EVALUATION RESEARCH CORPORATION

CONTROLLED COPY
CONTROL NO. DF-001

COMANCHE PEAK RESPONSE TEAM

QUALITY INSTRUCTION FOR ISSUE-SPECIFIC ACTION PLAN VII.c

INSTRUCTION NO.: QI-032

REVISION: 2

ISSUE DATE: 06/27/86

DOCUMENTATION REVIEW OF CONTAINMENT LINER AND TANK STAINLESS STEEL LINERS

Prepared by: Neil Banerjee Date: 6/25/86

Approved by: Albert S. Potts Date: 6/26/86
Issue Coordinator

Approved by: R. D. Zilly Date: 6/26/86
On-Site QA Representative

Approved by: J. Z. Hamel Date: 6/26/86
QA/QC Review Team Leader

1.0 PURPOSE

This instruction provides the methods and accept/reject criteria for the performance of a documentation review for the Containment Liner and Tank Stainless Steel Liners.

2.0 APPLICABILITY

This Quality Instruction applies to the performance of an independent review of the documentation for the containment liner and tank stainless steel liners. It applies to the sample selected from the Category I liner population as required per Action Plan VII.c.

3.0 REFERENCES

3.1 Memorandum (QA/QC-RT-291) to A. A. Patterson, providing basis for document review requirements including specific sources for attributes and exclusions.

3.2 CPP-009, "Performance of Reinspection and Documentation Reviews."

4.0 GENERAL

Document reviews are performed and documented in accordance with established CPRT procedures and instructions. This procedure establishes the attributes and accept/reject criteria for the documentation review of liners. Reference 3.2 addresses the method to perform and document the documentation reviews.

4.1 Responsibilities

4.1.1 QA/QC Discipline Engineers

The QA/QC Discipline Engineers prepare the Quality Instruction delineating reinspection requirements and attributes.

4.1.2 QA/QC Inspectors

QA/QC Inspectors perform documentation review/ verificaiton in accordance with this procedure and record results and deviation.

4.0 GENERAL (Cont'd)

4.2 Policy

Activities performed under this procedure shall conform to the policies contained in the latest Comanche Peak Response Team Action Plan VII.c.

5.0 INSTRUCTION

Using the information below, perform the documentation reviews on the items in this population and document the results on the checklist (Attachment 6.1).

NOTE: All CB&I documentation mentioned hereafter are maintained in the Permanent Plant Records Vault (PPRV). These documentations are to be reviewed in PPRV.

5.1 Record Drawings

The record drawing(Section 8.5 of CB&I documentation List of Records, see attachments 6.2.a, b for examples) shall be verified to have (a) joint identification numbers for the sample weld seam. The record drawing shall also be verified to list (b) welder identifications for the weld joint identifications listed for the weld seam.

If the joint and welder identification is contained on the record drawing, the checklist shall be marked accept. If joint or welder identification information is missing, the checklist shall be marked reject and the missing information identified by a deviation report.

5.2 Material Traceability

The record drawing (Section 8.5 of CB&I documentation List of Records, See Attachment 6.2a & b for sample) and Material Verification Summary Sheet and Material Records (Section 5.1 and 5.2 of CB&I documentation List of Records, See Attachment 6.2c, & d for sample) shall be reviewed to verify that:

a. The material is certified as SA-537 Cl. 2 for containment liner, ASTM-A240 Cl. 304L for stainless steel tank liner, and ASTM-A312 Materials for penetration pipe.

NOTE: Polar crane & inspection platform support brackets are supplied by Bostrom-Bergen. Some piece marks, which cannot be found in Sections 5.1 and 5.2 could be part of an assembly. The verification of these piece marks will require tracing them in CB&I Final Certified Drawings (Section 4.1.5) and shop release checklists (Section 8.16.1), and then verifying them in Sections 5.1 and 5.2 above.

5.0 INSTRUCTION (Cont'd)

5.2 Material Traceability (Cont'd)

Information relating to the material traceability are to be found in PPRV.

b. The Material Identification Verification was made during the installation inspection and shown by a check mark under "Material I.D", in record drawings.

If the material traceability is checked and found complete, the checklist shall be marked accept. If the material traceability cannot be verified then the checklist shall be marked reject and lack of material traceability shall be identitied by a deviation report.

5.3 Welding

The record drawing (Section 8.5 of CB&I documentation List of Records, see attachments 6.2a,b,c & d for examples) shall be reviewed to verify that:

a. The weld procedure is identified for each weld joint.

b. The weld fit-up, welding and finish joint column are initialed and dated.

c. The weld procedures applicable to SA-537 class 2 are listed on the weld procedure list, Attachment 6.7.

d. The weld procedure is approved by Engineers-Gibbs & Hill/TUSI. (See attachment 6.7 for example).

e. The "Complete" column of the record drawing (Attachment 6.2a, b, is initialed and dated.

NOTE: If this column is initialed and dated, it will indicate that proper weld filler material was utilized.

If the weld joint sign offs are complete for the items "a" thru "e" above, the checklist shall be marked accept. If the weld joints are not initialed and dated, or the procedure was not previously approved, the checklist shall be marked reject and the lack of signoff, or lack of approval, shall be identified by a deviation report.

5.4 Welder/Welding Operator Qualification

Qualification records of the welders/welding operators for the weld joints identified for the sample weld shall be reviewed to verify that:

5.0 INSTRUCTION (Cont'd)

5.4 Welder/Welding Operator Qualification (Cont'd)

a. The welder/welding operators qualifications (Section 8.10 of CB & I documentation list of records, see attachment 6.4 a, b for examples) are valid for the period the weld was performed.

b. The welder/welding operators qualification are valid for the weld procedure listed.

NOTE: The date of welding checked on the record drawing is to be within three (3) months after the welders/welding operators qualifications date.

If not within three months after the qualification date, verify that the interval between welds, as shown by the Record of Utilization on welder's/welding operator's qualification test (Section 8.10 of CB&I Documentation List of Records, see attachments 6.4.a, b for examples), during the period from weld qualification through date of welding, did not exceed three months.

If the welders qualifications did not exceed the three month period and the qualifications are valid for the weld procedures performed, the checklist shall be marked accept. If the welders qualifications are not valid for the period of performance of welding or not valid for the weld procedure identified, the checklist shall be marked reject and the welder identification shall be identified by a deviation report.

5.5 Nondestructive Examination (NDE)

The record drawing shall be reviewed to verify that the weld joints for the sample weld have the NDE examinations listed, initialed, dated, procedure identified, and record report number recorded.

The NDE examination reports (Section 7.3 to 7.10 of CB&I List of Records, see Attachments 6.5.a, b, c, d, e, f-two pages for examples) shall be reviewed to verify that:

a. The weld joint is identified or the report is traceable to the weld joint.

b. The NDE examination reports are identifiable to the NDE procedure and revision number.

c. The NDE interpreter/evaluator has signed the report as acceptable.

d. The radiographic film accepted and the report is signed off by a qualified interpreter.

5.0 INSTRUCTION (Cont'd)

5.5 Nondestructive Examination (NDE) (Cont'd)

NOTE: All welds are not radiographed. If a weld record references a spot radiographic report, the weld is radiographed within the 2% spot radiographic test (SRT) frequency, and is acceptable.

e. The Vacuum Box Test column in Record Drawing (see 8.5 of CB&I List of Documentation) is initialed and dated, and the Vacuum Box Test Report (Attachment 6.5f) is signed by a Level II.

5.6 NDE Operator and Inspector Certification

Certification records of the NDE operators/Evaluators and Inspectors listed on the NDE examination report shall be reviewed to verify that:

a. The NDE operator/Evaluators and Inspector for visual examination & VB testings certification (Section 8.12 of CB&I documentation list of records, see attachment 6.6 a, b, c, d and e for examples) are valid for the period that the NDE/visual examination was performed.

b. The NDE operators certifications are valid for the NDE process.

c. The NDE operator/Evaluator shall be listed as a Level II, or if the NDE was performed by a Level I and under the guidance of a Level II.

NOTE: If these attributes are rejected, determine if the person that signed as NDE Operator/Evaluator and Inspector was ever certified. If the inspector was certified, record the time period of certification, otherwise state that the person was never certified.

