Data Report Documenting the Reattachment of the CC Cryostat Heads

Engineering Note # 3740.214-EN-266

Issued: November 6, 1990

Originator: Rick Luther

Chicago Bridge & Iron

Technical Services Company

800 Jorie Boulevard
Oak Brook, Illinois 60522-7001

708 572 7000

Telex: 82684

82688

FAX: 708 572 7405

October 30, 1990

Mr. Richard Luther
Fermi National Accelerator Laboratory
Fermilab Contracts Office, Wilson Hall
5th Floor West (MS #216)
Batavia, IL 60510

SUBJECT: Cryostat Vessel Modifications
CBI Contract C70708

Dear Mr. Luther:

Enclosed is the documentation of the work done by CBI on the Cryostat Vessel. Three copies of the documentation package are enclosed as requested by your technical specification. Please contact me if additional information is required.

Sincerely,

A handwritten signature in cursive script that reads 'Brian T. Schlueter'.

Brian T. Schlueter
Oak Brook Engineering

BTS:aec

ENCLOSURE

PLEASE NOTE THE FOLLOWING COMMENTS CONCERNING
DOCUMENTATION OF CBI CONTRACT C70708:

1. NO PNEUMATIC TEST CHARTS ARE INCLUDED IN THIS RECORD. THE PNEUMATIC TESTING WAS PERFORMED BY OTHERS AND WITNESSED BY CBI.
2. NO POST WELD HEAT TREATMENTS WERE REQUIRED, AND THEREFORE, NO PWHT RECORDS ARE INCLUDED IN THIS RECORD.
3. NO MATERIAL REPAIRS WERE MADE. NO MATERIAL SPECIFICATIONS WERE MADE, AND NONE ARE INCLUDED IN THIS RECORD.

SUBJECT FERMI NATIONAL ACCELERATOR LABORATORY, BATAVIA, IL PRESSURE VESSEL RECORD	OFFICE CBI NOEA		REVISION 0		REFERENCE NO. C70708
	MADE BY BTS	CHKD BY	MADE BY	CHKD BY	SHT. OF
	DATE 10/30/90	DATE	DATE	DATE	

FORM R-1, REPORT OF WELDED ☒ REPAIR OR ☐ ALTERATION
as required by the provisions of the National Board Inspection Code

Made: 7/9/90
Chkd: 7/9/90

1. Work performed by CBI Na-Con, Inc. Contract C70708
(name of repair or alteration organization) (P.O. no., job no., etc.)
8900 Fairbanks N. Houston Road, Houston, Texas 77064
(address)
2. Owner Fermi National Accelerator Laboratory
(name)
PO Box 500, Batavia, Illinois 60510
(address)
3. Location of Installation Fermi National Accelerator Laboratory
(name)
PO Box 500, Batavia, Illinois 60510
(address)
4. Unit Identification: Pressure Vessel Name of original manufacturer Richmond-Lox Equipment Company
(boiler, pressure vessel)
5. Identifying nos.: 30093 3688 1987
(mfr's. serial no.) (original National Board no.) (jurisdiction no.) (other) (year built)

6. Description of work: _____
(use back, separate sheet, or sketch if necessary)

See attached sheet(s)

Pressure test, if applied No test psi

7. Replacement Parts. Attached are Manufacturers' Partial Data Reports properly identified and signed by Authorized Inspectors for the following items of this report:

None

(name of part, item number, mfr's. name and identifying stamp)

8. Remarks: Only the inner pressure vessel was originally U stamped. Therefore, only the work items on this vessel are included under the R stamp and this data report.

DESIGN CERTIFICATION

The undersigned certifies that the statements made in this report are correct and that the design changes described in this report conform to the requirements of the National Board Inspection Code.

ASME Certificate of Authorization no. _____ to use the _____ symbol expires _____, 19____.

Date _____, 19____ Signed _____
(name of organization) (authorized representative)

CERTIFICATE OF REVIEW OF DESIGN CHANGE

The undersigned, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the state or province of _____ and employed by _____

of _____ has examined the design change as described in this report and verifies that to the best of his knowledge and belief such change complies with the applicable requirements of the National Board Inspection Code. By signing this certificate, neither the undersigned nor his employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection, except such liability as may be provided in a policy of insurance which the undersigned's insurance company may issue upon said object and then only in accordance with the terms of said policy.

Date _____, 19____ Signed _____ Commissions _____
(Authorized Inspector) (National Board (incl. endorsements), state, prov., and no.)

CONSTRUCTION CERTIFICATION

The undersigned certifies that the statements made in this report are correct and that all construction and workmanship on this Repair conform to the National Board Inspection Code.
(repair or alteration)

Certificate of Authorization no. R1330 to use the R symbol expires April 20, 1993.

Date 10 July 1992 Signed CBI Na-Con, Inc.
(repair or alteration organization) (authorized representative)

CERTIFICATE OF INSPECTION

The undersigned, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the state or province of Illinois and employed by HSBI & I Co.

of Hartford, Conn. has inspected the work described in this report on 10 JUL, 1990

and state that to the best of my knowledge and belief this work has been done in accordance with the National Board Inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection, except such liability as may be provided in a policy of insurance which the undersigned's insurance company may issue upon said object and then only in accordance with the terms of said policy.

Date 10 JUL, 1990 Signed [Signature] Commissions NB 10522 IL 1547
(Authorized Inspector) (National Board (incl. endorsements), state, prov., and no.)

6. **Description of Work:**

Reassembly of the inner pressure vessel of a seventeen foot diameter by ten foot long double wall toroidal shaped vessel in which each vessel consists of two concentric cylinders which are capped at each end by an annular dished head. Attached drawing 1, 2, 3, and 4 (all Revision 1) show the repair work items.

The work covered by this data report applies only to the inner pressure vessel (See Item 8 - remarks). These work items are:

- 1). Two circumferential weld seams (Seams A and G on attached drawing 2) of the north end annular dished head.
- 2). Two circumferential weld seams (Seam C and F on attached drawing 2) of the south end annular dished head.
- 3). Rerolling and rewelding of the vertical seam of the 64 3/8 inch nominal inside diameter tube (seam L on attached drawing 2)
- 4). Welding of the two dust catchers inside the inner pressure vessel (Seams N and O on attached drawing 2). The dust catchers are attachments to pressure parts and were supplied by Fermi National Accelerator Laboratory.
- 5). Welding of the outer tube of the beam bypass tube (Seams I and K on attached drawing 3).

