U.S. NUCLEAR REGULATORY COMMISSION
Region I

Report No. 50-352/84-29

Docket No. 50-352

License No. CPPR-106 Priority -- Category B

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Limerick Unit 1

Inspection At: Limerick, Pennsylvania

Inspection Conducted: June 25 - July 20, 1984

Inspectors: Harry W. Kerch, Lead Reactor Engineer — 9/4/84 date

Richard H. Harris, NDE Technician — 9/4/84 date

Randy M. Campbell, NDE Technician — 8/30/84 date

Approved By: Jacque P. Durr, Chief, Materials and Processes Section, DETP — 9/20/84 date

Inspection Summary: Inspection on June 25 - July 20, 1984 (Report Number 50-352/84-29)
Areas Inspected: A routine, announced NRC independent measurements inspection was conducted at the utilities construction site using the NRC Mobile Nondestructive Examination (NDE) laboratory. Selected safety related piping, weldments fabricated to ASME Code, Section III, Classes 1, 2 and 3 were inspected. Three regional base inspection personnel assisted by two contracted NDE personnel were utilized during this inspection. The inspection involved 542 onsite hours and 93 offsite hours.

Results: Two violations were identified and one deviation.

DETAILS

1. Persons Contacted

Philadelphia Electric Company

** E. C. Gibson, QAE
 * K. A. Smub, Construction Engineer
 * R. E. Crofton, QAE
** R. H. Zong, Senior Engineer, NDE
 G. M. Leitch, Superintendent, LGS
 * J. Corcoran, Field QA
 J. Fedick, Senior Engineer
 * R. A. Pomon, S/V and Scheduling
** J. H. Arhar, Licensing Engineer
** R. R. Hess, Senior Engineer
** D. L. Schmidt, Jr., ME Section XI Coordinator

Bechtel Power Corporation

 * G. C. Bell, PQAE
 * G. C. Kelly, LSQAE
 J. J. Honer, Project Superintendent/Subcontracts
 * T. J. Waters, LQCWE
 B. A. Dragon, QAE
 K. L. Quenter, Assistant PFQCE
 K. G. Stout, PFQCE
** B. Chmielewski, LSC Engineer
 * B. Kerhin, W/Engineer
** B. Baker, NDE Level III
** E. Patel, Resident Project Engineer
 B. Gress, S/C Engineer
 G. T. Stoll, M&QS NDE
 B. L. Baker, M&QS NDE
 M. E. Greenidge, Project Superintendent/Services
 P. J. Guinet, RE

GEO

 M. Whallen, NDE
 G. Spencer, Project Manager
 * W. Baublitz, Shift Supervisor

Nuclear Energy Service

 T. Bechard, PM
 M. J. DeFine, F/Manager
 D. Jackson, Site Engineer
 C. A. Talbott, Manager
 A. R. Pennanen, NDE Level III

Hartford Steam Boiler

K. S. Russell, Jr., ANI

Reedy Associates

** W. Koepke, Sr. Consultant

USNRC

** T. Martin, Director, DETP, Region I
** C. Cheung, Section Chief, NRC/NRR/MTEB
* J. Wiggins, Senior Resident Inspector
* S. Chaudhary, Senior Resident Inspector
** R. Gallo, Chief, Projects Section 1A, DPRP, Region I
** J. Grant, Reactor Engineer, Region I
** J. Durr, Section Chief, DETP, Region I
** S. Ebneter, Chief, Engineering Branch, Region I

* Denotes those present at exit meeting.

** Denotes those present at meeting of August 9, 1984.

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

During the period of June 22nd through July 6th, 1984, quality records received from Limerick Unit 1 were reviewed in the regional office for completeness and compliance to the licensee's FSAR commitment to applicable codes, standards and specifications. Subsequently, an onsite independent verification inspection was conducted during the weeks of July 9th through July 20th using the NRC Mobile Nondestructive Examination (NDE) Laboratory. This inspection was conducted by regional based personnel in conjunction with NRC contracted NDE personnel.