If the NDE operator/Inspector's certifications are valid for the period of performance of NDE/Inspection, method of NDE, and the operator/Evaluator is a Level II the checklist shall be marked accept. If the NDE operator/Inspector's certifications are not valid for period of performance of NDE/inspection, method of NDE, or the operator/Evaluator is not a Level II, the checklist shall be marked reject and it shall be identified by a deviation report.

6.0 ATTACHMENTS

6.1 Checklist

6.2 Example record drawing
- a. Example record drawing
- b. Example record drawing
- c. Example Material Verification Summary Sheet
- d. Vendor Material Records

6.3 Example weld Procedure
- a. Record of Welding Procedure Qualification
- b. Impact Test Data

6.4 Example welder's/welding operator's qualification test
- a. Welders Qualification Test
- b. Performance Qualification Test

6.5 Example NDE examination report
- a. Radiographic Examination Report
- b. Magnetic Particle Examination Report
- c. Liquid Penetrant Examination Report
- d. Ultrasonic Examination Report
- e. Report of Radiography Examination
- f. Vacuum Box Test Report (2 sheets)

6.6 Example NDE operators Certification
- a. NDE Performance Qualification and Certification
- b. NDE Certification Annual Visual Test Record
- c. Record of Nondestructive Examination Performance (2 pages)
- d. NDE Performance Qualification and Certification (Vacuum Box)
- e. NDE Performance Qualification and Certification (visual)

6.7 Weld & NDE Procedures (3 pages)

COMANCHE PEAK RESPONSE TEAM
CHECKLIST

POPULATION DESC	VERIFICATION PKG NO.	PAGE 1 OF 2
QUALITY INSTRUCTION QI-032	☐ REINSPECTION	☐ UNIT 1
EQUIPMENT MARK/TAG NO.	☒ DOCUMENTATION REVIEW	☐ UNIT 2 ☐ COMMON

ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
5.1 Record Drawing a Joint Identification				
b Welder Identification				
5.2 Material Traceability a Material Certified as SA-537 Cl.2/A240-304L				
b Material I.D. is verified by inspection				
5.3 Welding a Weld procedure identified				
b Finished weld initialed and dated				
c Weld procedure applicable to SA-537 CL-2 (GR-B) (containment only)				
d Weld procedure approved by Gibbs & Hill				
e Weld Complete Column initialed and dated				

PREPARED BY: DISCIPLINE ENGR. DATE	APPROVED BY: LEAD DISCIPLINE ENGR. DATE
INSPECTED BY: INSPECTOR DATE	APPROVED BY: LEAD INSPECTOR DATE

COMANCHE PEAK RESPONSE TEAM
CHECKLIST

POPULATION DESC	VERIFICATION PKG NO.			PAGE <u>2</u> OF <u>2</u>
ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
5.4 <u>Welders/welding Operators Qualification</u> a Valid for period of welding				
b Valid for weld Procedure				
5.5 <u>Nondestructive Examination (NDE)</u> a NDE report traceability to weld joint				
b NDE Report traceability to NDE procedure				
c NDE evaluator signed off				
d Radiographic film evaluated and signed off.				
e Vacuum Box Test				
5.6 NDE Operators/ Inspector Certification a Certification valid for period of NDE				
b Certification valid for NDE Process/Inspection				
c Operator/Evaluator is a Level II				

CHECKLIST

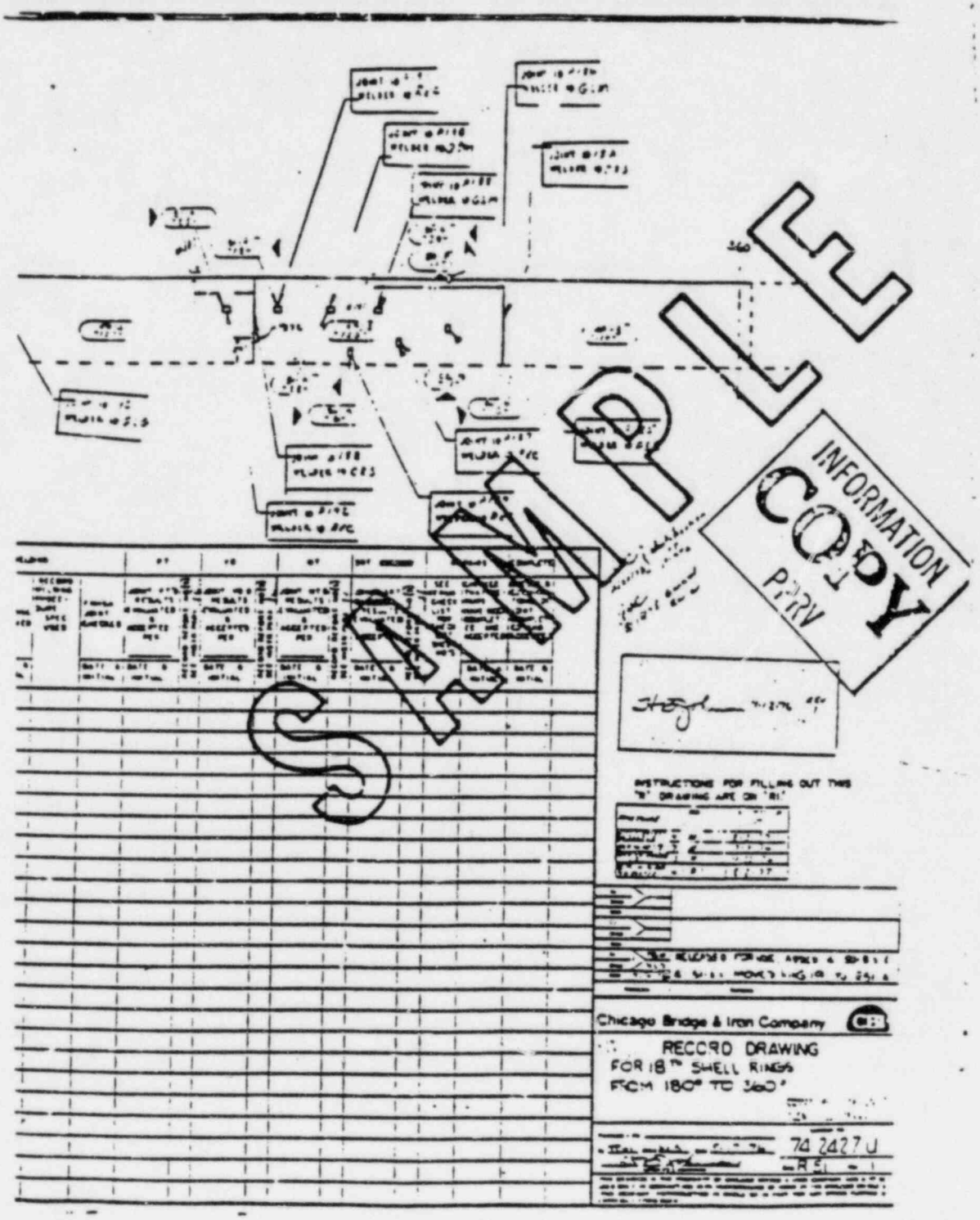
COMANCHE PEAK RESPONSE TEAM CHECKLIST				
POPULATION DESC	VERIFICATION PKG NO.			PAGE 1 OF 2
QUALITY INSTRUCTION QI-032	☐ REINSPECTION			☐ UNIT 1
EQUIPMENT MARK/TAG NO.	☒ DOCUMENTATION REVIEW			☐ UNIT 2 ☐ COMMON
ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
5.1 Record Drawing a Joint Identification				
b Welder Identification				
5.2 Material Traceability a Material Certified as SA-537 Cl.2/A240-304L				
b Material I.D. is verified by inspection				
5.3 Welding a Weld procedure identified				
b Finished weld initialed and dated				
c Weld procedure applicable to SA-537 CL-2 (GR-B) (containment only)				
d Weld procedure approved by Gibbs & Hill				
e Weld Complete Column initialed and dated				