NOTE: FOR ALL DRAWINGS

ALL WELDING PROCEDURES ON THE
PRESSURE/INNER VESSEL SHALL BE
COMPATIBLE WITH LIQUID NITROGEN
SERVICE AT -320 °F

ADDITIONAL NOTE ABOVE BY <i>MSK</i> DATE <i>5/19/90</i> CHK'D <i>SP</i> DATE <i>5/19/90</i> BY <i>MSK</i> DATE <i>5/19/90</i> CHK'D <i>SP</i> DATE <i>5/19/90</i>		CBI MODIFICATION TO CYLINDRICAL SECTION CC CRYOSTAT HEAD REMOVAL/REPLACEMENT FERMI NATIONAL ACCELERATOR LABORATORY BATAVIA, ILL. (CENTRAL VALVE VESSEL - GROSS SECTION)		Supplier's/Purchaser's No.
		Customer's No. <i>70708</i> By <i>MSK</i> Check <i>SP</i> Date <i>5/19/90</i> <i>JDM J. AHL</i> <i>TR</i> Engineering Supervisor	Contract No. <i>70708</i> Draw. <i>1</i> Sheet <i>1</i>	Rev. <i>1</i>
This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.

NOTES: (FOR ALL BY-PASS TUBE CONNECTIONS)

1. FIT BY-PASS TUBE TO HEAD
2. ALIGN BY-PASS TUBE TO HEAD AND CENTER HEAD
3. TACK BY-PASS TUBE (WPS E316L-15)
4. CHECK ALIGNMENT
5. WELD OUT JOINT (WPS E316L-15)
6. PT COMPLETED WELD

NOTE: COORDINATE LOCATION AND CENTERING OF TUBES WITH FERMI DURING INSTALLATION.

VIEW E (SEE DWG 1 FOR LOCATION)

CHANGED BY-PASS TUBE DETAILS		REMARKS MODIFICATION TO CYLINDRICAL SECTION CC CRYOSTAT HEAD REMOVAL & REPLACEMENT FERMI NATIONAL ACCELERATOR LABORATORY BATAVIA, ILL (BYPASS TUBE DETAIL)		Supplier's/Purchaser's No.	
Customer's No.		Contract No.		By MSK Chd Date 5/3/40	
By MSK Chd Date 5/3/40		TOM J. AHL Jr Engineering Supervisor		C70708	
Date		Sheet		Rev.	
This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.					

Ship No.	Mark	Assem No.	Description	Length		Spec.
				PL	IN.	
1	4-A		NAMEPLATE			
		1	CBI NAMEPLATE 5151A			S.S.

NOTES:

1. DATE TO BE SAME AS THAT SHOWN ON R-1 FORM.
2. ATTACH NAMEPLATE TO TOP OF JACKET, (WELD TO JACKET). PLACE ADJACENT TO EXISTING DUPLICATE NAMEPLATE.

Inspected By

CBI

CBI Na-Con, Inc.

C70708

TEMP. = -298°F
+100°F

R

SEE NOTE 1

F308 on E308L
(SEE NOTE 2)

Supplier's/Purchaser's No.

CBI

MODIFICATION TO CYLINDRICAL SECTION
CC CRYOSTAT HEAD REMOVAL/REPLACEMENT
FERMI NATIONAL ACCELERATOR LABORATORY
BATAVIA, ILL. (NAMEPLATE QWB.)

Customer's No.

By MSK Chid Date 5/5/90

TOM J. AHL
Engineering Supervisor

Contract No. C70708

Des. 4 Rev. 1

Sheet

This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.

► Indicates change from previous issue

Ingersoll Steel

Division of Avesta Inc.

Certificate of Analysis and Tests

SOLD TO

SHIP TO — SAME UNLESS NOTED OTHERWISE

ORDER NUMBER

23764

AVEA STAINLESS INC.

WILLIAMS & COMPANY, INC.

721 UNION BLVD.

7640 REINHOLD DRIVE

P. O. BOX 269

CINCINNATI

OH

45237

CUSTOMER

DATE

9600003

12/10/86

CUSTOMER ORDER NO.

DATE

ROUTING

WHEN WANTED

TERMS

72143-9-0306

12/09/86

ITEM NO.	MFG. CLASS	FIN.	DESCRIPTION	QUANTITY ORDERED		SHIPMENTS	
				WEIGHT	PIECES	PIECES	WEIGHT
304		1	.500 X 96.000 X 296.000 EXACT ASTM A-240-84A ASME SA-240-80 83ED, S84 ADD QOS-766C ASTM A-312 83 CHEM ONLY	STACEY MFG.	QUALITY CONTROL DEPARTMENT		
TEST PCS SOLUTION ANNEALED @ 1950 DEGREES FARENHEIT MINIMUM. COOLED OR RAPIDLY COOLED BY AIR FREE OF MERCURY CONTAMINATION ANNEALED & PICKLED (HRAP)				Material on this MTR was ordered from: WILLIAMS & Co. P.O. # Q16035-6308 Item # 1. Z This material applies to Stacey MFG.			

MECHANICAL

HEAT NUMBER	PIECES	YIELD STRENGTH LBS PER SQ. IN.	TENSILE STRENGTH LBS. PER SQ. IN.	ELONG % IN 2"	BEND	RED AREA %	INTERGRANULAR CORROSION	GRAIN SIZE	MK. #	REMARKS
75718	1	44074	82744	65.0	OK	66.8	OK		2E	1-3 This MTR. has been checked against ASME. spec. SA 240 T304 By: <u>D. Hume</u> Date: 1/13/87

CHEMICAL

HEAT NO.	Mn	P	S	Si	Cr	Ni	Co	Cu	Mo	N	Cb/Ta	Ti	AL	W	SN	C	FE
75718	0.45	1.860	.031	.014	.520	18.180	8.170	.090	.420	.240	.089						

Q/A
APPROVED
DEC 11 '86
J.B.

gersoll
Division of A
D. Box 370
w Castile.

ic.

