

MAY 12 1982

Docket No. 50-352

Philadelphia Electric Company
ATTN: Mr. John S. Kemper
Vice President
Engineering and Research
2301 Market Street
Philadelphia, PA 19101



Gentlemen:

Subject: Inspection No. 50-352/30-06

This refers to the routine safety inspection conducted by Mr. R. A. McBrearty of this office on March 15 - April 23, 1982 at the Limerick Generating Station, Unit 1, Limerick, Pennsylvania of activities authorized by NRC License No. CPPR-106 and to the discussions of our findings held by Mr. McBrearty with Mr. P. K. Pavlides of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the NRC Region I Inspector Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

In addition, our Mobile NDE Laboratory was also brought to your site and used by the inspectors to make certain independent examinations. The purpose of these examinations is to assess the adequacy of your quality control program through our independent examination of items previously accepted under your program.

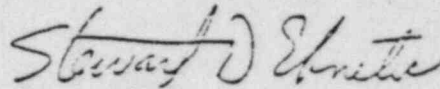
Within the scope of this inspection, no violations were observed.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1). The telephone notification of your intent to request withholding, or any request for an extension of the 10 day period which you believe necessary, should be made to the Supervisor, Files, Mail and Records, USNRC Region I, at (215) 337-5223.

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No reply to this letter is required. Your cooperation with us in this matter is appreciated.

Sincerely,



for Thomas T. Martin, Director
Division of Engineering and Technical
Programs

Enclosure: NRC Region I Inspection Report Number 50-352/82-06

cc w/enc1:

V. S. Boyer, Senior Vice President, Nuclear Power
Troy B. Conner, Jr., Esquire
Eugene J. Bradley, Esquire
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
Commonwealth of Pennsylvania

U. S. NUCLEAR REGULATORY COMMISSION

REF: 3

Region I

Report No. 50-352/82-06

Report No. 50-352

Priority --

Category A

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station, Unit 1

Inspection At: Limerick, Pennsylvania

Inspection Conducted: March 15, 1982 - April 23, 1982

Inspectors: Robert A. McBrearty
R. A. McBrearty, Reactor Inspector

5-10-82
date signed

S. D. Ebnetter
for S. P. Curr, Sr. Resident Inspector

5/10/82
date signed

Approved By: S. D. Ebnetter
S. D. Ebnetter, Chief, Engineering Programs
Branch

5/10/82
date signed

Inspection Summary:

Inspection on March 15 - April 23, 1982 (Report No. 50-352/82-06)

Areas Inspected: Routine, announced inspection of piping welds and base materials by direct inspection using the Region I Mobile NDE Laboratory. The inspection included NDE of selected welds and base materials; review of licensee contractor NDE procedures, vendor material certification records, fabrication records and NDE records. The direct inspection effort was performed using NRC contractor personnel. The inspection involved 345.5 inspection hours onsite by one regional based inspector, the resident inspector and two NRC contractor personnel.

Results: No violations were identified.

1. Persons Contacted

Philadelphia Electric Company

- *D. T. Clohery, QAE
- *F. J. Coyle, QAE
- *E. C. Gibson, QAE
- *G. Lauderback, QAE
- *M. J. McGill, QAE
- *P. K. Pavlides, QA Manager
- *R. Scott, Lead Construction Engineer
- *R. H. Zong, Senior Metallurgist, Level III

Bechtel Power Corporation

- *T. Altum, APFE
- *M. J. Baron, Lead Field Welding Engineer
- *R. J. Bulchis, Resident Engineer
- *T. M. Gwin, Project Construction Manager
- *K. Handy, Resident Engineer
- *F. Higgins, Instruction Engineer
- *J. Honer, Senior Lead S/C Engineer
- *D. Hunt, S/C Engineer
- *M. Jan, APFE
- *R. Lamley, LTM Engineer
- *J. L. Martin, QAE
- *K. L. Quinter, APFQCE
- *D. C. Thompson, APFQCE
- *A. G. Weedman, PFE

U. S. Nuclear Regulatory Commission

- *J. P. Durr, Senior Resident Inspector

*denotes those present at the exit interview on April 9, 1982.