PREPARED BY:	APPROVED BY:
DISCIPLINE ENGR. DATE	LEAD DISCIPLINE ENGR. DATE
INSPECTED BY:	APPROVED BY:
INSPECTOR DATE	LEAD INSPECTOR DATE

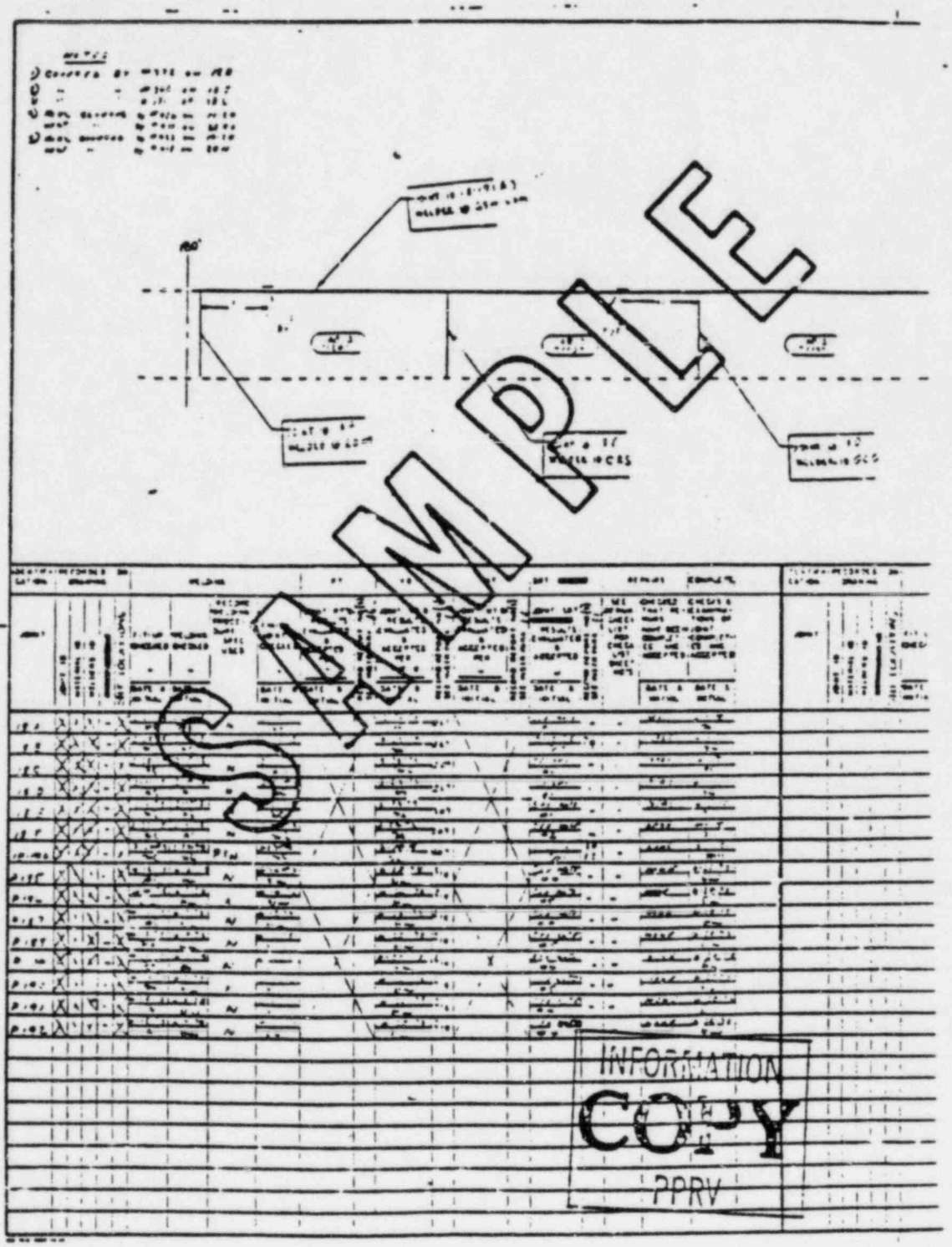
CHECKLIST (cont'd)

COMANCHE PEAK RESPONSE TEAM CHECKLIST				
POPULATION DESC	VERIFICATION PKG NO.			PAGE 2 OF 2
ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
5.4 Welders/welding Operators Qualification a Valid for period of welding				
b Valid for weld Procedure				
5.5 Nondestructive Examination (NDE) a NDE report traceability to weld joint				
b NDE Report traceability to NDE procedure				
c NDE evaluator signed off				
d Radiographic film evaluated and signed off.				
e Vacuum Box Test				
5.6 NDE Operators/ Inspector Certification a Certification valid for period of NDE				
b Certification valid for NDE Process/Inspection				
c Operator/Evaluator is a Level II				

EXAMPLE RECORD DRAWING



EXAMPLE RECORD DRAWING



EXAMPLE MATERIAL VERIFICATION SUMMARY SHEET

CBI METAL MATERIAL VERIFICATION SUMMARY SHEET

Contract No. 74-[illegible]
Sheet 6 of 40

Copy to Engineering – By ______ Date ______

No. of Ctrs For Customer ______

NO. OF PCS	ORDERED ITEM NO.	SUPPLIER'S HEAT, LOT OR OTHER IDENTIFICATION NUMBER	SUPPLIER'S SLAB NUMBER	MATERIAL SPEC. AND THICKNESS FOR PLATES	CAR OR TRUCK NUMBER AND SUPPLIER	CTR CHECKED Date & Initial	CTR CHECKED CBI No.	METAL REC'D INSPECTION REPORT CHECKED Date & Initial	METAL REC'D INSPECTION REPORT CHECKED CBI No.	DAILY FAB'H OR STORES RELEASE REPORT CHECKED Date & Initial	DAILY FAB'H OR STORES RELEASE REPORT CHECKED CBI No.	ENGR. PIECE MARK	SERIAL NUMBER	NO. OF PIECES FABRICATED	CHECKED COMPLETE INITIAL	REMARKS
*2427-1		Armco		SA537 Cl. 2	(MS 6052)										SS	(OK [illegible])
Cavity Bottom,		Main Bottom													SS	
1	18-1	80242	P32632	T = 1/4	3-31-75 SP 570029	SS	5/9	SS	5/14	6-4-75		18-3-L 18-2-L	1 1	1 1	SS	
1		"	P32633		"	SS	5/9	SS	6/14	6-4-75		18-7-L 18-8-L	1 1	1 1	SS	
1		"	P32634		"	SS	5/9	SS	5/14	6-4-75		18-7 18-6	1 1	1 1	SS	
1		"	P32635		"	SS	5/9	SS	5/14	6-4-75		18-8-R 18-9-R	1 1	1 1	SS	
1		80294	P33707		4-21-75 KI 3195	SS	5/9	SS	5/15	6-4-75		18-11-L 18-10-L	1 1	1 1	SS	
1		"	P33705		"	SS	5/9	SS	5/15	6-4-75		18-4-L 18-5-L	1 1	1 1	SS	
1		"	P33772		"	SS	5/9	SS	5/15	8-27-75		18-14	4	1	SS	
1		"	P33775		"	SS	5/9	SS	5/15	6-4-75		18-12 18-13-R	1 1	1 1	SS	
1		"	P33777		"	SS	5/9	SS	5/15	6-4-75		18-5-R 18-4-R	1 1	1 1	SS	
1		"	P33770		"	SS	5/9	SS	5/15	6-4-75		18-10-R 18-11-R	1 1	1 1	SS	
1		"	P34096		"	SS	5/9	SS	5/15	6-4-75		18-12 18-13-6	2 1	1 1	SS	
1		"	P33966		4-23-75 SP 564539	SS	5/9	SS	5/14	8-27-75		18-14	3	1	SS	
1		"	P33407		"	SS	5/9	SS	5/14	8-27-75		18-14	7	1	SS	
1		"	P33403		"	SS	5/9	SS	5/14	8-27-75		18-14	2	1	SS	
1		"	P33407		"	SS	5/9	SS	5/14	Scrapped			Rep 18-2-17		SS	Ship - KEJ
1		"	P33471		"	SS	5/9	SS	5/14	8-27-75		18-14	9	1	SS	
1		"	P33170		"	SS	5/9	SS	5/14	Scrapped			Rep 11-VSS-17		SS	Ship - KEJ
1		"	P34078		"	SS	5/9	SS	5/14	8-27-75		18-14	8	1	SS	
1	18-1	"	P34071	T = 1/4	"	SS	5/9	SS	5/14	8-27-75		18-14	6	1	SS	

1975

See standard 607 3-1 for instructions on using this form.

