Energy Industries of Ohio

Contract # S005242-F

Modular Coil Winding Form

A-2 Documentation Package

10/11/06

This A-2 Documentation consists of:

Part 1

Final documentation package Metal Tek Intl. – Pages 3-63
Latest revision 7/20/2006
Foundry documentation – 10/11/06 note additional info located in appendix

Part 2

Final documentation package Major Tool - Pages 64 - 117
Latest revision 8/29/2006
Machine shop documentation

NOTE - MTM – new EIO TOC is on page 65. Use this as a reference for finding files in MTM portion of Doc package.
on 10/11/06 …..

Part 3

Metal Tek radiographic films from part 1 (shipped to PPPL)

Major Tool radiographic films from part 2 (shipped to PPPL)

Part 4 - Appendix

Metal Tek CA-1347 for thin walled condition on A style MCWF – added Page 119

Energy Industries of Ohio

Contract # S005242-F

Modular Coil Winding Forms

A-2 Documentation Package

Part 1 – Metal Tek International
Casting Data Package

7/20/06

**Note – Document #'s listed in the TOC (page 4) are not necessarily the same as the number hand written on the top of the document. Please use page # to find relevant document.

A-2 Documentation Package

List of Documents 7-20-06

MetalTek INTERNATIONAL

Carondelet Division

8600 Commercial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2
Pattern Number MCWF-A2
CAF Metal Designation CF8MNMnMod
Material Spec CF8MNMnMOD
Weighted average of 3 heats – 31032(42%),31042(22%),31045(36%) Total Weight 31570 lbs.
Date: 12/13/05

Cert Number 175410-1
Pour Date 9/26/2005

Element	Min	Actual	Max
C	0.04	0.04	0.07
MN*	2.3	2.9	2.8
SI	0.0	0.4	0.7
CR	18.0	18.3	18.5
NI	13.0	13.1	13.5
MO	2.1	2.3	2.5
P	0.0	0.034	0.035
S	0.0	0.012	0.025
N	0.24	0.25	0.28

*Over specification, see CA 1323.

PRODUCT ANALYSIS

Results of spectrometer analysis of cast on test bar after spectrometer preventive maintenance performed and at Wisconsin Centrifugal.

Element	CAF after PM			WC Analysis		
	Z1	Z2	Z3	Z1	Z2	Z3
SI	0.4	0.6	0.4	0.4	0.6	0.4
MN	2.7	2.5	2.7	2.5	2.3	2.5
CR	18.2	18.3	18.1	18.0	18.2	18.1
NI	13.0	13.1	13.0	13.2	13.3	13.2
MO	2.3	2.3	2.3	2.3	2.3	2.3
P	0.035	0.032	0.036	0.034	0.030	0.036
S	0.012	0.012	0.012	0.026	0.024	0.029

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

MetalTek INTERNATIONAL

Carondelet Division

8600 Commercial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2 Heat Number 29198 Pour Date 4/28/2005

Pattern Number SE-141-073 COIL C SHIM (-3 thru -6 Parts) Cert Number S73220-2 and
SE-141-033 COIL A SHIM (-1 thru -6 Parts) Cert Number S76220-1

CAF Metal Designation CF8MNMnMod

Material Spec CF8MNMN MOD

Revised 8/16/05

Element	Min	Actual	Max
C	0.040	0.070	0.070
CR	18.000	18.100	18.500
MN	2.300	2.970	2.800
MO	2.100	2.450	2.500
N	0.240	0.255	0.280
NI	13.000	13.120	13.500
P*	0.000	0.013	0.015
S*	0.000	0.010	0.015
SI	0.000	0.700	0.500

MN & SI previously reported on CA 1308 and were accepted.

*P & S taken from test from heat parts were poured from and analyzed by wet chemistry, ASTM E1019-03 for sulfur and Gravimetric for phosphorous.

This report covers the eleven castings poured from heat 29198. Only parts listed above however will be shipped for this order. Each casting has a unique number stamped in the part adjacent to the pattern number to differentiate the part and subsequent reporting that will be traced to the casting.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

PRODUCT CONFORMANCE REPORT

LINCOLN® ELECTRIC

Product	LNM 4455	Size(s) mm	1,2
Class.	EN 12072-99: G 20 16 3 Mn L	Lot/Batch	3018513/78308
		Item No.	692129
Customer	EUROWELD MOORESVILLE N.C. 28117 UNITED STATES	Quantity	105,0 KG
		Customer ref.	P.O.: 05 - 46
		LSW Order No.	SD427896

Chemical analysis (%) EN10204 2.2

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	N
0,01	**0,5**	**7,3**	**0,015**	**0,001**	**20,3**	**15,4**	**2,9**	**0,1**	**0,19**

Mechanical tests, all weld metal EN10204 2.2

Tensile testing

Cond.	Temp. °C	Rp0.2 N/mm2	Rm N/mm2	A5 %
AW	**RT**	**407**	**623**	**41**

Impact testing

Cond.	Temp.1 °C	Av1 J
AW	**-196**	**67**

Additional information EN10204 2.2

Other tests

Remarks

Impact testing (individual values): 70J - 65J - 67J.

The product identified above has been manufactured, tested and supplied in compliance with a Quality Assurance Programme that fulfils the requirements of EN 29000/ ISO 9000/BS 5750 or similar standard.
We herewith certify that the product complies with the above-mentioned standards.
Certified ISO 9001:2000.