2. Independent Measurements - NRC Nondestructive Examination and Quality Record Review of Safety Related Piping Systems

This independent verification inspection was conducted March 15, 1982 through April 23, 1982 using the Region I Mobile NDE Laboratory. The inspection was conducted by the NRC Senior Resident Inspector and one Region I Reactor Inspector. The NDE was performed by two technicians from Wisconsin Industrial Testing under the supervision of the NRC inspector.

The purpose of the examinations was to verify the adequacy of the licensee's quality control program through NRC independent testing. This was accomplished by the NRC performing the same tests required of the licensee and evaluating the results. In addition to these tests, the NRC program performed field

All the requested documentation was readily retrievable and was found to be complete. The recorded physical properties were compared with the minimum required values found in the applicable material specification. All results exceeded the specified minimum values.

c. Nondestructive Examination

The following examinations were performed:

- Radiography - Nineteen welds were radiographed using an Iridium 192 source. These included ASME Class 1, 2 and 3 welds fabricated from stainless steel and from carbon steel. The technique and evaluation of results was performed in accordance with NRC Procedure NDE-5, revision 0, and procedure addendum LIM-1-5-1.

Findings: The following welds contained discontinuities which required evaluation:

- EBB-129-1-6 SW 2
- DSA-106-1-1 SW 2
- DLA-107-1-2 SW 1
- GBB-115-1-1A SW 1
- DLA-112-2 FW 6

Welds EBB-129-1-6 SW 2, DSA-106-1-1 SW 2 and DLA-107-1-2 SW 2 contained porosity which was found to be acceptable per the ASME Code.

Weld GBB-115-1-1A SW 1 contained an inclusion which was evaluated by two licensee level III individuals, two level II's and the ANI. The NRC inspectors agreed with the interpretation as an inclusion less than 1/4 inch long and acceptable. Weld DLA-112-2 FW 6 revealed discontinuities evaluated by NRC inspectors as transverse weld cracks. The cracks were identified on NCR 5014 by the licensee prior to the NRC examination. This weld was randomly selected by the NRC for examination prior to licensee acceptance and is scheduled for repair by the licensee.

Complete coverage was not achieved of weld GBB-101-2 FW 1 due to thickness transition. The available areas were found acceptable.

The remaining welds were found acceptable.

- Magnetic Particle - Two welds were examined using a magnetic yoke and the dry powder method. The technique and evaluation of results was performed in accordance with NRC Procedure NDE-6, revision 0, and procedure addendum LIM-1-6-1. The sample included one ASME Class 1 weld and one ASME Class 2 weld.

chemical and physical analyses, pipe wall thickness measurements, and licensee/NRC radiographic film comparisons.

The inspection sample selection was made by the NRC inspectors and was intended to provide a representative sample of piping systems, components, pipe sizes, materials, shop and field welds and ASME Class 1, 2 and 3 welds. The selected items were previously accepted by the licensee based on vendor shop or onsite NDE records by licensee contractors.

The examinations were performed using NRC detailed procedures and addenda specifically written for compliance with the licensee's PSAR commitments to the ASME Boiler and Pressure Vessel Code, 1974 Edition through Summer 1974 Addenda. The intent was to duplicate, to the extent practicable, the techniques and methods of the original acceptance examinations.

a. Nondestructive Examination Procedures

The inspector audited the below listed nondestructive examination procedures to ascertain compliance with ASME B&PV Code, Section III, Summer 1974 Addenda.