Contract No. 74-[illegible] (13)

GO-590

EXAMPLE MATERIAL RECORDS

CERTIFICATE OF TESTS

ARMCO

Armco Steel Corporation
P. O. Box 96120, Houston, Texas 77015

PURCHASE NO.	CUST ORDER NO.	SHIPPED VIA	CAR INITIAL AND NO.	DATE SHIPPED	SHIP REF. NO.	DATE MTR.	BY
TRS 9941	2427-2 REPL		BN 614285	5/29/75	7112853	5/30/75	CW

DESCRIPTION	BAR OR PLATE No.	No. PCS.	YIELD PSI	TENSILE PSI	% ELONG.	% REDUCT.	BEND TEST	FRACT TEST	BHN	IMPACT: TYPE		NOTCH SIZE			
										ORIEN	TEMP.	1	2	3	AVG.
PLTS PV QAT ASME SA537 CL 2 TO CBI MS 6052 REV 0 & QAS 354 REV 0 ASME BAPV CODE SEC II & III CLMC W/73 ADDENDA & CODE CASE 1637					2"										
HEAT: 65875 3/8 x 123 x 425"	P37425	1	75800 75200	86700 89200	25.0 25.0		ok								
#1															

PLTS & TEST COUPONS WERE AUSTENITIZED @ 1650°F, TIME @ TEMP: 35 MINUTES, AND TEMPERED @ 1260°F, TIME @ TEMP: 30 MINUTES & AIR COOLED.

The material covered by this certification was manufactured and tested in accordance with CBI Specification MS-6052 Rev 0

We certify that representative samples of the above material have been tested and the results conform to the requirements outlined in the CBI Specification MS-6052 Rev 0

HEAT	C	Mn	P	S	Si	Cr	Ni	Mo	Cu	Ti	V	B	Cb	Al	N				GRAIN
65875	.19	1.26	.010	.023	.46	.18	.13	.05	.22										9

THE CHEMICAL, PHYSICAL OR MECHANICAL TESTS REPORTED HEREWITH ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

SIGNED J. L. Robert
METALLURGICAL DEPT.

CHICAGO BRIDGE & IRON
P O BOX 687
SALT LAKE CITY, UTAH 84110

"THIS CERTIFIED TEST REPORT HAS BEEN DELIVERED TO A CONSIGNEE OF MATERIAL PURCHASED FROM ARMCO STEEL CORPORATION TO AVOID THE POSSIBILITY OF ITS MISUSE. ON THE REDELIVERY OF THIS REPORT TO A THIRD PARTY IT MUST BE RECERTIFIED BY AND UNDER THE NAME OF SUCH CONSIGNEE."

(15)

EXAMPLE WELD PROCEDURE

CBI

RECORD OF WELDING PROCEDURE QUALIFICATION
TO A S M E SECTION IX

PART II ESSENTIAL VARIABLES

Qualification No _____ Date _____

Process _____ Manual or Machine _____

Material specification _____

ASME P no _____ To ASME P no _____ FLUX OR ATMOSPHERE

Thickness (of plate dia and wall thick) _____ Flux trade name _____

Thickness range this test qualifies _____ Inert gas composition _____

Filler metal group no F _____ Flow rate _____

Weld metal analysis no A _____ Is backing strip used? _____

ASME specification no _____ Preheat temperature range _____

AWS specification no _____ Postheat treatment _____

WELDING PROCEDURE

Single or multiple gas _____ Single or multiple arc _____ Position of groove _____

Electrode _____ Filler wire diameter _____

Type of backing _____ Welding current _____

Consult PART III WELDING VARIABLES for joint dimensions and welding current settings

TEST RESULTS

Reduced Section Tensile Results

Specimen No.	Dimensions Width	Thickness	Area	Ultimate Total Load Lb	Ultimate Unit Stress PSI	Character of Failure and Location

Guided Bend Test

Type	Result	Type	Result

Welder's name _____ Social Security no _____ Welder's Symbol _____

Who by virtue of these tests meets welder performance requirements

We certify that the statements in this record are correct and that the test weld was prepared welded and tested in accordance with the requirements of Section IX of the ASME code.

Signed CHICAGO BRIDGE & IRON COMPANY Date _____
(MANUFACTURERS)

Laboratory test no _____ By _____

Remarks _____

SAMPLE REQUIRED

IMPACT TEST DATA

CBI

IMPACT TEST DATA

TYPE OF NOTCH _____

SPEC. NO.	SPEC. ORIENT	SPEC. SIZE	NOTCH LOCATION	TEST TEMP DEG F.	ENERGY FT-LB	LATERAL EXPANSION MILS	PER CENT SHEAR

SAMPLE

REMARKS: _____

SIGNED: _____ BY _____

EXAMPLE WELDERS/WELDING OPERATORS QUALIFICATIONS

WELDERS QUALIFICATION TEST

In Accordance With Section IX of the ASME Code Latest Edition
SHIELDED METAL ARC PROCESS

Thickness Range Qualified For _____ Material Thickness _____

Material – Specification _____ to _____ of P No _____ to P No. _____

Procedure Specification Number _____

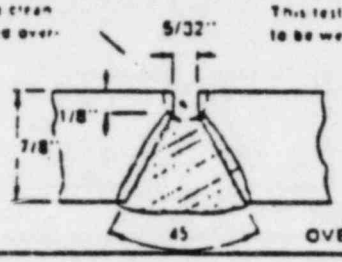
Filler Metal (F No.) F _____ Filler Metal (A No. Ref.) A _____

Filler Metal (SFA) Specification SFA _____

RECORD OF UTILIZATION

Month Year	Type Insp	Initials

Back gouge to clean metal and weld overhead

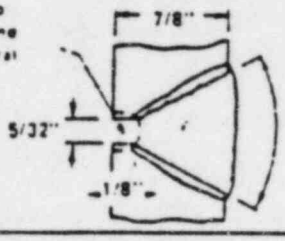


This test qualifies range 3/16" to max. to be welded.

OVERHEAD – BOTH SIDES

TEST METHOD	
Two bends per QW 452.2(a)	Radiography of 6" of test plate
Result 1	Result
Result 2	

Back gouge to clean metal and weld horizontal

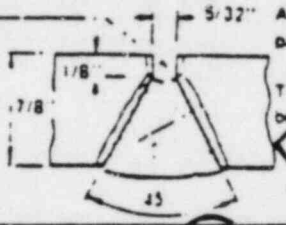


This test qualifies range 3/16" to max. to be welded.

HORIZONTAL – BOTH SIDES

TEST METHOD	
Two bends per QW 452.2(a)	Radiography of 6" of test plate
Result 1	Result
Result 2	

Back gouge to clean metal and weld vertical



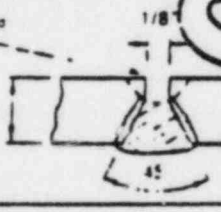
All passes uphill except first pass and weave passes which may be run downhill.

This test qualifies range 3/16" to max to be welded

VERTICAL – BOTH SIDES

TEST METHOD	
Two bends per QW 452.2(a)	Radiography of 6" of test plate
Result 1	Result
Result 2	

Back gouge to clean metal and weld vertical



All passes are to be run downhill

This test qualifies range 3/16" to 13/16"

13/32" SINGLE BEVEL BUTT VERTICAL

TEST METHOD	
Two bends per QW 452.2(a)	Radiography of 6" of test plate
Result 1	Result
Result 2	

1 Qualification on butt welds also qualifies welder for fillet welds and butt welds with backing bars
2 Qualification with F 5, F 42 & F 43 electrodes may be made on P 1 test plates.
3 Radiography of a 6" section of plate may be used in lieu of bend test
4 Qualification with F 4 electrode also qualifies for F 3, F 2, and F 1

Plates Tested	Date	Location	Social Security	Birth Date	Started CBI Year	Specimen Mark

WE CERTIFY THAT THE STATEMENTS MADE IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED, WELDED AND TESTED IN ACCORDANCE WITH SECTION IX OF THE ASME CODE – LATEST EDITION.

