UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Philadelphia Electric Company	)	Docket Nos. 50-352
	)	50-353
(Limerick Generating Station Units 1 and 2)	)	

APPLICANT'S ANSWERS TO INTERVENOR AWPP'S SECOND SET OF INTERROGATORIES ON QUALITY ASSURANCE/CONTROL

DISCOVERY 16
December 19, 1983

Interrogatory No. 1

Indicate total number of welds involved directly or indirectly with safety-relatd piping, reactor vessel, reactor vessel components and all units into and out of the reactor vessel which require or required welding.

Answer

Using various techniques, it has been estimated that there are over 195,000 safety-related welds joining safety-related piping, reactor vessels and reactor vessel internals for the Limerick Generating Station. The preceeding estimate includes safety-related piping into and out of the reactor vessel.

Participants in Preparation of Answer

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Interrogatory No. 2

Indicate the types of each weld performed and the name and proof of qualification of the welder who performed such weld or welds.

Answer

The types of field welds performed at Limerick Generating Station for safety-related piping, reactor vessels and reactor vessel internals are shown on the associated drawings, and specifications for the particular component, system, or piping. Additional welding details are found in the field welding procedures, a list of which is attached.

Each welder is qualified to perform welding to the appropriate welding procedures that he is using.

The following description is provided as an example of the controls applied at Limerick to assure that a welder is qualified to the procedure to which he is working:

When a field piping weld is to be performed, it is verified that the welder assigned is qualified prior to issuance of weld filler material. During the performance of the weld, the quality control inspector verifies, during surveillance inspections for selected pipe welds, that authorization has been granted for the weld filler material in the welder's possession, and that the welder is qualified to perform the weld.

To retrieve the inspection records and associated information for field pipe welds, the weld must be selected and identified by

pipe line number, drawing number and field weld number. Once the weld is selected, the specific type of weld can be identified, the welding procedure which was used and the welder(s) identification by review of the inspection record and associated documents. With the welder's identification, his qualifications to the welding procedure can be retrieved. The above information and proof of welder's qualifications are stored on site either in hard copy or in microfilm.

While there are variations in the methods used by vendors and subcontractors, controls equivalent to those described for field pipe welds are applied as required by their QA programs and implementing documents.

Participants in Preparation of Answer

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INTERROGATORY 2 ATTACHMENT 1

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
GWS-FM	GENERAL WELDING STANDARD	FERRITE AND MARTENSITIC
GWS-SN	GENERAL WELDING STANDARD	STAINLESS AND NICKEL
GWS-DM	GENERAL WELDING STANDARD	DISSIMILAR METALS
GWS-TC	GENERAL WELDING STANDARD	THERMOCOUPLE ATTACH.
GSS-NF	GENERAL SOLDERING STANDARD	NONFERROUS
GBS-NF	GENERAL BRAZING STANDARD	NONFERROUS
ESR-1	ELIMINATION OF SURFACE DEFECTS	ASME SECTION III CODE
GWS-NF	GENERAL WELDING STANDARD	NON-FERROUS
GPS-1	GENERAL PURGING SPECIFICATION	INTERNAL GAS PURGING

INTERROGATORY 2 ATTACHMENT 1

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
IRP-1	REPAIR PROCEDURE	INSPECTION AND REPAIR OF SURFACE DEFECTS
P1-A-Lh	WELDING PROCEDURE SPECIFICATION	NON-CRITICAL CARBON STEEL WELDS BY SMAW WELDING METHOD
P1-A-c-Lh	WELDING PROCEDURE SPECIFICATION	NON-CRITICAL CARBON STEEL WELDS BY SMAW WELDING METHOD
P1-AT-Lh	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY GTAW & SMAW WELDING METHODS
P1-At-Lh (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL BUTT WELDS IN NUCLEAR IMPACT-TESTED SYSTEMS BY GTAW & SMAW WELDING METHOD
P1-T P1-T (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY GTAW WELDING METHOD
P1-AT-Lh-1	ROOT, 2ND, AND COVER PASSES: GTAW BALANCE: SMAW	SOCKET WELDS (LIQUID PENETRANT EXAMINED)
P1-F	WELDING PROCEDURE SPECIFICATION	FLUX CORED ARC WELDING USING SELF-SHIELDING ELECTRODES OF CARBON STEEL PIPE OR PLATE.
P1-F (CO_2)	WELDING PROCEDURE SPECIFICATION	FLUX CORED ARC WELDING OF CARBON STEEL USING LOCKING STRIPS AND EXTERNAL GAS SHIELDING.

