U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-352/80-11

Docket No. 50-352

License No. CPPR-106 Priority _____ Category A

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Limerick Unit 1

Investigation at: Limerick, Pennsylvania

Investigation conducted: July 31, September 27, November 30, 1979 and June 4 and 5, 1980

Investigators: J. P. Durr, Reactor Inspector — 6/18/80 date signed

for J. P. Durr — E. P. Jernigan, Reactor Inspector — 6/18/80 date signed

_____ date signed

_____ date signed

Approved by: L. E. Tripp, Chief, Engineering Support Section No. 1, RC&ES Branch — 6/18/80 date signed

Investigation Summary:

Investigation on July 31, September 27, November 30, 1979 and June 4 and 5, 1980 (Report No. 50-352/80-11)

Areas Investigated: Unannounced investigation of an allegation concerning out-of-roundness of the 26" diameter main steam piping. The investigation involved 36 investigator-hours onsite by two NRC regional-based investigators.

Results: The facts, as alleged, were found to be true, however, there does not appear to be a violation of NRC fabrication requirements. No items of noncompliance were identified.

Region I Form 143
(Rev. October 1977)

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I. BACKGROUND

A. Reasons for Investigation

Or July 30, 1979, an allegation was received at the NRC Region I office from a former workman at the Philadelphia Electric Company's Limerick facility. The allegation concerned an out-of-roundness condition in one of the main steam pipes.

B. Identification of Organizations

1. Philadelphia Electric Company

   The NRC license holder for the Limerick Generating Stations, Units No. 1 and 2.

2. Bechtel-San Francisco

   Contracted to Philadelphia Electric Company for architect-engineering services.

3. General Electric Company

   Supplier of the nuclear steam system.

II. SUMMARY OF FINDINGS

Allegation and Investigation Conclusion

It was alleged that a 26" diameter, main steam pipe was approximately 3/8" out-of-round at the Limerick Generating Station. The pipe was clamped to correct the out-of-round condition. The pipe is located inside containment near the isolation valve.

The facts of the allegation, as stated, are true. The compliance of the pipe with applicable manufacturing codes has been rendered indeterminate due to welding and machining. It does not appear that the pipe is in noncompliance with fabrication codes. A secondary issue of pipe ovality versus design calculations is being evaluated by the licensee and the NRC.

III. DETAILS

A. Introduction

An allegation was received in the NRC Region I office on July 30, 1979, concerning the main steam piping being installed at the Limerick Generating Station. Investigators were dispatched to the facility on July 31, September 27, November 20, 1979 and June 4, 1980, in an effort to confirm the allegation and determine if NRC requirements had been violated.

B. Persons Contacted

Philadelphia Electric Company

J. Corcoran, Field Quality Assurance Branch Head
* D. DiPaolo, Quality Assurance Engineer
* R. Scott, Senior Engineer

Bechtel

* T. Altum, Lead Welding Engineer
* P. R. Dunn, Quality Assurance Engineer
* H. Foster, Project Field Quality Control Engineer
* E. R. Klossin, Project Quality Assurance Engineer
E. Lafluer, Pipe Welder
* R. Leingang, Assistant Project Field Engineer
* T. Martin, Lead Site Quality Assurance Engineer
V. Mehta, Piping Engineer for Drywell
* T. Molinaro, Project Superintendent
R. J. Phelps, Quality Control Engineer
* J. R. Reiney, Project Construction Manager
R. Whitehead, Pipe Fitter Foreman

General Electric Company

E. Franks, Mechanical Technical Director
W. Neal, Site Resident Manager

* denotes persons present at the exit interview.

C. Investigation of Allegation

Allegation

A 26" diameter, main steam pipe is approximately 3/8" out-of-round. The pipe has been clamped to correct the out-of-round condition. The pipe is located inside containment near the isolation valve.

NRC Investigation

A preliminary review of site documentation disclosed that the General Electric Specifications No. 21A9416, Revision 0 and No. 22A2513, Revision 1, provide the detailed instructions for fabrication and installation of the main steam piping. These documents specify the applicable code, ASME, Section III, Class I. The fabrication specification provides limited requirements to be satisfied for out-of-round conditions in paragraphs 4.4.1 and 4.4.5 but does not specify tolerances for ovality. The ASME III Code, paragraph NB-4223.2 limits ovality to 8% after bending.

A tour of the Unit No. 1 containment and interviews with craftsmen, foremen and technicians disclosed that main steam pipe spool APE-1MS-LD-38 was the one described by the alleger. This pipe spool is one of four that contains flow element devices for each main steam loop. This pipe contains the flow element for loop "D". The pipe, as received from the fabricator, required that the weld preparation be removed from one end and remachined. The piece that was removed exhibited a 3/8 out-of-round condition when measured by the investigator. The foreman responsible for installing the pipe stated that there was a 3/8" out-of-roundness on the cut end of the pipe prior to remachining. This was corrected by installing a "Dearman" clamp.

Previous to the discovery of the ovality problem by the NRC, the licensee measured the four flow element pipe spools and noted inside diameter variations beyond those specified. This was documented on Nonconformance Report No. 3527, dated April 17, 1979. Subsequent to the NRC finding, the remaining three pipe spools outside diameters were measured and they too were confirmed to have diameter anomalies. The licensee wrote a letter, dated August 6, 1979, to General Electric describing the ovality, clamping and machining and requested a determination of the acceptability of the condition and practices. General Electric responded that the pipe was acceptable and cited the 8% tolerance on ovality referenced in the ASME III Code, Paragraph NB-4223. In addition, the ovality problems of the four pipes were documented in the formal control system by issuing a "Field Deviation Disposition Request No. HH1-247." The suggested disposition is to "accept as-is."

The ASME II and III Codes and applicable design drawings direct the use of ASME SA-106, Grade "B" piping specifications. The specification permits the pipe diameter to vary plus 1/8" minus 1/32". This specification is applicable during the manufacture of the pipe. However, subsequent to its manufacture, the pipe ends and a 360 degree area on the inside were subjected to weld buildup. This weld build up could account for the pipe no longer meeting diameter tolerances. Therefore, the pipes compliance with applicable codes at the time of manufacture is indeterminate.

Further investigation by the NRC disclosed that the ASME III Code specifies certain limitations on ovality in Table 3683.2-1, Note (1). This is the Design Section of the code and does not appear to be addressed by the licensee's evaluation or his installation specifications. The licensee is evaluating the significance of this note on installation. This matter is considered unresolved pending completion of the licensee's evaluation and review by the NRC. (352/80-11-01)

NRC Conclusion

The facts as stated by the alleger are true, however, they do not appear to violate NRC and ASME fabrication requirements. The impact of ovality on design calculations, the unresolved item, is being pursued by the licensee and the NRC. The resolution of this matter will be documented in a routine inspection report.

D. Unresolved Items

An unresolved item is a matter about which more information is needed to determine if it is an item of noncompliance, a deviation or acceptable. An unresolved item is discussed at the end of Paragraph C, NRC Investigation.

E. Exit Interview

The investigator met with the members of the licensee's staff (denoted in Paragraph B) at the conclusion of the investigation on June 5, 1980. He summarized the scope and findings of the investigation.