STATE OF INDIANA
COUNTY OF HENRY

By

Ronald Elliott

Subscribed And Sworn To Before Me This

47262

Materiau d'apport:

Abmessung (mm, Zoll) Size (mm, inch) Dimensions (mm)	Menge Quantity Quantité	Nettogewicht (kg) Net weight (kgs) poids net (kg)	Charge Nr. Heat No. Coulée no.	Serie Nr. Series No. Série No.	Kolli Nr. Parcel No. Colis No.
				99108,99082 87314	

Chemische Analyse - Chemical Analysis - Analyse chimique

Charge Heat Coulée	Serie Serie Série	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Nb %
99108		0,016	0,65	0,78	0,024	0,014	20,06	0,33	10,20	0,090	
99082		0,018	0,69	0,79	0,024	0,011	20,28	0,04	9,91	0,060	
87314		0,028	0,73	0,74	0,027	0,011	19,91	0,26	10,22	0,18	

Mechanische Gütewerte - Mechanical Properties - Propriétés mécaniques

Charge Heat Coulée No.	Serie Serie Série No.	Wärmebehandl. Heat Treatm. Traite ment thermique	Streckgrenze Yield point Limite élastique N/mm ²	Zugfestigkeit Tensile strength Resistance à la traction N/mm ²	Dehnung Elongation Allongement (L=5,65 √A) %	Einschnürung Reduction Striction %	Härte Hardness Dureté	Kerbschlagarbeit Impact strength Résilience Charpy-V Joule
99108)				✓	✓			
99082)		u		min.520	min.35			
87314)								

u = unbehandelt - as welded - non traité
a = angelassen - tempered - revenu
s = spannungsarmgeglüht - stress relieved - recuit de détente

VEREINIGTE EDELSTAHLWERKE
AKTIENGESELLSCHAFT (VEW)

Werksgruppe Kapfenberg

Schweißversuchsanstalt
Kontrolle und Abnahme

THE STACEY MFG. CO.		
RECEIVED		
APR - 6 1987		
NO.	INIT'L	DATE
	DA	4/6/87

STACEY MFG. QUALITY CONTROL DEPARTMENT:

Material on this MTR was ordered from:

AGA on

P.O. # 16118-BLANKET Item # 1 & 2

This material applies to Stacey MFG.

S.O. # 6308 - 6309

MK. # WELDING

MATERIALS

ASME. spec. SFA 5.4 - 308L-16

By: D. J. Hume Date: 4/6/87

Ship No.	Mark	Assem No.	Description	Length		Spec
				Fl.	In.	
1	4-A		NAMEPLATE			
		1	CBI NAMEPLATE 5151A			S.S.

NOTES:

1. DATE TO BE SAME AS THAT SHOWN ON R-1 FORM. (JULY 10, 1990)
2. ATTACH NAMEPLATE TO TOP OF JACKET, (WELD TO JACKET). PLACE ADJACENT TO EXISTING DUPLICATE NAMEPLATE.

Supplied By
CBI
CBI Na-Con, Inc.

CBI CONTRACT NUMBER

CBI CONTRACT NUMBER

CBI CONTRACT NUMBER

CBI CONTRACT NUMBER

TEMP. = -298°F
+100°F

Professional Board Report
Symbol and Stamp No.

DATE OF REPAIR
DATE OF REPAIR
DATE OF REPAIR
DATE OF REPAIR

E300 or E300L
(SEE NOTE 2)

SEE NOTE 1

TON OF ASB FOR WELDING PLATE, WELD MIN-GRATE DENSITY TO TOP OF JACKET PLACE TEMPS ON BOTTOM OF NAMEPLATE RATHER THAN BELOW THE CBI CONTRACT NUMBER		CBI Supplier's/Purchaser's No.	
By <u>MSK</u> Chkd. <u>STJ</u> Date: <u>5/5/90</u>	By <u>MSK</u> Chkd. <u>STJ</u> Date: <u>5/5/90</u>	Customer's No. <u>C70708</u>	Contract No. <u>C70708</u>
By <u>MSK</u> Chkd. <u>STJ</u> Date: <u>5/5/90</u>	By <u>MSK</u> Chkd. <u>STJ</u> Date: <u>5/5/90</u>	By <u>TOM J. AHL</u> Chkd. <u>STJ</u> Date: <u>5/5/90</u> Engineering Supervisor	Dwg. <u>4</u> Rev. <u>2</u> Sheet
This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.			

MADE: JA JFV 7/9/90CHKD: JA TJA 7/9/90REPORT OF WELDED ☒ REPAIR OR ☐ ALTERATION

1. Work done by CBI Na-Con, Inc. Houston, Texas C70708
(Name and Address of repair or alteration organization) (Contract No.)
2. Owner Fermi National Accelerator Laboratory Batavia, IL
(Name and Address of Owner)
3. Location of Installation Fermi National Accelerator Laboratory Batavia, IL
(Name and Address)
4. Unit Identification Outer Jacket Name of Manufacturer Richmond-Lox Equipment Company
(Boiler, Pressure Vessel)
- CBI Contract No. of Existing Vessel NA
5. Identifying Nos. None None 1987
(Mfr. Serial No.) (National Board No.) (Jurisdiction) (Other) (Year Built)
6. Description of Work: _____
(Use separate sheet or sketch if necessary)
- See attached sheet(s)

7. Remarks: Attached are Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors for the following items of this report:
None

(Name of part, item number, Mfr's name and identifying stamp)

8. Work done in accordance with Fermi Lab Purchase Order 938570/Spec #3740.214-ES-224130
(Owner's Spec. No., Nat'l Bd. Rules, ASME Code & Addenda, etc.)

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that all _____
(design) if applicable
material, construction, and workmanship on this Repair conform to Item 8 above.
(repair, alteration)

8-29-90
(Date Signed)CBI Na-Con, Inc.
(Repair, Alteration Organization)By [Signature]
(Authorized Representative)

CERTIFICATE OF INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Illinois and employed by HSBI & I Co.
of Hartford, CT have inspected the work described in
this Data Report on _____, 19____ and state that to the best of my knowledge and belief,
this work has been done in accordance with Item 8 above.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the work described in this Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection, except such liability as may be provided in a policy of insurance which the Inspector's insurance company may issue upon said object and then only in accordance with the terms of said policy.

DATE _____ Commissions _____
(Inspector) Nat'l Board, State or Province and No.

6. **Description of Work**

Reassembly of the outer jacket vessel of a seventeen foot diameter by ten foot long double wall toroidal shaped vessel in which each vessel consists of two concentric cylinders which are capped at each end by an annular dished head. Attached drawings 1, 2, 3, and 4 (all Revision 1) show the repair work items.

