



## Duquesne Light

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October 25, 1983

United States Nuclear Regulatory Commission  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

ATTENTION: Mr. Richard W. Starostecki  
Division of Project and Resident Programs

SUBJECT: Beaver Valley Power Station - Unit No. 2  
Docket No. 50-412  
Additional Report to  
USNRC IE Inspection Report No. 40-512/83-07

Gentlemen:

This letter provides additional information relative to our previous response to the subject Inspection Report.

As per the commitments made in Reference 7, this letter provides the Final Report of the influences of heavy wall fittings on the emergency diesel generator exhaust system and the generic influences of heavy wall fittings on selected NRC benchmark piping problems (Reference 2). Beaver Valley Unit 2 has completed assessing the effects of heavy wall fittings on the emergency diesel generator exhaust system for comparison with the standard approach of using nominal wall fittings for pipe stress modeling. The final disposition and assessment for both the generic study and the specific diesel generator exhaust system is attached.

SUBSCRIBED AND SWORN TO BEFORE ME THIS

25<sup>th</sup> DAY OF October, 1983.

Elva G. Lesondak  
Notary Public  
ELVA G. LESONDAK, NOTARY PUBLIC  
ROBINSON TOWNSHIP, ALLEGHENY COUNTY  
MY COMMISSION EXPIRES OCTOBER 20, 1986

DUQUESNE LIGHT COMPANY

By E. J. Woolever  
E. J. Woolever  
Vice President

JS/wjs

Attachments: 1) Report on Potential Significant Deficiency No. 83-08, "Heavy Wall Thickness on Diesel Generator Exhaust System"

2) (B2-12241-65) "Structural Review of Piping Analysis Including Effect of Heavy Elbows," October 1983

cc: Mr. G. Walton, NRC Resident Inspector (w/attachment)  
Ms. L. Lazo, Project Manager (w/attachment)  
NRC Document Control Desk (w/attachment)

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- REFERENCES:
1. NRC letter Docket No. 50-412, dated June 10, 1983
  2. Piping Benchmark Problem Dynamic Analysis, NUREG-CR/1677 and BNL-NUREG-51267, Vol. 1
  3. 2NRC-3-041, dated July 12, 1983
  4. 2NRC-3-048, dated July 20, 1983
  5. 2DLS-18336, dated August 17, 1983
  6. 2DLS-18337, dated August 17, 1983
  7. 2NRC-3-064, dated August 22, 1983
  8. 2DLS-18931, dated October 17, 1983
  9. 2DLS-18946, dated October 17, 1983

COMMONWEALTH OF PENNSYLVANIA )  
 ) SS:  
COUNTY OF ALLEGHENY )

On this 25<sup>th</sup> day of October, 1983, before me,  
a Notary Public in and for said Commonwealth and County, personally  
appeared E. J. Woolever, who being duly sworn, deposed and said that (1)  
he is Vice President of Duquesne Light, (2) he is duly authorized to exe-  
cute and file the foregoing Submittal on behalf of said Company, and (3)  
the statements set forth in the Submittal are true and correct to the best  
of his knowledge.

  
Notary Public

ELVA G. LESONDAK, NOTARY PUBLIC  
ROBINSON TOWNSHIP, ALLEGHENY COUNTY  
MY COMMISSION EXPIRES OCTOBER 20, 1986.

BEAVER VALLEY POWER STATION UNIT NO. 2  
DUQUESNE LIGHT COMPANY

ATTACHMENT 1

Report on Potential Significant Deficiency No. 83-08  
"Heavy Wall Thickness on Diesel Generator Exhaust System"

1. SUMMARY

During a routine safety inspection by the NRC resident inspector, the emergency diesel generator exhaust fittings (spools EDG 3-1 and EDG 14-1) were found to have thickness readings of 0.75 in., which is twice their nominal value. This was cited as an Item of Violation in Inspection No. 50-412/83-07.

2. IMMEDIATE ACTION TAKEN

Mr. E. F. Kurtz, Jr., Manager of Duquesne Light Company's Regulatory Affairs Department, notified Mr. Lowell Tripp of the NRC Region I office on June 27, 1983, on this potentially reportable deficiency. An engineering evaluation was undertaken to determine the reportability status of the exhaust system.

3. DESCRIPTION OF DEFICIENCY (Extracted from NRC Inspection Report 83-07 dated June 10, 1983)

In the diesel generator exhaust system, two fittings, EDG-3-1 and EDG-14-1, while being installed were found to have thickness measurements of 0.75 in., which is twice the 0.375 in. nominal wall. The system contains one 90° long radius Ell, two 45° Ell's, one 38 in. standard tee, one 38 in. flange, and two 38 in. standard pipes. The fittings were ordered from Ladish Company as 38 in. standard (0.375 nominal wall). The actual wall thickness measurements performed by site quality control by request of the NRC, found the 90° elbow, the two 45° elbows, and the one tee to have an average wall thickness of 0.750 in. The stress calculations for this system were based on the nominal wall thickness.

4. ANALYSIS OF SAFETY IMPLICATIONS

At the time of the cited deficiency, the analysis of the EDG exhaust system was documented in calculation 12241-NP(T)-X60K-1. The calculated loads on the exhaust silencer nozzles (from the above calculation) were documented in nozzle load summary 12241-NP(T)-NL-526-0. Since the allowable nozzle loads were not available, the nozzle load summary was appropriately marked "confirmation required" until the calculated loads would be reconciled against the allowables. Since that time, the nozzle loads have been reconciled by SWEC and a support system finalized. The finalized analysis is documented in calculation 12241-NP(B)-X60K-3.

However, to demonstrate that the cited deficiency would not have any detrimental impact on the analysis results, the finalized support system was remodelled and reanalyzed to include the effects of the heavy wall fittings. This analysis is documented in calculation 12241-NP(B)-369-X6-0.



A comparison of the results of the analyses (heavy wall vs. standard weight fittings), documented in calculation 12241-NP(B)-369-X6-0, indicate that the stress levels (including supports and equipment nozzle loads) would have remained within acceptable limits had the heavy wall fittings not been included in the piping analysis of the EDG exhaust piping. The primary concern for the EDG exhaust system was the increase and redistribution of the deadweight effects. Calculation 12241-NP(B)-369-X6-0 shows that the redistributed and increased deadweight remains acceptable. Thermal effects due to revised elbow flexibility is not a concern since the system is free-ended. Seismic effects are also not a real concern due to the many conservative assumptions in the analysis such as conservative load input, load combinations, low damping values, peak broadening of ARS, enveloping ARS, and the considerations of spatial and modal components, coupled with low allowable stresses. This will be confirmed by SWEC's generic study to assess the effects of heavy fittings. The generic study is currently in the process of being finalized and will be included in the additional response to NRC Inspection Report 83-07 as per the commitment in the letter 2NRC-3-064, dated August 22, 1983. This engineering evaluation of the EDG exhaust system concludes there is no safety implication.

5. CORRECTIVE ACTION TO REMEDY DEFICIENCIES

Corrective action for the diesel generator exhaust system is not required since there are no safety implications.

6. ADDITIONAL REPORTS

This is the final report concerning the heavy wall thickness on the Diesel Generator Exhaust System.