The purpose of this examination was to verify the adequacy of the licensee's welding quality control program. This was accomplished by duplicating those examinations required of the licensee by the regulations and evaluating the results. In addition to the required examinations, several other confirmatory examinations designed to verify conformance with material specifications were performed and compared to quality assurance records.

An NRC inspector made a random selection of weldments. These were intended to provide a representative sample of piping systems, components, pipe size, shop and field weldments fabricated to ASME Class 1, 2 and 3 Codes. The items selected were previously accepted by the licensee based on vendor shop and onsite QA/QC records.

2.1 Material Traceability

Thirty safety related piping systems document packages containing the following documents were reviewed:

-- Material certification, including weld wire
-- NDE records
-- Fabrication records
-- Drawings (isometrics)
-- Physical properties
-- Procedures

These documents were reviewed to verify compliance to NRC requirements and licensee's commitments to industry codes and standards.

No violations were identified.

2.2 Nondestructive Examinations

Examinations were performed using NRC procedures with addenda written specifically for compliance to the licensee's FSAR commitment to the ASME B&PV Code, for onsite fabrication. The intent was to duplicate to the extent practicable the techniques and methods of the original examinations.

The following examinations performed:

Radiographic Examination

Twenty-nine pipe welds were examined by radiography using an Iridium-192 source per NRC Independent Measurements Procedure, NDE-5, Revision 0, Addenda LIM-1-5-1. Welds examined were ASME Classes 1, 2 and 3.

No violations were identified.

Liquid Penetrant Examination

Fourteen safety related pipe weldments were examined per NRC Procedure NDE-9, Revision 0, and Addenda LIM-1-9-1. Samples examined included ASME Classes 1, 2 and 3.

No violations were identified.

Visual Examinations

Sixty-two weldments and adjacent base metal were visually inspected for weld reinforcement, overall workmanship and surface condition per NRC Procedure NDE 14, Revision 0.

No violations were identified.

Magnetic Particle Examination

Fifteen safety related pipe and structural weldments were examined per NRC Procedure NDE-6, Revision 0 and Addendum LIM-1-6-1. Samples included ASME and AWS Code welds.

No violations were identified

Hardness Measurements

Fourteen welds were checked for hardness (base material adjacent to welds) using the equo-tip hardness tester per NRC Procedure NDE-12, Revision 0. Hardness numbers were converted to Brinnell values and the approximate tensile strengths were determined by use of conversion tables.

No violations were identified.

Thickness Measurement

Thirty welds and adjacent pipe material were examined per NRC Procedure NDE-11, Revision 0 using a NORTEC NDT thickness gauge. Minimum wall thickness was determined by using ASTM standard pipe sizes and a nominal thickness chart.

No violations were identified.

Ferrite Measurements

Ten pipe welds were checked for delta ferrite content using a Type II Ferrite Indicator (Severn Gauge).

No violations were identified.

3. Review of Licensee's Radiographs

A random sample of the licensee site safety related radiographs was reviewed to verify the adequacy of the radiographic program. Radiographs were reviewed for technique, film quality and weld integrity. Twenty-four complete packages of radiographs were reviewed.

No violations were identified.

4. Review of Vendor Radiographs

A random sample of the vendor radiographs was reviewed to verify the adequacy of the vendor QC program and the licensee's vendor acceptance program. Sixty-two complete packages from vendors were reviewed.

No violations were identified.

5. Additional Confirmatory Examinations

5.1 Ultrasonic Examination

Three weldments were examined volumetrically by the ultrasonic (U.T.) method. This examination duplicated, to the extent practicable, the techniques and methods of the original examination. One weldment, RH006 was examined by NRC personnel and then the NRC witnessed the re-examination by site subcontracted NDE personnel. The re-examination was performed to determine the exit point of transmitted sound. This was accomplished by using a pitch-catch U.T. method and the original method where by the sound could be dampened at the point of sound exit. Both methods verified that sound exit is as stated on U.T. data sheet 1566-528.

No violations were identified.

5.2 Socket Welds

Twenty socket welds were radiographed to verify engagement and required seat gap.

No violations were identified.