CHICAGO BRIDGE & IRON COMPANY

BY _____
CBI Representative

Home Address _____

City _____ State _____

Full Name _____
First Middle Last

X – X Ray
P – Plate
V – Visual

WL III REV APR 75

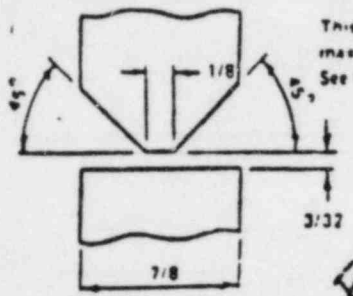
EXAMPLE WELDERS/WELDING OPERATORS QUALIFICATIONS

PERFORMANCE QUALIFICATION TEST
In Accordance with Section IX of the ASME Code - Latest Edition
AUTOMATIC SUBMERGED ARC PROCESS

Thickness Range Qualified For _____ Material Thickness _____
Material – Specification _____ to _____ of P No _____ to P No _____
Procedure Specification Number _____
Filler Metal (F No.) F _____ Filler Metal (A No. Ref.) A _____
Filler Metal (SFA) Specification SFA _____ Flux _____
AUTOMATIC GIRTH WELDER _____ AUTOMATIC FLATDOWN WELDING _____

RECORD OF UTILIZATION

Month Year	Type Imo	Initials

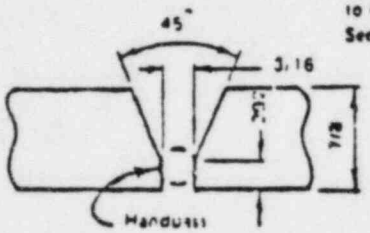


This test qualifies range 3/16" to maximum to be welded See Note 1

Test Plate Assembly
AUTOMATIC GIRTH WELDER

TEST METHOD (See Note 4)

Radiography of 36" of production weld	Two bends per QW462.2(a)	Radiography of 6" of Test Plate
Result	Result 1	Result
	Result 2	



This test qualifies range 3/16" to maximum to be welded See Note 1

Test Plate Assembly
AUTOMATIC FLATDOWN WELDING

TEST METHOD (See Note 4)

Radiography of 36" of production weld	Two bends per QW462.2(a)	Radiography of 6" of Test Plate
Result	Result 1	Result
	Result 2	

Examination. Welds made in test assemblies may be examined by radiography (QW 302.2) or by bend tests. Alternatively, a three foot length of the first production weld made by this welding operator in accordance with a qualified WPS may be examined by radiography

(a) The radiographs of the joint shall meet the requirements of UW 51, Section VIII, Division 1

(b) When bend tests are employed for performance qualifications of a welding operator, they shall meet the requirements of QW 160

1 Joint detail for qualification on production work will be per contract drawings.
2 Qualification on butt welds also qualifies welding operator for fillet welds
3 Qualification with F 6 (A 8) electrodes may be made on P 1 test plates.
4 Radiography of a 6" section of test plate or 36" of production weld may be used in lieu of bend test

Plates Tested	Date	Location	Social Security	Birth Date	Started CBI	Specimen Mark
					Welder	

WE CERTIFY THAT THE STATEMENTS MADE IN THIS RECORD ARE CORRECT AND THAT THE TEST WELDS WERE PREPARED WELDED AND TESTED IN ACCORDANCE WITH SECTION IX OF THE ASME CODE - LATEST EDITION

CHICAGO BRIDGE & IRON COMPANY

BY _____
CBI Representative

Home Address _____
City _____ State _____
Full Name _____
First Middle Last

X - X Ray
P - Plugs
V - Visual

WL 184 APR 75

Attachment 6.5a
QI-032
Rev. 2
Page 1 of 1

EXAMPLE NDE EXAMINATION REPORT

CBI RADIOGRAPHIC EXAMINATION REPORT

Page ____ of ____

Contract No _____ Area _____ ☐ Shop ☐ Field Sequence No _____

	SKETCH OR GEOMETRIC ARRANGEMENT OF RADIOGRAPHY & LOCATION MARKERS ☐ SEE BACK OF REPORT ☐ SEE ATTACHED PAGE ☐ ON RECORD DRAWING ____ REV ____					PROCEDURE & REV RADIOGRAPHY DATE	
ISO TYPE	CURIE	FOCAL FILM DIST	TIME ON	DIA & LGTH FOCAL SPOT SIZE	WELD PROCEDURE	FILM TYPE & BRAND ☐ SINGLE FILM ☐ DOUBLE FILM	
X-RAY	KV	MA		WIDTH & LGTH FOCAL SPOT SIZE MATERIAL THICKNESS		SCREENS TYPE & THICKNESS	

SEAM INT ITEM NO	LOCATION AND SIZE OF UNACCEPTABLE DEFECTS SHOWN BELOW OR ON AN ATTACHED REPAIR CHART EACH SPACE FOR INCHES OF FILM	IN	UNACCEPTABLE DEFECTS	NO	NE	VIELDEN'S NAME OR IDENTIFICATION	FILM GRADING ACCEPT-ABLE	REJECT-ABLE	REMARKS

SAMPLE

REDUCED

				Reviewed and Accepted by
				CUSTOMER DATE
RADIOGRAPHER DATE	INTERPRETER LEVEL DATE	FOREMAN DATE	AUTHORIZED INSPECTOR	DATE

* QD629 REV MAR 75

EXAMPLE NDE EXAMINATION REPORT

NUCLEAR

GBI

MAGNETIC PARTICLE EXAMINATION REPORT

Location _____ Shop ☐ Field ☐ Contract Number _____ Report or Sequence Number _____

CUSTOMER INFORMATION

DESCRIPTION & STAGE OF PART OR WELD ☐ OUTSIDE ☐ INSIDE

PROCEDURE AND REV. NO.	☐ PRODS ☐ YOKE	MFR OR BRAND	PROD OR POLE SPACING	AMPS ☐ DC ☐ AC	CALIBRATION DATE

MACHINE	MFR OR	RATING	PARTICLES ☐ DRY ☐ WET
			COLOR & MFR

Record all non conforming indications which were not removed during examination and/or evaluation. (Those in base material must be accurately located and referenced to some definable point.

SAMPLE

The initial examination covered by this report has been performed in accordance with applicable procedure.

OPERATOR _____ LEVEL _____ DATE _____

All indications have been evaluated in terms of applicable acceptable standards. Relevant non conforming indications have been noted on above sketch and have been reported to the Quality Assurance supervisor.

Item is: Acceptable ☐ Unacceptable ☐

EVALUATOR _____ LEVEL _____ DATE _____

Relevant, non conforming indications, other than shown in above sketch, have been removed in accordance with approved procedure GRP____ Rev ____ Para ____. the area re examined, and found to be acceptable.

QA SUPERVISOR _____ DATE _____

Examination and evaluations have been performed to my satisfaction	Witnessed and accepted by	Witnessed by
FOREMAN	CUSTOMER	AUTHORIZED INSPECTION

GE 187 REV 1 78

EXAMPLE NDE EXAMINATION REPORT

NUCLEAR

GBF

LIQUID PENETRANT EXAMINATION REPORT

Location _____ Shop ☐ Field ☐ Contract Number _____ Report or Sequence Number _____

CUSTOMER INFORMATION

DESCRIPTION & STAGE OF PART OR WELD — OUTSIDE ☐ INSIDE ☐

PROCEDURE AND REV NO.

Cleaned after Examination — NO ☐ YES ☐
Cleaned after Re Examination — NO ☐ YES ☐

	INITIAL EXAMINATION		RE-EXAMINATION	
	Brand Name & Type	Batch Number	Brand Name & Type	Batch Number
Penetrant				
Penetrant Remover				
Emulsifier				
Developer				
Water				

Record all non conforming indications which were not removed during examination and/or evaluation. (Those in base material must be accurately located and referenced to some definable point.)