- (1) RT-XG-2, Radiographic Examination, Revision dated 7/1/74
- (2) PT-SR-1, 2, Liquid Penetrant Examination (Solvent Removable Method), Revision dated 8/21/74
- (3) MT-P-1, 2, Magnetic Particle Examination (Prod Method), Revision dated 8/26/74
- (4) MT-Y-1, 2, Magnetic Particle Examination (Yoke Method), Revision dated 10/30/74

No violations were identified.

b. Material Traceability

Twenty-six documentation packages were reviewed for the following:

- Material certification records including weld wire.
- NDE results.
- Fabrication records - shop and field.
- Drawings.
- Chemistry.
- Physical properties.

All the requested documentation was readily retrievable and was found to be complete. The recorded physical properties were compared with the minimum required values found in the applicable material specification. All results exceeded the specified minimum values.

c. Nondestructive Examination

The following examinations were performed:

- . Radiography - Nineteen welds were radiographed using an Iridium 192 source. These included ASME Class 1, 2 and 3 welds fabricated from stainless steel and from carbon steel. The technique and evaluation of results was performed in accordance with NRC Procedure NDE-5, revision 0, and procedure addendum LIM-1-5-1.

Findings: The following welds contained discontinuities which required evaluation:

- . EBB-129-1-6 SW 2
- . DBA-106-1-1 SW 2
- . DLA-107-1-2 SW 1
- . GBB-115-1-1A SW 1
- . DLA-112-2 FW 6

Welds EBB-129-1-6 SW 2, DBA-106-1-1 SW 2 and DLA-107-1-2 SW 2 contained porosity which was found to be acceptable per the ASME Code.

Weld GBB-115-1-1A SW 1 contained an inclusion which was evaluated by two licensee level III individuals, two level II's and the ANI. The NRC inspectors agreed with the interpretation as an inclusion less than 1/4 inch long and acceptable. Weld DLA-112-2 FW 6 revealed discontinuities evaluated by NRC inspectors as transverse weld cracks. The cracks were identified on NCR 5014 by the licensee prior to the NRC examination. This weld was randomly selected by the NRC for examination prior to licensee acceptance and is scheduled for repair by the licensee.

Complete coverage was not achieved of weld GBB-101-2 FW 1 due to thickness transition. The available areas were found acceptable.

The remaining welds were found acceptable.

- . Magnetic Particle - Two welds were examined using a magnetic yoke and the dry powder method. The technique and evaluation of results was performed in accordance with NRC Procedure NDE-6, revision 0, and procedure addendum LIM-1-6-1. The sample included one ASME Class 1 weld and one ASME Class 2 weld.

Findings: All areas were found acceptable and correlation with original test results was good.

Liquid Penetrant - Ten welds were examined using the color contrast, visible dye, solvent removable penetrant method. The technique and evaluation of results was performed in accordance with NRC Procedure NDE-9, revision 0, and procedure addendum LIM-1-9-1. The sample included ASME Class 1 and 3 welds.

Findings - All areas were found acceptable and correlation with original test results was good.

Thickness Measurements - Twenty-five areas were measured, including welds and base materials, using an ultrasonic digital readout thickness gage. The measurements were made in accordance with NRC Procedure NDE-11, revision 0. The minimum wall thickness was determined by using the pipe wall thickness specified in the piping design tables minus the 12.5 percent mill tolerance.

Findings - All areas equalled or exceeded the minimum thickness requirements.

Ferrite Measurements - Four stainless steel welds were measured using a Type II Ferrite Indicator (Severn Gauge).

Findings - All measurements were found to be acceptable.

Hardness Checks - Twenty-five areas (base materials adjacent to welds) were checked using an Equo-Tip hardness tester in accordance with NRC Procedure NDE-12, revision 0. Hardness numbers were converted to Brinell hardness and approximate ultimate tensile strength by the use of conversion tables.

Findings - No unacceptable readings were found.

Weld Reinforcement Measurements - Twenty-five welds were examined for reinforcement.

Findings - All examined weld reinforcements were found to be acceptable.