The work covered by this data report applies only to the outer jacket vessel. These work items are:

- 1) Two circumferential weld seams (Seams B and E on attached drawing 2) of the north end annular dished head.
- 2) Two circumferential weld seams (Seams M and D on attached drawing 2) of the south end annular dished head. Seam M, however, involves repair to an existing weld seam in accordance with attached drawing 2.
- 3) Welding of the inner tube of the beam bypass tube (Seams H and J on attached drawing 3) to the outer jacket vessel.

1. FIT BY-PASS TUBE TO HEAD
2. ALIGN BY-PASS TUBE TO HEAD AND CENTER HEAD
3. TACK BY PASS TUBE (WPS E316L-15)
4. CHECK ALIGNMENT
5. WELD OUT JOINT (WPS E316L-15)
6. PT COMPLETED WELD

(SEE DWG 1 FOR LOCATION)

CHANGED BY-PASS TUBE DETAILS MSK 5/4/40		Remarks MODIFICATION TO CYLINDRICAL SECTION CC CRYOSTAT HEAD REMOVAL & REPLACEMENT FERMIL NATIONAL ACCELERATOR LABORATORY BATAVIA, ILL (BYPASS TUBE DETAIL)	Supplier's/Purchaser's No.	
			C70708	
By MSK Chas. 5/4/40 Date 5/4/40 TOM J AHL JR Consulting Supervisor		Customer's No.		Contract No.
By MSK 5/4/40	Chas. 5/4/40	Date 5/4/40	Draw. 3	Rev. 1
By MSK 5/4/40	Chas. 5/4/40	Date 5/4/40	Sheet	1
This drawing is being prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.				

FORM DA 33-A REV OCT 86

Shop No.	Mark	Assem No.	Description	Pl.	Sh.	Spec.
1	4-A		NAMEPLATE			
		1	CBI NAMEPLATE 5151A			S.S.

NOTES:

1. DATE TO BE SAME AS THAT SHOWN ON R-1 FORM.
2. ATTACH NAMEPLATE TO TOP OF JACKET, (WELD TO JACKET), PLACE ADJACENT TO EXISTING DUPLICATE NAMEPLATE.

CBI
CBI Na-Con, Inc.

C70708
DATE OF REPAIR

TEMP. = -270 °F
TEMP. = 7100 °F

DATE OF REPAIR

DATE OF REPAIR

E30B OR E30BL
(SEE NOTE 2)

SEE NOTE 1

FROM THE PRIOR FOR NAME- PLATE, WELD NAMEPLATE DIRECTLY TO TOP OF JACKET				Supplier's/Purchaser's No.	
		Remarks MODIFICATION TO CYLINDRICAL SECTION CC CRYOSTAT HEAD REMOVAL, REPLACEMENT FERMI NATIONAL ACCELERATOR LABORATORY BATAVIA, ILL. (NAMEPLATE DWG.)			
Customer's No.		Contract No.			
By <u>MSK</u> Chkd. <u>SAV</u> Date: <u>5/1/90</u>		C70708			
<u>TOM J. AHL</u> Engineering Supervisor		Dwg. <u>4</u> Rev. <u>1</u>			
This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.		Sheet <u>1</u>			

Indicates change from previous issue

Ship No.	Mark	Asm No.	Description	Length		Spec.
				Fl.	In.	
1	4-A		NAMEPLATE			
		1	CBI NAMEPLATE 5151A			S.S.

NOTES:

1. DATE TO BE SAME AS THAT SHOWN ON R-1 FORM. (JULY 10, 1990)
2. ATTACH NAMEPLATE TO TOP OF JACKET, (WELD TO JACKET), PLACE ADJACENT TO EXISTING DUPLICATE NAMEPLATE.

Prepared by
CBI
CBI Na-Con, Inc.

Contract Number: C70708 DATE OF REPAIR: ☒

Contract Number: DATE OF REPAIR:

Contract Number: DATE OF REPAIR:

Contract Number: DATE OF REPAIR:

TEMP. = -298°F
+100°F

Revised 10/80

E308 OR E308L
(SEE NOTE 2)

SEE NOTE 1

Supplier's/Purchaser's No. **CBI**

MODIFICATION TO CYLINDRICAL SECTION
CC CRYOSTAT HEAD REMOVAL/REPLACEMENT
FERMI NATIONAL ACCELERATOR LABORATORY
BATAVIA, ILL. (NAMEPLATE DWG.)

Customer's No. **C70708**

By **MJK** Chkd **JA** Date **5/1/90**

TOM J. AHL **TS**
Engineering Supervisor

Dwg. **4** Rev. **2**

This drawing has been prepared for and is the property of CBI and is to be used only in connection with performance of work by CBI. Reproduction in whole or in part for any other purpose is expressly forbidden.