The initial examination covered by this report has been performed in accordance with applicable procedure

OPERATOR _____ LEVEL _____ DATE _____

All indications have been evaluated in terms of applicable acceptance standards. Non conforming indications have been noted on above sketch and have been reported to the Quality Assurance Supervisor.

Item is Acceptable ☐ Unacceptable ☐

EVALUATOR _____ LEVEL _____ DATE _____

Relevant, non conforming indications, other than shown in above sketch, have been removed in accordance with approved procedure GRP____ Rev ____ Para ____, the area re examined and found to be acceptable.

QA SUPERVISOR _____ DATE _____

Examination and evaluations have been performed to my satisfaction	Witnessed and accepted by	Witnessed by
FOREMAN	CUSTOMER	AUTHORIZED INSPECTION

GE 50/ REV 1 78

EXAMPLE NDE EXAMINATION REPORT

NUCLEAR

GBI

ULTRASONIC EXAMINATION REPORT

Location _____ Shop ☐ Field ☐ Contract Number: _____ Report or Sequence Number _____

Customer Information					
Description & Stage of Part or Weld					
Procedure and Rev No.		Couplant			
Instrument No.	Calibration Date	Mfg. Transducer	Size	Angle	Frequency
Record indications specified by procedure.					

The initial examination covered by this report has been performed in accordance with applicable procedure _____ Operator _____ Level _____ Date _____

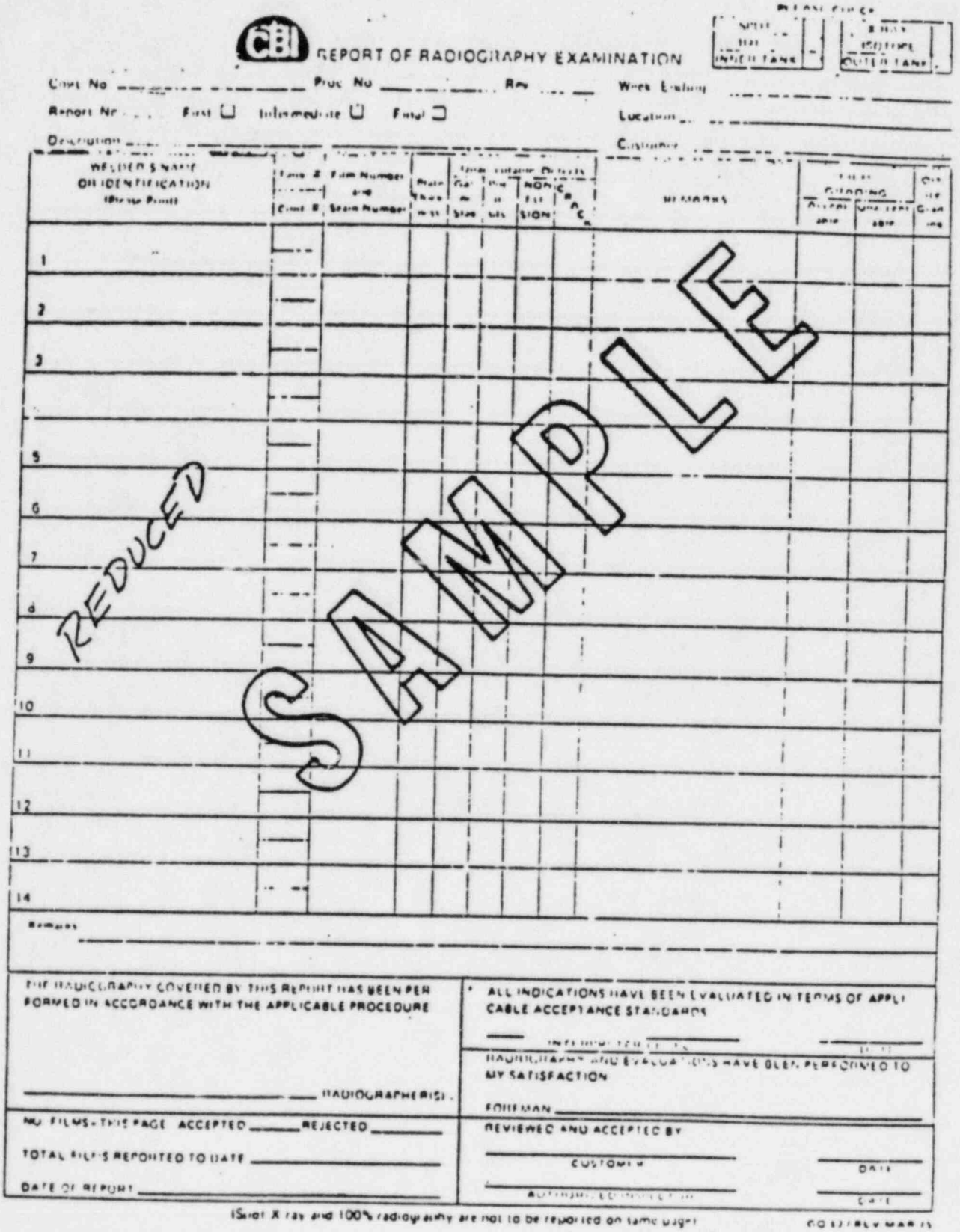
All indications have been evaluated in terms of applicable standards. Non-conforming indications noted on above sketch and have been reported to the Quality Assurance Supervisor. Item is: Acceptable ☐ Unacceptable ☐

_____ Evaluator _____ Level _____ Date _____

Examinations and evaluations have been performed to my satisfaction _____ For GBI	Witnessed and accepted by _____ Customer	Witnessed by: _____ Authorized Inspector

GE 581 REV 1-78

EXAMPLE NDE EXAMINATION REPORT



EXAMPLE NDE EXAMINATION REPORT

CBI

VACUUM BOX TEST REPORT

Contract No. _____ Customer _____ Report or Sequence # _____

Job Location _____ Proc. No. _____ Rev. _____

Pressure Gauge Manufacturer _____ Model _____

Pressure Gauge _____ ø Range _____ S/N or ID _____

Last Calibration Date _____ Recalibration Due _____

Leak Detector Solution _____

Reduced

Description of Areas Covered by This Report

Examinations covered by this report have been acceptably completed.

Evaluator (S) _____ Level _____ Date _____

Examination and evaluations have been performed to my satisfaction	Witnessed and Accepted By	Witnessed By
Foreman	Customer	Authorized Inspector

EXAMPLE NDE EXAMINATION REPORT (cont'd)

CBI LEAK TEST REPORT

Page 1 of 1

Contract No. 74-2427 V Location GLEN ROSE TX ☐ Shop ☒ Field Report or Sequence No. 236

Customer: BROWN & ROOT FOR TUSI

Procedure & Rev.: VTP-74-2427/9-4B REV 3

Leak Detector (Mfg., Type & Model): VINTOL PRODUCTS

Standard Leak ID: N/A

Leak Detector Solution (s): SEAMTEST CONCENTRATE

Assm. or Area ID	Assm. or Area Dwg. No.	Pressure Gauge ID	Enter Date & Evaluators Initials					
			①VACUUM BOX		①		①	
			Acceptable	Unacceptable	Acceptable	Unacceptable	Acceptable	Unacceptable
SRG	NC-198	PV-1	1-14-81 DJW					
NC-202	NC-202	PV-1	1-14-81 DJW					

Remarks: SEE REPAIR CHECK LIST PAGES 44 & 45

Tests were performed and evaluated per the referenced procedure.

MT ☐ or PT ☐ of welded repairs made during testing has been completed and found acceptable (includes repair cavity).

See MT or PT Report No. _____.

No leaks detected during testing. ☑

Defects or potential defects not repaired during testing are recorded above.

All other tested areas included in this report were found acceptable.

D Williams — OPERATOR/EVALUATOR — II — LEVEL — 1-14-81 — DATE

Report results reviewed and accepted by: D Williams — II — LEVEL — 1-14-81 — DATE

Reviewed and accepted by:

CUSTOMER'S INSPECTOR — DATE — ANI OH AI — DATE

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① Enter applicable test methods such as "Vacuum Box Test", etc.
INSTRUCTIONS. When an entry is made under any "Unacceptable" column, make a new entry for that assembly or area and repeat documentation. Make new entry lines until all tests for that assembly or area are acceptable.