6. Review of NDE Procedures

The following procedures were reviewed for compliance to the licensee's FSAR commitment and applicable codes, standards and specifications.

Texas Pipe Bending

Radiography, IXR-3, Revision 0; Liquid Penetrant, PT-2

Southwest Fabricating

Radiography, RT-3; Magnetic Particle, MT-1; Liquid Penetrant, PT-1

Bechtel Power Corporation

Visual, VE-BPC-1, Revision 2
Radiography, RT-XG-2, Revision 1
Magnetic Particle, MT-P-1, 2, Revision 1 and MT-BPC-4, Revision 0
Liquid Penetrant, PT-SR-1, 2, Revision 1 and PT-HT-1, 2, Revision 2
Nonconformance SF-PSP-G-3.1, Revision 11

Nuclear Energy Service

Liquid Penetrant, 80A1562, Revision 2
Weld Marking, 80A1557, Revision 1

No violations were identified.

7. Verification of NDE Personnel Qualifications

A random selection of four personnel records of past and present employee's involved in nondestructive examination was reviewed to the requirements of ASME Codes III and V and SNT-TC-1A.

No violations were identified.

8. Attachments

Attachment No. 1 is a tabulation of the specific items examined and results.

Attachment No. 2 is a list of radiographs reviewed.

9. Preservice Inspection (PSI) Program

PSI Program

The licensee has elected to comply with Section XI, 1974 Edition including the Summer of 1975 Addenda, as modified by Appendix III of the 1975 Winter Addenda and to paragraph IWA-2232 of the Summer of 1976 Addenda to the extent practicable. The licensee is currently requesting relief from specific ASME code requirements applicable to this program, which they feel are impractical. Such requests with technical justification for relief have been submitted to the NRC for review and approval.

PSI Data Review

The RHR System was selected for review of PSI data. This review verified that examinations were done in compliance with the governing procedure and that applicable ASME Code and Regulatory requirements were met. The review also verified that the licensee properly recorded test evaluations and that dispositions on test reports were appropriate. Three welds were then selected by the NRC for independent ultrasonic re-examination.

The review of the PSI data disclosed the following problems:

(1) No procedure was in place for the site NDE Level III to make evaluation for the phenomenon known as "sound beam redirection" due to dendritic metallurgical structures found in austenitic materials. The licensee has committed to establishing a procedure to be used in evaluating dendritic conditions. This item is unresolved pending issue of the procedure and review by the NRC (352/84-29-01).

(2) Preservice ultrasonic reports do not include the results of examinations, acceptance or rejection, by the person responsible for interpreting the results of examination. The licensee has committed to establishing responsibility for the completed ultrasonic examinations. This item is unresolved pending definition of responsibility and review by the NRC (352/84-29-02).

(3) During preservice ultrasonic examinations, the reference point for determining the weld centerline was not marked as committed to in the FSAR. The FSAR invokes ASME Code, Section XI, 1974, Addenda Summer 1975, and Appendix III of the later editions. Appendix III, Supplement II (mandatory), requires a reference mark be placed on the weld to establish a data point for the examination. The licensee has failed to implement this reference system in the preservice program. This item is a deviation and remains open pending resolution by the licensee and review by the NRC (352/84-29-03).

(4) Limerick uses a calibration data sheet as an ultrasonic report, the data on this report does not contain adequate information to meet the requirements for an ASME Code ultrasonic report. For example, one report does not indicate that confirmation by supplemental examination was made to qualify the reflector as geometric. The licensee has agreed to sample the preservice data (prior to 1979) to determine the adequacy of previous practices to document geometric reflectors. This item is unresolved pending completion of this review and review by the NRC (352/84-29-04).

(5) Nuclear Energy Services Inc. (NES) Ultrasonic Level III personnel have not met the ASME Section XI code requirement for calibration. NES personnel when interpreting and evaluating reflectors were not meeting ASME Section XI, Article I-4000 calibration requirements. The code requires that basic calibration blocks be used as described in Article I-3000. They were, in fact, calibrating metal paths with a Rompus block which does not meet the code requirement. This item is a violation (352/84-29-05).