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
P1-F ($A-CO_2$)	WELDING PROCEDURE SPECIFICATION	FLUX CORED ARC WELDING OF CARBON STEEL USING AN EXTERNAL SHIELDING GAS
P4-A	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY SMAW WELDING METHOD
P4-AT	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW & SMAW WELDING METHOD
P4-T	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW WELDING METHOD
P4, P1-AT	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY GTAW & SMAW WELDING METHODS
P4, P1-T-1	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY GTAW WELDING METHOD
P4, P1-AT (A3)	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY GTAW AND SMAW
P1-A-Lh (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY SMAW
P5-A	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY SMAW WELDING METHOD

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
P5-AT-Ag	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW & SMAW WELDING METHODS
P5-T	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW WELDING METHOD
P5-T-Ag	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW WELDING METHOD
P5,P1-A	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY SMAW WELDING METHOD
P5, P1-AT-Ag	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY GTAW & SMAW WELDING METHODS
P5,P1-AT	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL USING GTAW & SMAW
P5, P1-T-1	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY TO CARBON STEEL WELDS BY GTAW WELDING METHOD
P5,P4-A	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY SMAW WELDING METHOD
P5, P4-AT-Ag	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY SMAW WELDING METHOD

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
P5,P4-T	WELDING PROCEDURE SPECIFICATION	CHROME-MOLY WELDS BY GTAW WELDING METHOD
P8-A	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY SMAW WELDING METHOD
P8-AT-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW & SMAW WELDING METHOD
P8, AT-Ag (HSW)	WELDING PROCEDURE SPECIFICATION	HEATSINK WELDING S.S. BY GTAW & SMAW
P8, AT-Ag-1 (HSW)	WELDING PROCEDURE SPECIFICATION	HEATSINK WELDING S.S. BY GTAW & SMAW
P8-T-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW WELDING METHOD
P8-AT-Ag-1	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW & SMAW WELDING METHOD
P8 (G1), P1 (G1)-AT-Ag (CVN)	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY GTAW & SMAW
P8,P1-AT-Ag (CVN) (BUTTERED)	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY GTAW & SMAW

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
P8,P5-AT-Ag (A8)	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CHROME-MOLY WELDS BY GTAW & SMAW
P8,P5-A	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CHROME-MOLY WELDS BY SMAW
P8,P1-A	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY SMAW WELDING METHODS
P8,P1-AT-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY GTAW & SMAW WELDING METHODS
P8,P1-T-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY GTAW WELDING METHOD
P8,P4-AT-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CHROME-MOLY WELDS BY GTAW & SMAW WELDING METHODS
P8,P4-T-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CHROME-MOLY WELDS BY GTAW WELDING METHOD
P8,P5-T-Ag (F-43)	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CHROME-MOLY WELDS BY GTAW WELDING METHOD
P8,P1-AT-Ag-1	ROOT, 2ND & COVER PASSES GTAW ON S.W. BALANCE SMAW	CS TO SS FOR SOCKET WELDS

Field Welding Procedures for Pipe

PROCEDURE	DESCRIPTION	APPLICATION
P8,P5-AT-Ag	GTAW AND SMAW	CHROME-MOLEY TO AUSTENITIC SS
P8,P1-AT-Ag (CVN)	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO IMPACT TEST CARBON STEEL USING GTAW & SMAW
P-107, H-101-1	WELDING PROCEDURE SPECIFICATION	BRAZING COPPER SOCKET JOINTS BY MANUAL TORCH METHOD
P-107, H-101-S1	WELDING PROCEDURE SPECIFICATION	SOLDERING COPPER SOCKET JOINTS BY MANUAL TORCH METHOD
P-107, H-101-2	WELDING PROCEDURE SPECIFICATION	BRAZING COPPER SOCKET JOINTS BY MANUAL TORCH METHOD
P-107, H-101-4	WELDING PROCEDURE SPECIFICATION	BRAZING COPPER JOINTS BY MANUAL TORCH METHOD
P45-T-AG (65)	GTAW	WELDING OF P45 MAT'LS AND CARPENTER 20Cb-3
P45-A-(135)	SMAW	WELDING OF P45 MAT'LS AND CARPENTER 20Cb-3