Indicates change from previous issue

ASME SECTION VIII DIV 1 VESSELS — PART UCS, UHA, UCI, UNF

INSPECTION REQUIREMENTS AND INSPECTION AND TESTING SEQUENCE FOR TANK COMPONENTS		Initials and Date	
		Foreman or Welding Supervisor	
		Initials	Date
A BUTT WELDS (SHELL AND HEAD(S) AND INSERT FITTING)			
1. LIQUID PENETRANT TEST ROOT PASS AND COMPLETED WELD FOR ALL BUTT WELDS.		DAE	7-23-90
b. Radiograph butt welds to be covered by structural pads or reinforcing plates, (if Applicable).		DAE	6-21-90
2. Solution film during preliminary pneumatic test except joints greater than 3/8" (10mm) in thickness and joints 3/8" (10mm) or less in thickness that are radiographed.			
3. Visually inspect during hydrostatic test or areas below water line during hydro-pneumatic test.			
4. Solution film at inspection pressure during pneumatic test except joints greater than 3/8" (10mm) in thickness and joints 3/8" (10mm) or less in thickness that are to be radiographed.			
5. Visually inspect at the inspection pressure above the water line during hydro-pneumatic test or during pneumatic test on all joints.			
6. Liquid penetrant examine all austenitic-chromium-nickel alloy steel butt welds, in vessels with shell thickness over 3/4" (19mm) and 36% Nickel steel butt welds regardless of thickness. To be performed after heat treatment if welds are to be heat treated.			
7. Wet magnetic particle examine the following joints when material is A537 Class 2 or similar material:			
a. Inside surface of entire closing joint of top head on spheres or vessels.			
b. Inside surface of entire closing joint of bottom head on spheres or vessels.			
c. Inside surface for 5 percent of each horizontal joint length on spheres. Examinations shall be random selected lengths with no less than four (4) per joint.			
B BOTTOM AND BOTTOM CONNECTION WELDS ON SMOOTH SPHEROIDS RESTING ON GRADE (if Applicable)			
1. Radiograph all intersections before they become inaccessible.			
2. Before hydrostatic or hydro-pneumatic test, magnetic particle or liquid penetrant examine bottom and bottom connection welds not accessible for visual examination during the final test.			
3. After hydrostatic or pneumatic test, vacuum box solution film test at 3 psig (8.1" Hg) (21 kPa gauge) minimum bottom welds not accessible for visual examination during the final testing.			
C FITTINGS PENETRATING THE VESSEL WALL			
1. PT COMPLETED WELDS ON ALL BY-PASS TUBE CONNECTIONS		DAE	7-31-90
		DAE	7-10-90
2. For 18" (460 mm) ϕ or larger penetrations when material is A537 Class 2 or similar material, wet magnetic particle examine at least 10% of the neck to shell weld joint.			
3. Air pressure solution film pad plate and neck to shell welds before overload test at 26 psig (172 kPa gauge) maximum.			
4. Visually inspect during hydrostatic test or below the water line during hydro-pneumatic test.			
5. Solution film pad plates during pneumatic test or above the water line if hydro-pneumatic test.			
6. For fittings without pad plates, solution film pipe to shell welds above water line during hydro-pneumatic test or during pneumatic test.			
D INSERT FITTINGS (if Applicable)			
1. Magnetic particle or liquid penetrant examine butt welds attaching insert fittings to the shell or head(s) if not 100% radiographed. (See Note 1)			

REV	BY	CONST. ASSIGNED	ENG. ASSIGNED	MADE BY	DATE	CHKD BY	DATE	CONTRACT NO.	SHEET
	CHKD								
	DATE								
		Na-Con	OAKBROOK	MSK	4/30/90	5/1/90	C70708	10/1

ASME SECTION VIII DIV 1 VESSELS – PART UCS, UHA, UCL, UNF

INSPECTION REQUIREMENTS AND INSPECTION AND TESTING SEQUENCE FOR TANK COMPONENTS	Initials and Date	
	Foreman or Welding Supervisor	
	Initials	Date
GENERAL (AS APPLICABLE BEFORE OVERLOAD TEST)		
1 Magnetic particle or liquid penetrant examine all welds around openings on pneumatically tested vessels or the pneumatically pressurized portion of hydro-pneumatically tested vessels.		
2 Magnetic particle or liquid penetrant examine cut edges of flat pressure parts made from forged or rolled plate over 1/2" (13mm) thick and welded to form a corner joint. Before welding, perform this examination on all cut edges, including weld joint preparations, that will be subjected to stress through the thickness. After welding, re-examine all such edges that remain exposed. This applies to bolted flanges, flat heads, tube sheets and rectangular vessels. (See Note 1)		
3 Magnetic particle or liquid penetrant examine weld buildups of base metal when the buildup is intended to restore the required thickness or provide the required taper at a transition section. (See Note 1)		
4 Liquid penetrant examine chrome alloy liner welds that cross the joints in the base metal of a lined vessel.		
5 Liquid penetrant examine all austenitic Chromium-Nickel alloy fillet welds with vessel thickness over 3/4" (19mm) and all 36% Nickel fillet welds regardless of thickness.		
6 For UNF Vessels, liquid penetrant examine non-radiographed non-ferrous welds.		

Note 1:

Unless otherwise specified, magnetic particle or liquid penetrant examinations must be performed before the overload test.

For postweld heat treated vessels or parts, cracks sometimes develop during PWHT so this examination must be performed on accessible areas after PWHT.

The shop may wish to perform an additional examination before shop PWHT to minimize the probability of reheat treating. The cost of repeating PWHT in the field is very high, therefore the additional examination before PWHT is mandatory for field PWHT vessels or parts.

Cross out or mark NA (not applicable) on the checklist any items that do not apply to the specific contract.

Upon completion of all examinations, Construction-Assigned shall send one copy of the completed checklist to Oak Brook, London or Singapore Contract File.

WHEN COMPLETE**FOREMAN:**

Send Construction
Office One Legible
And Work Copies If Any

CONSTRUCTION OFFICE:

Keep One Copy In
Construction Office File
Send Legible Copy To
Oak Brook, London or
Singapore Contract File

REV	BY		CONST. ASSIGNED	ENG. ASSIGNED	MADE BY	DATE	CHKD BY	DATE	CONTRACT NO.	SHEET
	CHKD		Na - Con	OAKBROOK	M5K	4/30/90	SAW	5/1/90	C70708	ND-2
	DATE

CHECK LIST SECTION VIII PRESSURE VESSELS

VACUUM (OUTER) VESSEL

Existing Shell

Material I.D. -

Welder I.D. -

Seq. No.	Description	Applicable Procedure or Instruction	CBI Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only														
				Initial	Date															
1	Record Material I.D.	-----																		
2	Record Welder I.D.	-----																		
3	Remove B/U Bar From North and South Ends of Inner Cyl.	-----	X	DAE	9-2-88															
4	Repair PL Surface by Welding	WPS E316L-15	X	DAE	9-2-88															
5	NDE Repaired Surface	PT8-S1	X	DAE	9-2-88															
6	Attach B/U Bar to North End of Inner Cyl.	WPS E316L-15	X	DAE	9-8-88															
7	Spot NDE Attachment Weld	PT8-S1	X	DAE	9-9-88															
8	Final Inspection	-----	X																	
9	REWELD HEAD TO INNER CYL	WPS E316L-15	X	DAE	9-9-88															
10	NDE HEAD TO INNER CYL (IN & OUT)	PT8-S1	X	DAE	9-9-88															
11	FINAL INSPECTION	-----	X	DAE	9-9-88															
<table border="1"> <tr> <td>Made By TJL</td> <td>Chkd By PDB</td> <td>REV</td> <td>By Chkd</td> <td></td> <td>Contract Number C70708</td> <td>No. CL-2</td> </tr> <tr> <td>Date 8/19/88</td> <td>Date 8/19/88</td> <td></td> <td>Date</td> <td></td> <td></td> <td>Sheet 1 of 1</td> </tr> </table>							Made By TJL	Chkd By PDB	REV	By Chkd		Contract Number C70708	No. CL-2	Date 8/19/88	Date 8/19/88		Date			Sheet 1 of 1
Made By TJL	Chkd By PDB	REV	By Chkd		Contract Number C70708	No. CL-2														
Date 8/19/88	Date 8/19/88		Date			Sheet 1 of 1