(6) Review of Relief Request: The licensee has taken credit for construction examinations and tests as supplementary NDE for the preservice examination (PSI) that cannot be used during Inservice Examination (ISI).

In a letter to NRR, the licensee identified several welds with rejectable indications under the edition of ASME XI committed to for preservice examinations. However, these same indications are acceptable under later editions of ASME XI. Based on this, the licensee requested relief to use the later edition of ASME XI.

Relief Requests Number 19 and 20 reported twelve welds with rejectable indications. A review of the relief request numbers 19 and 20 disclosed the following.

Weld	NCR#	Type of Rejected Indication
RDA019	9161	Lack of Fusion
RRA-037 max RRA-038	7564	Lack of Fusion
RRA027 min	7563	Lack of Fusion 1" length
RRA028 min	7563	Lack of Fusion 7" length
FWB028	7877	Lack of Fusion .20" to .70" deep indication 360° around
RRA-027 max RRA-028 max	7528	Lack of Fusion .02 wide, .5 deep, weld is .75" thick. Indication 360° around
RBA-194	No NCR	Inclusions
HP-117	No NCR	Lack of Fusion
RHB-005 max	No NCR	Inclusion
RDB-011	No NCR	(2) Cracks

The NRC review of the foregoing welds disclosed that these rejectable indications were detected while the systems were still under the jurisdiction of ASME III. This code does not permit lack of fusion or cracks.

The NRC requested a meeting with the licensee on August 9, 1984, to discuss the appropriate code to disposition the ultrasonic indications under. The licensee committed to re-evaluate the indications and, in some cases, reinspect to determine the acceptability of these 12 welds under ASME III Code. The meeting attendees are listed in paragraph 1.

(7) Welds RHB-194, HP-117, RHB-005 max and RDB011 were not reported as nonconforming in accordance with Bechtel's Procedure SF/PSP-G-3-1, Revision 11, Nonconformance Procedure, Paragraph 3.1.5, requires a Nonconformance Report (NCR) be written if a deficiency to the code is identified. The failure to issue a nonconformance report for the above welds is a violation (352/84-29-06).

(8) The NRC inspector selected two Philadelphia Electric Company (PECO) audit reports for review, report numbers M-177 and M-236, of NES preservice activities. The qualifications of the two PECO audit personnel performing preservice inspection audits were also reviewed.

No violations were identified.

(9) Authorized Nuclear Inspector (ANI): During this inspection, the NRC inspector was informed by Hartford Steam Boiler Insurance Agency ANI of a major concern involving licensee's preservice inspection, dealing with improper weld surface preparation preventing the ultrasonic transducer from meeting the ASME 10% overlap requirement due to physical restriction of the weld reinforcement.

The ANI provided the NRC inspector with several years of documentation concerning this particular problem for NRC review. The licensee is aware of the ANI's concerns and is currently pursuing this problem. This item is considered unresolved pending resolution by the licensee and review by the NRC (352/84-29-07).

(10) The inspector selected ultrasonic calibration blocks to verify that the right calibration blocks were used for weld examinations. He verified the dimensions of the calibration block and that the dimensions are traceable to the National Bureau of Standards (NBS). Material certifications and documentation of the calibration blocks were also verified.

No violations were identified.

10. (Closed) Unresolved Item (352/83-21-01): Reviewed the documentation on the use of Polyester Resin Body Filler (Bondo) to fill in scale pitting on the surface of a ultrasonic calibration block. The inspector reviewed the General Electric summary report "Effects of Polyester Resin Body Filler Material When Used to Surface Conditions For Calibration Standards", dated April 9, 1984. PECO's completed corrective actions for this unresolved item were also reviewed by the NRC inspector. The report indicates that the resin filler does not affect the acoustic qualities of the block.

The inspector had no further questions on this subject and considers item 352/83-21-01 closed.

11. Exit Interview

An exit interview was held on July 20, 1984, with members of the licensee's staff. The inspector summarized the scope and findings of this inspection. No written material was provided to the licensee during this inspection.