Printed in USA

WL 223 REV OCT 77

EXAMPLE NDE OPERATORS CERTIFICATION

CBI NDE PERFORMANCE QUALIFICATION AND CERTIFICATION

(Check One) ☐ Initial Certification ☐ Requalification

Name _____ Soc Sec # _____

CBI LEVELS I AND II

Method _____ CBI Level _____

Practical Performance Test: Procedure No. _____ Date _____ Location _____

Practical Grade _____ Administered By _____ (Signature)

Written Examination Grades: Date _____ Location _____

General _____ Specific _____ Administered By _____ (Signature)

Composite Grade _____ * [(General Grade) (*) + (Specific Grade) (*)] + (Practical grade) [5]

* Percentile weights as shown on applicable written NDE examination

Requalification based on continuing satisfactory performance

Method _____ CBI Level _____ Date _____ Verified By _____ SIGNATURE

CHICAGO BRIDGE & IRON COMPANY CERTIFIES THAT THE ABOVE NAMED EMPLOYEE HAS SATISFACTORILY COMPLETED THE PHYSICAL AND TECHNICAL QUALIFICATIONS REQUIRED BY THE CBI NONDESTRUCTIVE EXAMINATION PERSONNEL TRAINING QUALIFICATION AND CERTIFICATION MANUAL IN ACCORDANCE WITH SNT-TC-1A AND THAT THE EMPLOYEE IS QUALIFIED FOR THE METHOD AND LEVEL INDICATED

QA Manager, Reg or Right _____ Manager, Inspection & Testing _____

CBI LEVEL III

Method _____ Date _____ Requested By _____ SIGNATURE

CHICAGO BRIDGE & IRON COMPANY CERTIFIES BY APPOINTMENT BASED ON RESUME THAT THE ABOVE NAMED EMPLOYEE SATISFACTORILY MEETS THE PHYSICAL AND TECHNICAL QUALIFICATIONS REQUIRED BY THE CBI NONDESTRUCTIVE EXAMINATION PERSONNEL TRAINING QUALIFICATION AND CERTIFICATION MANUAL IN ACCORDANCE WITH SNT-TC-1A AND THAT THE EMPLOYEE IS QUALIFIED FOR CBI LEVEL III IN THE METHOD INDICATED

Director of Welding & Quality Assurance _____ Manager, Inspection & Testing _____

Effective Date _____

CBI Level _____

Method _____

Registration No _____

Qualification Levels

CBI Level I Equivalent to SNT-TC-1A, LEVEL I
CBI Level II Equivalent to SNT-TC-1A, LEVEL II
CBI Level III Equivalent to SNT-TC-1A, LEVEL III
} as determined per CBI Training Procedure

Qualification Methods

UT Ultrasonic Examination
RT Radiographic Examination
MT Magnetic Particle Examination
PT Liquid Penetrant Examination
ET Eddy Current Examination
VT Visual Examination
PET Pulsed Echo Testing
HST Hydrogen Stress Testing
APT Attenuation Pressure Testing
MVT Mass Spectrometer Testing

Seal

SAMPLE

REDUCED

EXAMPLE NDE OPERATORS CERTIFICATION

CBI

NDE CERTIFICATION
ANNUAL VISION TEST RECORD

Note: The CBI Nondestructive Examination Training Program Manual, in accordance with SNT TC 1A, provides as follows "An examination to assure natural or corrected near distance acuity such that the applicant is capable of reading a minimum of Jaeger Number 1 letters at a distance of not less than 12 inches (30.5 cm) on a standard Jaeger or equivalent type test chart for near vision. The ability to perceive an Ortho Rater minimum of 8 or similar test patterns is acceptable. The examination shall be on an annual basis."

Name of Technician ______________________ Location ______________________

Soc. Sec. No. ______________________

Date Administered (Month Year)	Result of Test		Corrective Lenses		Administered By (Give Name and Title)
	Passed	Failed	Yes	No	

SAMPLE

REDUCED

INSTRUCTIONS This form is to be submitted only once for each individual at the time when that individual is recommended for certification for the first time for any of the examination methods. No applicant can be considered for certification [illegible]. Subsequently, the various Construction Offices or Plants will be responsible for [illegible] the vision test [illegible] result to Welding Services I & T on the WL 102 form provided. Construction Offices or Plants are to record all annual vision test results on the copy of this form retained in their files.

EXAMPLE NDE OPERATORS CERTIFICATION

WPL 11 REV 1-73

CBI

RECORD OF NONDESTRUCTIVE EXAMINATION PERFORMANCE

Date _____

Page 1 of _____

Name _____ So. Sec. # _____

Permanent Address _____
(Street Address) (City) (State)

Educational Background: Grade School _____ Yrs. High School _____ Yrs. College _____ Yrs.

Other Formal Ed/Voc. Training _____ Yrs.

NDE CLASSES ATTENDED & DATES & HOURS

CBI _____

_____

_____

Other _____

_____

_____

_____

NDE TRAINING & EXPERIENCE

Contract	Location	Time		Type of NDE (RT, MPT, LPT, UT, & LDT (SFT, HST, APT, PST, & MST)) and LEVEL
		From	To	

EXAMPLE NDE OPERATOR CERTIFICATION (cont'd)

WL 5 REV 2-72
(Continuation Sheet)

RECORD OF NONDESTRUCTIVE EXAMINATION PERFORMANCE

CHICAGO BRIDGE & IRON COMPANY

Page ___ of ___

Name _____ Soc. Sec. # _____

NDE TRAINING & EXPERIENCE (Cont'd)

Contract	Location	Time		Type of NDE (RT, MPT, LPT, UT, & LDT (SFT, HST, APT, RST, & MSTI) and LEVEL
		From	To	

EXAMPLE NDE OPERATOR CERTIFICATION

WL 10 REV 2-72

PERFORMANCE QUALIFICATION AND CERTIFICATION
CHICAGO BRIDGE & IRON COMPANY

NONDESTRUCTIVE EXAMINATIONS

Date March 28, 1974

Name Virgil E. Aker Soc. Sec. # 308-44-0445

Type & Level of Certification: LDT (SFT) (Type) / A (Level)

Practical Performance Test: Procedure No. VTP-4B Date 3/28/74 Location Essexville, Mich.

Grade 100% Administered By William R. Wagner (Signature)

Written Examination: Date 3/28/74 Location Essexville, Michigan

Grade 100% Administered By William R. Wagner (Signature)

Composite Grade 100% = [(Written grade) (.5) + (Practical grade) (.5)]

CHICAGO BRIDGE & IRON COMPANY CERTIFIES THAT THE ABOVE NAMED EMPLOYEE HAS SATISFACTORILY COMPLETED THE PHYSICAL AND TECHNICAL QUALIFICATIONS REQUIRED BY CB&I'S NONDESTRUCTIVE EXAMINATION PERSONNEL TRAINING, QUALIFICATION AND CERTIFICATION MANUAL IN ACCORDANCE WITH SNT-TC-1A AND THAT THE EMPLOYEE IS QUALIFIED FOR THE METHOD AND LEVEL INDICATED ABOVE.