Existing Shell

Seal Weld

Material I.D. -

Welder I.D. -

Seq. No.	Description Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	CBI		For A.I. Only
			Init. Req'd "X"	Operation Insp. or Exam Accepted	
				Initial	
1	Record Material I.D.	-----			
2	Record Welder I.D.	-----			
3	Remove B/U Bar from North and South Ends of Inner Cyl.	-----	X	DAE	9-2-88
4	Remove B/U Bar from O.D. of South Head	-----	X	DAE	9-1-88
5	Repair PL Surfaces by Welding	WPS E316L-15	X	DAE	9-7-88
6	NDE Repaired Surfaces	PT8-S1	X	DAE	9-9-88
7	Attach B/U Bar to North End of Inner Cyl.	WPS E316L-15	X	DAE	9-7-88
8	Attach B/U Bar to O.D. of South End Cyl. Shell	WPS E316L-15	X	DAE	9-6-88
9	Spot NDE Attachment Weld	PT8-S1	X	DAE	9-9-88
10	Final Inspection	-----	X	DAE	9-9-88

Made By TJL	Chkd By PDB	REV	By				Contract Number C70708	No. CL-1 Sheet 1 of 1
Date 8/19/88	Date 8/19/88		Chkd					
			Date					

CHECK LIST

PRESSURE VESSEL
(INNER)

Made By

SOUTH HEAD
PRESSURE VESSEL
(INNER)

[illegible]

CBI CHECK LIST

Description			CBI			
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	FIT HEAD TO SHELL	6-15-90				
2	ALIGN HEADS TO BY-PASS TUBE	6-18-90				
3	TACK HEAD IN PLACE	WPS ER308L	X	DAE	6-18-90	
4	CHECK ALIGNMENT		X	DAE	6-15-90	
5	TIG WELD ROOT PASS	WPS ER308L	X	DAE	6-20-90	
6	NDE ROOT PASS	PT 55	X	DAE	6-25-90	
7	WELD OUT JOINT	WPS E316L-15	X	DAE	7-9-90	
8	NDE COMPLETED WELD	PT 55	X	DAE	7-10-90	

Made By PDB	Chkd by	REV	By				Contract Number C70708	No. _____
Date 4/25/90	Date		Chkd					Sheet 3 of _____
			Date					

CBI CHECK LIST

Description				CBI			For A.I. Only
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted			
				Initial	Date		
1	Fit HEAD TO SHELL	b-15-90					
2	ALIGN HEADS TO By-PASS TUBE	b-15-90					
3	TACK HEAD IN PLACE	WPS ER308L	X	DAE	6-15-90		
4	CHECK ALIGNMENT		Y	DAE	6-15-90		
5	TIG WELD ROOT PASS	WPS ER308L	X	DAE	6-20-90		
6	NOE ROOT PASS	PT 55	X	DAE	6-25-90		
7	WELD OUT JOINT	WPS E316L-15	X	DAE	7-9-90		
8	NOE COMPLETED WELD	PT 55	X	DAE	7-10-90		

Made By POB	Chkd by	REV	By				Contract Number C70708	No. _____
Date 4/25/90	Date		Chkd					Sheet 4 of _____
			Date					

CBI CHECK LIST

SOUTH
HEAD

TUBE (INNER)
PRESSURE VESSEL

Description			CBI			For A.I. Only
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		
				Initial	Date	
1	FIT TUBE TO HEAD					
2	ALIGN TUBE TO BY-PASS TUBE					
3	TACK TUBE IN PLACE	WPS ER308L	X	DAE	6-14-90	
4	CHECK ALIGNMENT		X	DAE	6-13-90	
5	TIG WELD ROOT PASS	WPS ER308L	X	DAE	6-14-90	
6	NDE ROOT PASS	PT 55	X	DAE	6-25-90	
7	WELD OUT JOINT	WPS E316L-15	X	DAE	7-9-90	
8	NDE COMPLETED WELD	PT 55	X	DAE	7-10-90	

Made By POB	Chkd by	REV	By			Contract Number C70708	No. _____
Date 4/25/90	Date		Chkd				Sheet 5 of _____
			Date				

CBI CHECK LIST

NORTH
HEAD

TUBE (INNER)
PRESSURE VESSEL

Description			CBI			
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	FIT TUBE TO HEAD					
2	ALIGN TUBE TO BY PASS TUBE					
3	TACK TUBE IN PLACE	WPSE R308 L	X	DAE	6-14-90	
4	CHECK ALIGNMENT		X	DAE	6-13-90	
5	TIG WELD ROOT PASS	WPSE R308 L	X	DAE	6-14-90	
6	NDE ROOT PASS	PT 55	X	DAE	6-25-90	
7	WELD OUT JOINT	WPSE R316 L-15	X	DAE	7-9-90	
8	NDE COMPLETED WELD	PT 55	X	DAE	7-10-90	

Made By POB	Chkd by	REV	By				Contract Number C70708	No. _____
Date 4/25	Date		Chkd					Sheet 6 of _____
			Date					

CBI CHECK LIST

NORTH HEAD
VACUUM VESSEL
(OUTER)

Description			CBI		For A.I. Only
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted	
				Initial	Date
1	RECORD MATERIAL ID	F60653-92034 130455 SAZHD		DAE	6-8-90
2	RECORD WELDER ID				
	DANNY REED = D.R.				
	DUANE A ELSICK = DAE				
	DANIEL J FERGUSON DF				
	WESLEY L GRASS = WLG.				

