



# THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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MURRAY R. EDELMAN

VICE PRESIDENT  
NUCLEAR

October 22, 1985

PY-CEI/OIE 0121 L

Mr. James G. Keppler  
Regional Administrator, Region III  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

RE: Perry Nuclear Power Plant  
Docket Nos. 50-440; 50-441  
Tube Turns Nuclear Class I  
Flued Head Penetrations  
[RDC 144(85)]

Dear Mr. Keppler:

This letter is a final report pursuant to 10CFR50.55(e) concerning potentially deficient shop welds in containment penetration assemblies manufactured by Tube Turns, Inc. of Louisville, Kentucky. Mr. James McCormick-Barger of your office was notified by telephone on July 31, 1985 by Mr. Paul Martin of The Cleveland Electric Illuminating Company (CEI) that this condition was being evaluated per Deviation Analysis Report 250. Tube Turns, Inc. was also notified. An interim report was submitted on August 29, 1985. We have determined that this condition does not constitute a significant deficiency per the requirements of 10CFR50.55(e).

## Description of Potential Deficiency

Flued heads are used to support and anchor process piping where it passes through a containment penetration. For typical configurations, see the attached sketch. During leak testing of the assemblies installed in Unit 1, leakage indications were identified in two (2) penetration assemblies (P-410 and P-411). In both instances, the indications of leakage occurred at or near the shop weld that connects the flued head to the process pipe. These penetration assemblies, including the weld to the process piping, were supplied by Tube Turns, Inc. of Louisville, Kentucky.

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As part of the investigation to determine the source of indications found during leak tests as described above, ultrasonic testing (UT) was used to perform a volumetric examination in the immediate area of concern. This examination identified ultrasonic indications which were not within acceptance criteria established for this type of examination by ASME Section III. Because of this, the UT was performed on the flued head to process piping weld on all Class I penetration assemblies which were furnished by Tube Turns, Inc. for Unit 1. As a result, thirteen (13) Class I penetrations have been found to exhibit ultrasonic indications in excess of ASME criteria.

It must be noted that the applicable Construction Code for these flued head welds, ASME Section III/Subsection NB, does not require UT examination. Under the provisions of Subsection NB (Class I requirements), this weld is treated as a structural attachment to the piping pressure boundary. As such, Article NB-5000 of Subsection NB requires that the welds be subjected to a liquid penetrant (LP) or magnetic particle (MP) examination. UT examination is required by CEI to satisfy augmented In-Service Inspection (ISI) commitments. This inspection results from a Standard Review Plan requirement (MEB 3-1), and not from an ASME Section XI ISI requirement. All required ASME Section III examinations (liquid penetrant or magnetic particle testing) were performed by the manufacturer and accepted. The assemblies are therefore Section III complete and were Code-stamped by the manufacturer.

#### Conclusions of Evaluation

In an effort to determine the source or cause of indications found during leak tests on penetration assemblies P-410 and P-411, the penetrations were flapper-wheeled and leak tests were subsequently performed by two different ASME Certificate holders. Neither test identified any indications of leakage. In addition, these areas were examined using liquid penetrant, magnetic particle and ultrasonic testing methods. Again no indications were found that could be connected to potential leakage. We have therefore concluded that the original indications of leakage found during leak testing were false. Insofar as leak testing is concerned, we consider penetrations P410 and P411 to be acceptable.

The ultrasonic indications identified during the investigation of leak testing results are considered as a separate problem. Through detailed evaluation of UT data and physical examination of similar discontinuities in a duplicate Unit 2 assembly which was sectioned, we have determined that (1) the UT indications we have identified appear to result from slag inclusions, and, (2) the actual discontinuities are relatively small in relationship to the overall weld size.

In dealing with indications identified through performance of an examination over and above Section III requirements, we have chosen to utilize methods typically used for defect evaluation subsequent to construction completion, that is, fracture mechanics and fatigue analysis. This type of analysis is appropriate in this instance given the character and size of discontinuities and the potential for metallurgical degradation of material properties in effecting weld repairs. This analysis has shown the penetration welds to be acceptable in their present condition. We consider this approach to be consistent with sound engineering and industry practices.

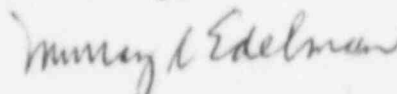
Evaluation of the potentially affected Unit 2 penetrations will be completed on a schedule consistent with Unit 2 construction.

#### Analysis of Safety Implications

As stated above, the thirteen Unit 1 penetration assemblies affected by the leakage and/or UT indications are considered to be acceptable in their present condition. In the case of the UT indications, our design agent, Gilbert Associates, working together with APTECH Engineering has performed fracture mechanics and fatigue analyses which show that the discontinuities identified do not affect the integrity of the flued head penetration assemblies. Thus, we have concluded that if these problems had gone undetected, they would not have been detrimental to the safe operation of the Perry Nuclear Power Plant.

Please call if there are any questions.

Sincerely,



Murray R. Edelman  
Vice President  
Nuclear Group

MRE:sab  
Attachments

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