Field Welding Procedures for General Electric (NED) Piping

PROCEDURE	DESCRIPTION	APPLICATION
GWS-FM	GENERAL WELDING STANDARD	FERRITE AND MARTENSITIC
GWS-SN	GENERAL WELDING STANDARD	STAINLESS AND NICKEL
GWS-DM	GENERAL WELDING STANDARD	DISSIMILAR METALS
GWS-TC	GENERAL WELDING STANDARD	THEROCOUPLE ATTACH.
GPS-1	GENERAL PURGING SPECIFICATION	INTERNAL GAS PURGING
ESR-1	ELIMINATION OF SURFACE DEFECTS	NUCLEAR AND NON-NUCLEAR
IRP-1	INSPECTION AND REPAIR OF SURFACE DEFECTS	NUCLEAR AND NON-NUCLEAR
P1-A-Lh (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY SMAW
P1-AT-Lh-1	WELDING PROCEDURE SPECIFICATION	SOCKET WELDS - LIQUID PENETRANT EXAMINED

Field Welding Procedures for General Electric (NED) Piping

PROCEDURE	DESCRIPTION	APPLICATION
P1-AT-Lh	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY GTAW & SMAW WELDING METHODS
P1-AT-Lh (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL BUTT WELDS IN NUCLEAR IMPACT-TESTED SYSTEMS BY GTAW & SMAW WELDING METHOD
P1-T	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY GTAW WELDING METHOD
P1-T (CVN)	WELDING PROCEDURE SPECIFICATION	CARBON STEEL WELDS BY GTAW WELDING METHOD - IMPACT TESTED MATERIALS
P8-AT-Ag-1	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW AND SMAW WELDING METHOD
P8-T-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW WELDING METHOD
P8-AT-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL WELDS BY GTAW & SMAW WELDING METHOD
P43,P8-AT-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO INCONEL BY GTAW & SMAW
P8,P1-T-Ag	WELDING PROCEDURE SPECIFICATION	STAINLESS STEEL TO CARBON STEEL WELDS BY GTAW WELDING METHOD

INTERROGATORY 2 Attachment 3

Welding Procedures for the Reactor Vessel, its Components and Appurtances.

Procedure	Description	Application
SRSE 1-7	General welding Procedure for SMAW & GTAW	Reactor Vessel Safe-end and pipe to Reactor vessel welds.
LRI-79-1-2D	Inconel Filler Material-Manual GTAW/SMAW	"
LRI-79-1-4D	Carbon Steel to Carbon Steel- Manual GTAW/SMAW	"
LRI-79-1-5D	Carbon Steel Overlay(P-1)-Manual SMAW	"
LRI-79-1-6W/D	Inconel Butter/Groove Weld of Stainless Steel Couplings	"
LRI-79-1-7D	Inconel to Inconel- Automatic GTAW	"
LRI-79-1-7D Alternate	Inconel to Inconel-Automatic GTAW	"
LRI-79-1-9D	Inconel (Open Root)F-43-Manual GTAW	"
LRI-79-1-10D	Carbon Steel to Carbon Steel (Open Root) GTAW	"
LRI-79-1-15D	Carbon Steel to Carbon Steel-Automatic GTAW	"
LMI-GWP-1	General Weld Procedure	RPV Internals
LMI-WPS-8.43-1	Stainless Steel to Inconel GTAW/SMAW (Manual)	"
LMI-WPS-43.43-1	Inconel to Inconel GTAW/SMAW (Manual)	"
LMI-WPS-8.8-1	Stainless Steel to Stainless Steel, Manual GTAW	"
LMI-WPS-8.8-2	Stainless Steel to Stainless Steel, Manual GTAW	"
LMI-WPS-8.8-3	Stainless Steel to Stainless Steel, Manual GTAW	"
LMI-WPS-1.1-1	Carbon Steel to Carbon Steel, Manual SMAW	"
LMI-WPS-1.1-2	Carbon Steel to Carbon Steel, Manual SMAW	"

Note:

Applications are defined by drawings and specifications

INTERROGATORY 2 Attachment 3

Welding Procedures for the Reactor Vessel, its Components and Appurtances.

Procedure	Description	Application
LMI-WPS-1.8-1	Buttering of Carbon Steel, Manual SMAW	RPV Internals
LMI-WPS-1.43-1	Carbon Steel Buttered with Inconel, Manual SMAW	"
LMI-WPS-43.43-2	Inconel to Inconel, Manual GTAW/SMAW	"
LMI-WPS-8.8-4	Stainless Steel to Stainless Steel, Manual GTAW	"
LMI-WPS-8.43-2	Stainless Steel to Inconel, Automatic	"
LMI-WPS-8.8-5	Stainless Steel to Stainless Steel, Automatic	"
LMI-WPS-43.43-3	Inconel to Inconel, Manual GTAW	"
WP-1	Weld Procedure For Mild Steel to Mild Steel	RPV Internals Installation
WP-6	Weld Repair Procedure	"
GWS-1	General Welding Specifications	"
W-1/1-OS-1L	Carbon Steel to Carbon Steel, Manual SMAW	"
W-1/1-CTS-1L	Carbon Steel to Carbon Steel, Manual GTAW/SMAW	"
W-1/1-OTS-1L	Carbon Steel to Carbon Steel, Manual GTAW/SMAW	"
W-8/8-CTS-1L	Stainless Steel to Stainless Steel, Manual GTAW/SMAW	"
W-8/8-OS-1L	Stainless Steel to Stainless Steel, Manual GTAW/SMAW	"
W-8/8-OTS-1L	Stainless Steel to Stainless Steel, Manual GTAW/SMAW	"
W-43/43-CTS-1L	Inconel to Inconel, Manual GTAW/SMAW	"