J. M. Yarbrough
QA Manager, Region or Plant

Charles W Shurlock
Manager, Inspection & Testing

INFORMATION COPY PPRV

Seal

Certification:
Effective Date 3-28-74
Level A
Type LDT (SFT)
Registrant No. 122

Qualification Levels:
A_1, A_2 & A_3 Equivalent to SNT-TC-1A, LEVEL I
A Equivalent to SNT-TC-1A, LEVEL II
S Equivalent to SNT-TC-1A, LEVEL II
S (Manager or Instructor) Equivalent to SNT-TC-1A, LEVEL III
} as defined per CB&I Training Program

Type Qualification:
UT Ultrasonic Examination
RT Radiographic Examination
MPT Magnetic Particle Examination
LPT Liquid Penetrant Examination
LDT Leak Detection Examination

EXAMPLE NDE OPERATOR CERTIFICATION

CBI NDE PERFORMANCE QUALIFICATION AND CERTIFICATION

(Check One) ☒ Initial Certification ☐ Recertification

Name DENNIS G. WILLIAMS Soc. Sec. # 459-70-3847 Method VT

(Check One) CBI LEVEL I ☐ II ☒

Practical Performance Test: Procedure No. VT5 Date 1/22/79 Location Glen Rose, Texas

Practical Grade 97% Administered By Michael Jeffers II
SIGNATURE & LEVEL

Written Examination Grades: Date 1/23/79 Location Glen Rose, Texas

General 100% Specific 100% Administered By Michael Jeffers II
SIGNATURE & LEVEL

Composite Grade 98.5% = [(General Grade) (.30 *) + (Specific Grade) (.20 *) + (Practical Grade) (.5)]

* Weight factors as shown in program and on applicable written NDE examination.

Recertification based on continuing satisfactory performance:

Date _____ Verified By _____
SIGNATURE & LEVEL

William W Jeffers
QA Manager, Region or Plant

Charles Sherlock
Manager, Inspection & Testing

CBI LEVEL III

Written Examination Grades: Date _____ Location _____

Basic _____ Verified or Administered By _____
SIGNATURE & LEVEL / OR TITLE

Date _____ Location _____

Method Composite _____ Administered By _____
SIGNATURE & LEVEL / OR TITLE

Method Composite Grade = [General Grade) (0.50) + (Specific Grade) (0.30) + Practical Grade (0.20)]

Recertification based on continuing satisfactory performance:

Date _____ Verified By _____
SIGNATURE & LEVEL / OR TITLE

Director of Welding & Quality Assurance

Manager, Inspection & Testing

CHICAGO BRIDGE & IRON COMPANY CERTIFIES THAT THE ABOVE NAMED EMPLOYEE HAS SATISFACTORILY COMPLETED THE PHYSICAL AND TECHNICAL QUALIFICATIONS REQUIRED BY THE CBI NONDESTRUCTIVE EXAMINATION PERSONNEL TRAINING, QUALIFICATION AND CERTIFICATION PROGRAM DEVELOPED IN ACCORDANCE WITH SNT-TC-1A AND ANSI 45.2.6 AND THAT THE EMPLOYEE IS QUALIFIED FOR THE METHOD AND LEVEL INDICATED.

Effective Period Jan. 23, 1979 to Jan. 23, 1982
CBI Level II
Method VT
Registrant No. 200

Qualification Methods:

U T	Ultrasonic Examination	SFT	Solution Film Testing
R T	Radiographic Examination	HST	Halogen Sniffer Testing
M T	Magnetic Particle Examination	APT	Absolute Pressure Testing
P T	Liquid Penetrant Examination	APT(L)	Absolute Pressure Testing (Limited)
V T	Visual Examination	MST	Mass Spectrometer Testing

Seal

WELD & NDE PROCEDURES

The following is a list of weld and nondestructive examination procedures that are contained in the CB&I Quality Assurance Manual which have been approved by Engineers.

Containment Liner

General Repair Procedures (GRP)

GRP-(74-2427/8)-C	Rev. 0	
GRP-(74-2427/8)	Rev. 1	Materials and Welds
GRP-(74-2427/8)-17	Rev. 1	
GRP-(74-2427/8)-18	Rev. 1	Weld Metal Defects
GRP-(74-2427/28)-200	Rev. 1	
GRP-(74-2427/28)-400	Rev. 1	

General Welding Procedures (GWPS)

GWPS-(74-2427/8)-GMA	Rev. 1	Gas Metal Arc Process
GWPS-(74-2427/8)-GTA	Rev. 1	Gas Tungsten Arc Process
GWPS-(74-2427/8)-SAW	Rev. 1	Automatic Submerged Arc Process
GWPS-(74-2427/8)-SMA	Rev. 1	Shielded Metal Arc Process
MTP-(74-2427/8)-1	Rev. 1	Continuous Prod Magnetic Particle Examination Utilizing Dry, Visible Particles
MTP-(74-2427/8)-2	Rev. 1	Continuous Yoke Magnetic Particle Examination Utilizing Dry, Visible Particles
MTP-(74-2427/8)-12B	Rev. 1	Magnetic Particle Examination By The Prod Method
MTP-13B	Rev. 12	Magnetic Particle Examination Proc. By The Yoke Method
PTP-(74-2427/8)-10B	Rev. 2	Liquid Penetrant Examination Proc.
PTP-(74-2427/8)-12B	Rev. 3	Solvent-Removable Liquid Penetrant Examination
PTP-(74-2427/8)-18	Rev. 2	Color Contrast, High Temperature Liquid Penetrant Examination
RTP-(74-2427/8)	Rev. 8	Radiographic Examination Procedure
RTP-(74-2427/8)-1	Rev. 1	Radiographic Examination Procedure
RTP-(74-2427/8)-9B	Rev. 2	Radiographic Examination Procedure for welds

Special Repair Procedures (SRP)

SRL	Rev. 0	WPS-E8018-C1
SRM	Rev. 0	WPS-E8018-C1
SRN	Rev. 0	WPS-E8018-C1
SRO	Rev. 0	WPS-E8018-C1

WELD & NDE PROCEDURES
(Cont'd)

SRQ	Rev. 1	WPS-E8018-C1
SRP-(74-2427)-A	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-B	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-C	Rev. 1	WPS-E8018-C1
SRP-(74-2427)-D	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-E	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-F	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-G	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-H	Rev. 0	WPS-E8018-C1
SRP-(74-2427)-I	Rev. 0	WPS-E8018-C1
SRP-(74-2428)-J	Rev. 0	WPS-E8018-C1
UTP-(74-2427/8)-47	Rev. 1	Straight Beam Ultrasonic Examination of Steel Plates
VEP-1B	Rev. 2	Visual Examination Procedure
VTP-(74-2427/28)-4B	Rev. 4	Vacuum Box Test of Welds
WPAT-(7402427/8)	Rev. 7	Welding Procedure Application Table

Welding Procedure Specification (WPS)

		Base Material	Weld Filler Metal
WPS-DS 85 C-1/74-2427/8U	Rev. 0	SA537 CL2 (GRB)	DS 85 C-1
WPS-W18/860 74-2427/8	Rev. 4	SA537 CL2 (GRB)	ARMCO W-18
WPS-E7018 74-2427/8	Rev. 1	SA537 CL2 (GRB)	E7018
WPS-E8018-C1 (74-2427/8)	Rev. 4	SA537 CL2 (GRB)	E8018
WPS-E8018-C1(Re)74-2427/8	Rev. 0	SA537 CL2 (GRB)	E8018
WPS-E308L/83420	Rev. 0	304 (p-8 GP-1)	E308L-15 & E308L-16
WPS-E309/83420	Rev. 0	A-36 (P-1) to 304 (P-8)	E309-15 & E309-16
WPS-E7018/83420	Rev. 0	A-36 (P-1)	E7018

Tank Stainless Steel Liners

SR1	Rev. 0	Special Repair Procedure
SR2	Rev. 0	Special Repair Procedure
VB3	Rev. 2	Vacuum Box Test Procedure
VT10	Rev. 4	Visual Inspection Procedure
WPAT	Rev. 0	Welding Procedure Application Table
PT20	Rev. 2	Liquid Penetrant Examination Proc. Color Contrast, Solvent Removable, Wet Developer
GRP-17	Rev. 4	General Repair of Materials
GRP-18	Rev. 5	General Repair of Weld Metal Defects
GWPS-SMAW (WPS-800)	Rev. 10	General Welding Proc. Spec. for the Shielded Metal Arc Process

WELD & NDE PROCEDURES
(Cont'd)

Welding Procedure Specification (WPS)

		Base Material	Weld Filler Metal
WPS-E308L/83420	Rev. 0	304 (P-8 GP-1)	E308L-15 & E308L-16
WPS-E309/83420	Rev. 0	A-36 (P-1) to 304 P-8)	E309-15 & E309-16
WPS-E7018/83420	Rev. 0	A-36 (P-1)	E7018