Made By NDV3	Chkd by	REV	By			Contract Number C70708	No. _____
Date 4-25-90	Date		Chkd				Sheet <u>7</u> of _____
			Date				

CHECK LIST

SOUTH HEAD
VACUUM VESSEL
(OUTER)

[illegible]

CBI CHECK LIST

Description				CBI		
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	FIT HEAD TO SHELL			DAE	7-23-90	
2	ALIGN HEAD TO BY-PASS TUBE			DAE	7-23-90	
3	TACK HEAD IN PLACE	WPS E316L-15	X	DAE	7-24-90	
4	CHECK ALIGNMENT		X	DAE	7-24-90	
5	WELD ROOT LAYER	WPS E316L-15	X	DAE	7-24-90	
6	NOE ROOT LAYER	PTSS	X	DAE	7-25-90	
7	WELD OUT JOINT	WPS E316L-15	X	DAE	8-4-90	
8	NOE COMPLETED WELD	PTSS	X	DAE	8-4-90	

Made By PDB	Chkd by	REV	By				Contract Number C70708	No. _____
Date 4/25/90	Date		Chkd					Sheet 9 of _____
			Date

CHECK LIST

Description

CBI

Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	FIT HEAD TO SHELL			DAE	7-23-90	
2	ALIGN HEAD TO BY-PASS TUBE			DAE	7-23-90	
3	TACK HEAD IN PLACE	WAS E316L-15	X	DAE	7-24-90	
4	CHECK ALIGNMENT		X	DAE	7-24-90	
5	WELD ROOT LAYER	WPSE316L-15	X	DAE	7-24-90	
6	NDE ROOT LAYER	PT 55	X	DAE	7-25-90	
7	WELD OUT JOINT	WPSE316-15	X	DAE	8-3-90	
8	NDE COMPLETED JOINT	PT 55	X	DAE	8-4-90	

Made By POB	Chkd by	REV	By	Contract Number C70708	No. _____
Date 4/25/90	Date		Chkd		Sheet 10 of _____
			Date		

CBI CHECK LIST

SECTION AA VACUUM VESSEL (OUTER)

Description			CBI			For A.I. Only
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		
				Initial	Date	
1	Fit HEAD TO TUBE			DAE	7-23-90	
2	ALIGN TUBE TO BY-PASS TUBE			DAE	7-23-90	
3	TACK HEAD TO TUBE	WPS E316L-15	X	DAE	7-24-90	
4	CHECK ALIGNMENT		X	DAE	7-24-90	
5	WELD ROOT LAYER	WPS E316L-15	X	DAE	7-24-90	
6	NDE ROOT LAYER	PT 5S	X	DAE	7-25-90	
7	WELD OUT JOINT	WPS E316L-15	X	DAE	8-23-90	
8	NDE COMPLETED WELD	PT 5S	X		8-3-90	

Made By DOB	Chkd by	REV	By	Chkd	Date	Contract Number C70708	No. _____
Date 5/1	Date						Sheet 11 of _____

CBI CHECK LIST

BEAM BY-PASS TUBE
SOUTH HEAD
VACUUM VESSEL (OUTER)

Description				CBI		
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	FIT BY-PASS TUBE TO HEAD					
2	ALIGN BY-PASS TUBE TO HEAD AND CENTER TUBE					
3	TACK BY-PASS TUBE	WPS E316L-15	X	DAE	8-1-90	
4	CHECK ALIGNMENT		X	DAE	8-1-90	
5	WELD OUT JOINT	WPS E316L-15	X	DAE	8-2-90	
6	NOE COMPLETED WELD	PT 55	X	DAE	8-3-90	

Made By POB	Chkd by	REV	By	Chkd	By	Chkd	Contract Number C70708	No. _____ Sheet 12 of _____
Date 5/1	Date							

CBI CHECK LIST

BEAM By-PASS Tube
NORTH HEAD
VACUUM VESSEL (OUTER)

Description				CBI		
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	Fit By-Pass Tube to HEAD					
2	Align By-Pass Tube to HEAD AND CENTER TUBE					
3	TACK By-PASS TUBE	WPS E316L-15	X	DAE	8-1-90	
4	CHECK ALIGNMENT		X	DAE	8-1-90	
5	WELD OUT JOINT	WPS E316L-15	X	DAE	8-2-90	
6	NDE COMPLETED WELD	PT.55	X	DAE	8-3-90	

Made By PDB	Chkd by	REV	By	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	Contract Number C 70708	No. _____	
Date 5/1	Date		Chkd		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>
			Date				

CBI CHECK LIST

BEAM BY-PASS Tube SOUTH HEAD PRESSURE VESSEL (INNER)

Description			CBI			
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		For A.I. Only
				Initial	Date	
1	Fit By-Pass Tube TO HEAD					
2	Align By-Pass Tube TO HEAD AND CENTER TUBE					
3	TACK By-Pass Tube	WPS E316L-15	X	DAE	6-14-90	
4	CHECK ALIGNMENT		X	DAE	6-15-90	
5	WELD OUT JOINT	WPS E316L-15	X	DAE	6-20-90	
6	NOE COMPLETED WELD	PT 55	X	DAE	7-10-90	

Made By POB	Chkd by	REV	By	Contract Number	No. _____
Date 5/1	Date		Chkd	C70708	Sheet 14 of _____
			Date

BEAM BY-PASS TUBE
NORTH HEAD
PRESSURE VESSEL (INNER)

Description				CBI		For A.I. Only
Seq. No.	Operation, Inspection, or Examination to be Completed	Applicable Procedure or Instruction	Init. Req'd "X"	Operation Insp. or Exam Accepted		
				Initial	Date	
1	Fit By-Pass Tube To HEAD					
2	ALIGN By-Pass Tube To HEAD AND CENTER TUBE					
3	TACK By-Pass Tube	WPS E316L-15	X	DAE	1-14-90	
4	CHECK ALIGNMENT		X	DAE	6-15-90	
5	WELD OUT JOINT	WPS E316L-15	X	DAE	6-20-90	
6	NDE COMPLETED WELD	PT 55	X	DAE	7-10-90	

Made By POB	Chkd by	REV	By	Contract Number C70708	No. _____
Date 5/1	Date		Chkd		Sheet 15 of _____
			Date		

WELD PROCEDURES

1. WPS E308L
2. WPS ER308L/880M

NORTH HEAD
AND
SOUTH HEAD

45° BEVEL TO THE OUTSIDE

WELD BUILD UP OF EDGES WHERE MARKED - MAX OF 3/8"