Note:

Applications are defined by drawings and specifications

INTERROGATORY 2 Attachment 3

Welding Procedures for the Reactor Vessel, its Components and Appurtenances.

Procedure	Description	Application
W-43/43-OTS-1L	Inconcel to Inconel, Manual GTA/SMAW	RPV Internals Installation
W-8/1-CTS-1L	Stainless Steel to Carbon Steel, Manual GTAW/SMAW	"
W-8/1-OTS-1L	Stainless Steel to Carbon Steel, Manual GTAW/SMAW	"
W-43/8-OTS-1L	Inconel to Stainless Steel, Manual GTAW/ SMAW	"
DBW-1	Draw Bead Welding	"
PRS-1/1	Jet Pump Adapter to Shroud Support Welding Sequence Procedure	"
W-8/8-CTA-1L	Stainless Steel to Stainless Steel, Automatic GTAW	"

Note:

Applications are defined by drawings and specifications

INTERROGATORY 2 Attachment 3

Weld Procedure Specification for RPV.

Number	Number
WPS-101-1F43	WPS-239-1F43
WPS-103-1F5	WPS-239-2F43
WPS-103-2F43	WPS-301-1F4
WPS-103-3F5	WPS-301-2F4
WPS-103-4F4	WPS-301-3F4
WPS-123-1F7	WPS-301-5F4
WPS-123-2F43	WPS-303-1F4
WPS-123-3F5F7	WPS-303-2F4
WPS-143-1F5F7	WPS-305-1F5
WPS-143-3F43	WPS-309-2F43
WPS-143-4F5F7	WPS-323-1F6
WPS-143-8F7	WPS-323-2F4F6
WPS-201-2F4	WPS-339-1F43
WPS-203-1F4	WPS-339-2F43
WPS-203-2F4	WPS-339-5F43
WPS-205-1F5	WPS-339-6F43
WPS-205-2F5	WPS-343-1F4F6
WPS-205-3F5	WPS-343-2F6
WPS-209-1F43	WPS-403-2F4
WPS-231-1F6	WPS-433-1F6F4
WPS-201-1F4	WPS-331-2F6F4
WPS-433-3F6	WPS-435-1F7
WPS-433-4F6F4	WPS-439-1F43

Weld Procedure Specification for RPV (Continued)

Number
WPS-439-2F43
WPS-439-3F43
WPS-439-8F43
WPS-439-9F43
WPS-439-15F43
WPS-800
WPS-830
WPS-840
WPS-820

Interrogatory No. 3

Provide all radiographs of all welds in Interrogatory 1 above, or other physical tests or evidence re weld quality.

Answer

There are approximately 40,000 radiograph film sheets for field welds and approximately 50,000 radiograph film sheets for vendor welds.

The radiographs and records of other nondestructive examinations are stored on site or at other records storage locations. Applicant will make specifically identified radiographs available to AWPP's technical representative upon reasonable notice after receiving information indicating that the AWPP representative is qualified to evaluate the radiographs, e.g. SNT-TC-1A, Level II or III certification in radiography.

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Interrogatory No. 4

Provide copies of all IE reports in which a safety-related welding infraction is discussed or described.

Answer

Copies of IE reports in which a safety-related welding infraction is discussed or described have been previously provided and is available for inspection and copying under Discovery 14, Item 1; Discovery 2 enclosure 2 Items 1, 2, 3; and Discovery 15, Item 1.

Participants in Preparation of Answer

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COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF PHILADELPHIA :

V. S. Boyer, being first sworn, deposes and states:

That he is Senior Vice President of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing Applicant's Answers to Intervenor AWPP's Second Set of Interrogatories on Quality Assurance/Control and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

V. S. Boyer
Senior Vice President

Subscribed and sworn to
before me this 19th day
of December, 1983.

Patricia O. Scholl
Notary Public

PATRICIA O. SCHOLL
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires February 10, 1986