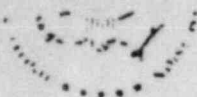
Alloy Analysis - Seven areas of stainless steel base material were examined for material composition using a Texas Nuclear Alloy Analyzer. The examination included material identification and chemical analysis. The results were compared with vendor material certification records.

Findings - All tests confirmed the vendor material certification records.

The welds randomly selected for independent verification and the NDE performed are listed in Attachment 1.

3. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on April 9, 1962. The inspectors summarized the scope and findings of the inspection.



REF: 3
C-17-1-11

Docket No. 50-352

MAY-13 1982

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MAY 18 1982

R. A. MULFORD

Philadelphia Electric Company
ATTN: Mr. John S. Kemper
Vice President
Engineering and Research
2301 Market Street
Philadelphia, PA 19101

Gentlemen:

Subject: Inspection No. 50-352/82-06

Enclosed is Attachment 1 to IR 50-352/82-06 which was sent to you on May 12, 1982. This attachment was inadvertently omitted from the inspection report.

Sincerely,

Thomas T. Martin, Director
Division of Engineering and
Technical Programs

Enclosure:
Attachment 1 to IR 50-352/82-06

cc w/encl:
V. S. Boyer, Senior Vice President, Nuclear Power
Troy B. Conner, Jr., Esquire
Eugene J. Bradley, Esquire

TIFICATION

EXAMINATION

Spool/System	Weld No.	Radiography	Magnetic Particle	Liquid Penetrant	Thickness	Ferrite	Hardness	Weld Reinforcement	Ar
DLA-107-1-2 Feedwater ASME Class 1 12"	FW-6	Acceptable	-	Acceptable	Acceptable	-	Acceptable	Acceptable	
	SW-1	Acceptable	Acceptable	-	Acceptable	-	Acceptable	Acceptable	
GBC-101-3-4 Main Steam ASME Class 3 12"	FW-3	-	-	Acceptable	Acceptable	-	Acceptable	Acceptable	
	SW-3	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
DBA-106-1-1 HPCI ASME Class 1 10"	FW-2	Acceptable	--	Acceptable	Acceptable	-	Acceptable	Acceptable	
	SW-2	Acceptable	-	Acceptable	Acceptable	-	Acceptable	Acceptable	
EBB-129-1-6 HPCI ASME Class 2 14"	FW-6	-	-	-	Acceptable	-	Acceptable	Acceptable	
	SW-2	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
EBB-121-3-2 RHR ASME Class 2 10"	FW-5	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
	SW-1	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
GBB-115-1-1A Core Spray Cooling ASME Class 2 10"	SW-1	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
	SW-2	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
DCA-104-1-1 RHR ASME	FW-11	Acceptable	-	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Ac

Spool/System	Weld No.	Radiography	Magnetic Particle	Liquid Penetrant	Thickness	Ferrite	Hardness	Weld Reinforcement	Air Analysis
DCA-105-1-3 RHR ASME Class 1 20"	FW-6	-	-	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
	SW-2	Acceptable	-	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
DLA-112-2 RHR ASME Class 1 12"	FW-6	Acceptable	-	Acceptable	Acceptable	-	Acceptable	Acceptable	
	-	-	-	-	-	-	-	-	
HBC-183-1 RHR ASME Class 3 20"	FW-8	-	-	Acceptable	Acceptable	-	Acceptable	Acceptable	
	SW-1	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
GDB-101-2-1 RHR ASME Class 2 18"	FW-1	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
	SW-1	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
HBB-110-1-2 HPCI ASME Class 2 16"	SW-2	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
	-	-	-	-	-	-	-	-	
GDB-118-3-9 RHR ASME Class 2 4"	SW-5	Acceptable	-	-	Acceptable	-	Acceptable	Acceptable	
	-	-	-	-	-	-	-	-	
HBB-127-1 Containment Atmospheric Control	FW-54	-	Acceptable	-	Acceptable	-	Acceptable	Acceptable	