NDE TO RECORD ACTUAL LOCATIONS OF WELD BUILDUPS WHICH WERE PT'd

SEQ	OPERATION	SEQ	OPERATION	SEQ	OPERATION
1	AI Review Checklist	5	Final Weld Check		
2	Check Material ID	6	PT ALL BUILD UP AREAS		
3	Check Weld Procedure	7	QA Final Review		
4	Record Welder ID				

REF. MARK	These examinations & operations were performed, results evaluated and accepted to applicable procedures.											See N C Control List No.
	1 Weld Procedure Spec.	2 Mat. ID Recorded	3 Record Welder ID	4 Welding Checked	5 PT SW REV. 2 PT 8 REV. 3	6	7	8	9	10	11	
A NORTH	☒	☒	424	☒	N/A							
B SOUTH NORTH	☒	☒	424	☒	N/A							
	☐	☐		☐								
	☐	☐		☐								

CBI				Reviewed by AI		CONTRACT NO.	
ASSEMBLY INSPECTED & ACCEPTED BY:				<u>I. M. M.</u>		902568	
INSPECTOR <u>I. M. M.</u> DATE <u>3-8-90</u>				AI		Date	
				Reviewed by QA Manager		NO. 61 P	
				N/A		SHT. 1 OF 1	
				Name		Date	
Made By	Chkd By	REV	By	APP'D			
JJJ	JJJ						
Date	Date	Date	Date				
2/20/90	2/23/90

SHOP CHECK LIST

WELD PROCEDURES

1. WPS E308L
2. WPS ER308L/880M

1. FIT BACK UP BARS TO HEADS
2. WELD OUT BACK UP BAR SPLICES
3. WELD BACK UP BARS TO HEADS
4. GOUGE/GRIND EXISTING BACK UP BAR FROM THE HEADS

SBQ	OPERATION	SBQ	OPERATION	SBQ	OPERATION
1	AI Review Checklist	5	Final Weld Check		
2	Check Material ID	6	QA Final Review 1-2-8-90		
3	Check Weld Procedure				
4	Record Welder ID				

REF. MARK	These examinations & operations were performed, results evaluated and accepted to applicable procedures.											See N C Control List No.
	1 Weld Procedure Spec.	2 Mat. ID Recorded	3 Record Welder ID	4 Welding Checked	5	6	7	8	9	10	11	
A NORTH	1	1-2-90 PJK	SSI	3-3-90 PJK								
B NORTH	1	1-2-90 PJK	SSI	3-3-90 PJK								
C SOUTH	1	1-2-90 PJK	SSI	3-3-90 PJK								
D SOUTH	1	1-2-90 PJK	SSI	3-3-90 PJK								

CBI				Reviewed by AI <u>L. Hearn</u> 2-23-90 AI Date				CONTRACT NO. 902568			
ASSEMBLY INSPECTED & ACCEPTED BY:				Reviewed by QA Manager N/A N/A Name Date				NO. 81 P SHT. 2 OF 2			
INSPECTOR <u>[Signature]</u> DATE <u>3-8-90</u>											
Made By JJJ	Chkd By JBL	REV	By	APP'D							
Date 2/20/90	Date 2-23-90		Date

SHOP CHECK LIST

WELD PROCEDURES

1. WPS E308L
2. WPS ER308L/880M

A

1. STRAP CYLINDER AT BOTH ENDS AND CENTER
2. REMOVE EXISTING BACK UP BARS
3. CUT VERT SEAM
4. TRIM CYLINDER (determine amount after strapping backup bars on the heads)
5. RE-ROLL CYLINDER
6. BEVEL AND WELD LONG SEAM

SEQ	OPERATION	SEQ	OPERATION	SEQ	OPERATION
1	AI Review Checklist	5	Final Weld Check		
2	Check Material ID	6	QA Final Review		
3	Check Weld Procedure				
4	Record Welder ID				

These examinations & operations were performed, results evaluated and accepted to applicable procedures.												See N C Control List No.
REF. MARK	1 Weld Procedure Spec.	2 Matl. ID Recorded	3 Record Welder ID	4 Welding Checked	5	6	7	8	9	10	11	
A	☒	☒ 11/18/90	☒ 522	☒ 2-28-90	☐	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

CBI				Reviewed by AI <u>P. Hedden</u> <u>2-22-90</u> AI Date				CONTRACT NO. 902568												
ASSEMBLY INSPECTED & ACCEPTED BY:				Reviewed by QA Manager N/A N/A Name Date				NO. 61 P SHT. 1 OF 2												
INSPECTOR <u>[Signature]</u> DATE <u>3-8-90</u>																				
Made By JJJ	Chkd By JBR	REV	By	APP'D	By	APP'D	By	APP'D	By	APP'D	By	APP'D								
Date	Date		Date										Date	Date	Date	Date	Date	Date	Date	Date
2/20/90	2/20/90																			

CBI SHOP CHECK LIST

WELD PROCEDURES

1. WPS E316L-15

A

1. GOUGE/REMOVE EXISTING WELD (LONG SEAM)
2. CLEAN AND REWELD LONG SEAM

SEQ	OPERATION	SEQ	OPERATION	SEQ	OPERATION
1	AI Review Checklist	5	Final Weld Check		
2	Check Material ID	6	QA Final Review <u>BR5-17-90</u>		
3	Check Weld Procedure				
4	Record Welder ID				

These examinations & operations were performed, results evaluated and accepted to applicable procedures.

REF. MARK	1 Weld Procedure Spec.	2 Matl. ID Recorded	3 Record Welder ID	4 Welding Checked	5	6	7	8	9	10	11	See N C Control List No.
A	☒	☒ <u>N/A</u> <u>5-17-90</u>	☒ <u>29</u> <u>5-16-90</u> <u>D/L</u>	☒	☐	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
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CBI ASSEMBLY INSPECTED & ACCEPTED BY: INSPECTOR <u>[Signature]</u> DATE <u>5-16-90</u>				Reviewed by AI <u>[Signature]</u> <u>5-16-90</u> AI Date		CONTRACT NO. 902568	
Reviewed by QA Manager N/A N/A Name Date				NO. <u>61 P</u> SHT. <u>1</u> OF <u>1</u>			
Made By JJJ	Chkd By JBR	By APP'D	By APP'D	By APP'D	By APP'D		
Date 5/16/90	Date 5/16/90	Date	Date	Date	Date		