INDEPENDENT MEASUREMENT PROGRAM

Limerick Unit 1

ATTACHMENT NO. 1

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	DATE	REMARKS
EBB-129-2 FW3	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC		
EBB-129-2-3 SW1	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC		
EBB-129-2-3 SW3	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC		
DLA-107-1 FW12	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DLA-107-1-6 SW1	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DLA-108-1 FW10	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
DLA-108-1-4A SW1	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
DLA-110-1 FW5	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
DCA-319-1-1 SW1	1	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
DCA-320-1 FW3	1	N/A	ACC	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DCA-320-1-3 SW1	1	N/A	ACC	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DCA-318-4 FW6	1	N/A	ACC	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DCA-318-4-2 SW1	1	N/A	ACC	ACC	N/A	ACC	N/A	ACC	ACC	ACC		
DBB-103-1 FW3	2	N/A	N/A	ACC	N/A	N/A	N/A	N/A	N/A	ACC		

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	DATE	REMARKS
DBB-104-1 FW50	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
DBB-104-1-1 SW3	2	N/A	N/A	ACC	N/A	ACC	N/A	ACC	N/A	ACC		
EBB-108-1 FW52	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC		
EBB-108-1-3 SW5	2	N/A	N/A	ACC	ACC	ACC	N/A	N/A	N/A	ACC		
EBB-109-1 FW53	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC		
EBB-109-1-11 SW5	2	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC		
HCB-101-4 FW66	2	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
HCB-101-4 FW74	2	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
DCC-103-1 FW6	3	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
DCC-103-1-5 SW1	3	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
DCC-104-1 FW65	3	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
DCC-104-1-5 SW3	3	N/A	ACC	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
GBC-104-1 FW6	3	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC		
GBC-104-1-5 SW1	3	N/A	N/A	ACC	N/A	ACC	N/A	N/A	N/A	ACC		

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	DATE	REMARKS
GBC-102-1 FW7	3	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
GBC-102-1-7 SW1	3	N/A	N/A	ACC	N/A	ACC	N/A	N/A	ACC	ACC		
HBC-105-1-1A FW50	2	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC		
HBC-103-1 FW1	2	N/A	N/A	N/A	N/A	N/A	N/A	ACC	N/A	ACC		
EBB-133-1-9 SW1	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-133-1-9 FW3	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-133-1-9 FW52	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-133-1-9 FW53	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-133-1-9 FW63	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-133-1-9 FW64	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-134-1-9 FW53	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-134-1-6 FW57	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-134-1-6 FW60	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		
EBB-127-1-6 SW2	2	N/A	N/A	N/A	ACC	N/A	N/A	N/A	N/A	ACC		

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	DATE	REMARKS
HBB-170-E12 W5	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W6	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W7	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W8	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W9	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W10	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W11	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W12	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W13	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W14	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W15	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W16	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W101	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W102	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds

WELD NUMBER LINE/ISO	CLASS	ALLOY ANAL.	FERRITE	THICK	M.T.	R.T.	U.T.	P.T.	HARDNESS	VISUAL	DATE	REMARKS
HBB-170-E12 W103	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W104	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W105	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W106	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W107	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
HBB-170-E12 W108	2	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A	ACC		1½" Socket Welds
CSB-078	1	N/A	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A		Pipe side only axial scan
RHR-040	1	N/A	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A		Pipe side only axial scan NCR #3579
RHR-006	1	N/A	N/A	N/A	N/A	N/A	ACC	N/A	N/A	N/A		Pipe side only axial scan

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

Limerick 1

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
EBB-129-2	FW3	X										X				
EBB-129-2-3	SW1	X			X							X				Slag in Code
EBB-129-2-3	SW3	X										X				
EBB-108-1	FW52	X				X						X				
EBB-108-1-3	SW5	X														
EBB-109-1	FW53	X					X					X				
EBB-109-11	SW5	X										X				
EBB-109-1	FW11	X														
EBB-109-1	FW12	X										X				
DLA-107-1	FW12	X										X				
DLA-107-1-6	SW1	X										X				
DLA-108-1	FW10	X				X	X					X	X			
DLA-108-1-4A	SW1	X				X									X	
DLA-110-1	FW5	X										X				
DCA-319-1-1	SW1	X										X				
DCA-320-1	FW3	X										X				
DCA-320-1-3	SW1	X										X				
DCA-318-4	FW5	X										X				
DCA-318-4-2	SW1	X										X				
DBB-103-1	FW3	X										X				
FSK-DBB-104-1	FW50	X														
FSK-DBB-104-1-1	SW3	X										X				
HCB-101-4	FW65R1	X										X				

C - CRACK
SL - SLAG
P - POROSITY
T - TUNGSTEN

LF - LACK FUSION
IP - INADEQUATE PENETRATION
LI - LINEAR INDICATION
UI - UNFUSED INSERT

A - ARTIFACTS
S - SURFACE
CC - CONCAVITY
CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
HCB-101-4	FW74	X														
DCA-319-1-5	FW6	X										X	X			
DCA-319-1-2	FW4	X											X			
DCA-103-1	FW6	X										X		X		
DCA-103-1-5	SW1	X														
FSK-DCC-104-1	FW65	X										X				
DCC-104-1-5	SW3	X										X				
GBC-104-1	FW6	X										X				
GBC-104-1-5	SW1	X				X						X				
GBC-102-1	FW7R2	X					X					X				
GBC-102-1-7	SW1	X				X										
HCB-101-4	FW65	X										X		X		
DCC-104-1-5	SW5	X										X				
DCC-104-1-5	SW4	X										X				
DCC-104-1-5	SW2	X										X				
DBB-104-1-1	SW1	X				X						X				
DBB-104-1-1	SW2	X														
DBB-104-1-1	SW3	X										X				
DBB-104-1-1	SW4	X														
DBB-104-1-1	SW5	X														
EBB-129-2-3	SW5	X										X				
EBB-129-2-3	SW6	X										X				

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A - ARTIFACTS
S - SURFACE
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CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
DLA-108-1-4A	SW2	X														
DCA-318-4-2	SW3	X														
EBB-109-1-11	SW1	X										X				
EBB-109-1-11	SW2	X										X				
EBB-109-1-11	SW3	X										X				
EBB-108-1-3	SW1	X														
EBB-108-1-3	SW2	X														
F10-MS-B21-G001-7	B	X											X			
F10-MS-B21-G001-7	A	X											X			
F35-MS-B21-G001-6	D	X				X						X				
F35-MS-B21-G001-6	C	X										X				
F35-MS-B21-G001-6	B	X										X				
F35-MS-B21-G001-6	A/R3	X				X							X			
F9-MS-B21-G001-6	C/R2	X			X							X				Slag in Code
F9-MS-B21-G001-6	D/R1	X				X										
F9-MS-B21-G001-6	B	X										X				
F9-MS-B21-G001-6	A	X										X				
TGVP9-020	B	X														
TGVP9-020	C	X														
TGVP9-020	E	X														
TVGP9-020	F	X														
BWRPD-1-REC-1	WA15	X										X		X		

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S - SURFACE
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CV - CONVEXITY

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
BWRPD-1-MS-1	WA03	X										X		X		
BWRPD-1-MS-1	WA01	X										X				
BWRPD-1-REC-1	WA16	X										X		X		
RD-1-A5	W1	X														
RD-1-A5	W3	X														
RD-1-A5	WA	X														
RD-1-A5	WB	X														
RD-1-A8	WA	X														
RD-1-A8	WB	X														
GBB-102-4	FW50	X														
DCA-319-1-2	SW2	X										X				
DCC-103-1-5	SW2	X										X				
DCC-103-1-5	SW3	X										X				
DCC-103-1-5	SW4	X										X				
DCC-103-1-5	SW5	X										X				
DCC-103-1-5	SW6	X										X				
DLA-106-1	FW5	X														
DCA-318-2-2	SW1	X														
DCA-318-2-2	SW3	X														

ATTACHMENT 2