Company	Issued by	Function	Date	Cert.No.
Lincoln Smitweld B.V.	**P. Nagels**	**QA Administrator**	**22/03/2005**	**3018513/7830**

Registered Office *Post address* *Telephone:* *Fax:*
Nieuwe Dukenburgseweg 20 *P.O. Box 253* 31 24 3522271 31 24 3522200
6534 AD NIJMEGEN *6500 AG Nijmegen*

V22Uvo3

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2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

August 16, 2005
Lab No. 05P-2532
P.O. No. 21324

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): LNM 4455, LINCOLN LOT 3018513/78308

SPECIFICATION: ASTM A 370-03a

SPECIMEN TYPE: "A" Vee Notch

SPECIMEN SIZE: 10 mm x 10 mm

TEMPERATURE OF TEST: 293°K

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
LNM4455-7	104	0.085	100
LNM4455-8	106	0.093	100
LNM4455-9	99	0.084	100
Average	103	0.087	100

Identification of tested specimen provided by client.

Karl Schmitz, Director
Materials Testing

KS/tlv

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

August 16, 2005
Lab No. 05P-2532
P.O. No. 21324

Attention: CHUCK RUUD

REPORT OF MECHANICAL TESTS

SAMPLE ID: LNM 4455, LINCOLN LOT 3018513/78308

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length) in.	Elongation (2.0" Gage Length) %	Modules of Elasticity
LNM4455	0.1932	0.0866	55.2	65200	95200	0.76	38.0	23.4

Round, reduced section tensiles

Yield taken at .2% offset

Tested in accordance with ASTM A 370-03a

Identification of tested specimens provided by the client.

Karl Schmitz, Director
Materials Testing

KS/tlv

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

October 5, 2005
Lab No. 05P-3096
P.O. No. 21324

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): WELD PLATE- 3018513 / 78308

SPECIFICATION: ASTM A 370-03a

SPECIMEN TYPE: "A" Vee Notch

SPECIMEN SIZE: 10 mm x 10 mm

TEMPERATURE OF TEST: -320°F

REQUIREMENTS: minimum 35 ft / lbs.

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
3018513/78308-1	48	0.033	50
3018513/78308-2	65	0.045	50
3018513/78308-3	48	0.033	50
Average	54	0.037	50

Identification of tested specimen provided by client.

Karl Schmitz, Director
Materials Testing

KS/tlv

Westmoreland Mechanical Testing & Research, Inc.
P.O. Box 388
Westmoreland Drive
Youngstown, Pa. 15696-0388 U.S.A.
Telephone: 724-537-3131 Fax: 724-537-3151
Website: www.wmtr.com
WMT&R is a technical leader in the material testing industry.

ACCREDITED
621-01 & 621-02

Accredited Nadcap Materials Testing Laboratory

October 18, 2005

CERTIFICATION

Section 1 of 1

WMT&R Report No. 5-35979
Requisition No. 4972

MetalTek International
The Carondelet Division
8600 Commercial Blvd.
I-55 Industrial Park
Pevely, MO 63070-1528

Attention: Jim Galaske

Subject: All processes, performed upon the material as received, were conducted at WMT&R, Inc. in accordance with the WMT&R Quality Assurance Manual, Rev. 9, dated 4/1/2000.
The following tests were performed on this order: TENSILE

TENSILE RESULTS: ASTM E21-03a
SOAK TIME: 5 Minutes
SPEED OF TESTING: 0.0030 in./in./min., 0.0500 in./min./in.
MATERIAL: METALTEK CF8MNMNMOD

DISPOSITION: Report

Specimen ID	TestLog Number	Temp. °F	UTS ksi	0.2% YS ksi	Elong %	RA %	Modulus Msi	Ult. Load lbf	0.2% YLD. lbf	Orig. Dia. (in.)	Final Dia. (in.)	4D Orig GL (in.)	4D Final GL (in.)	Orig. Area (sq. in.)	Machine Number	A\U\R
3018513/78308	C54936	-320	184.9	123.7	33	33	32.8	18470	12350	0.3566	0.2926	1.40	1.86	0.09987403	M9	R

A\U\R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

Roy E. Starr/Matt Wojton
Technical Services Manager / Tensile Supervisor

10-18-05
October 18, 2005

Westmoreland Mechanical Testing & Research, Inc.
P.O. Box 388
Westmoreland Drive
Youngstown, Pa. 15696-0388 U.S.A.
Telephone: 724-537-3131 Fax: 724-537-3151
Website: www.wmtr.com
WMT&R is a technical leader in the material testing industry.

ACCREDITED
621-01 & 621-02

Accredited Nadcap Materials Testing Laboratory

December 28, 2005

CERTIFICATION

Section 1 of 1

WMT&R Report No. 5-40960
P.O. No. 19386
Requisition No. 7743

MetalTek International
The Carondelet Division
8600 Commercial Blvd.
I-55 Industrial Park
Pevely, MO 63070-1528

Attention: Jim Galaske

Subject: All processes performed upon the material as received were conducted at WMT&R, Inc. in accordance with the WMT&R Quality Assurance Manual, Rev. 9, dated 4/1/2000.
The following tests were performed on this order: TENSILE

TENSILE RESULTS: ASTM E21-05

Requirements: UTS ksi (Min 95\Max ---) 0.2% YS ksi (Min 72\Max ---) 4D Elong. % (Min 32\Max ---) Modulus Msi (Min 21\Max ---)

SOAK TIME: 5 Minutes

SPEED OF TESTING: 0.003 in./in./min., 0.05 in./min./in.

MATERIAL: Metaltek CF8MNMnMOD

DISPOSITION: Acceptable

Specimen ID	TestLog Number	Temp. °F	UTS ksi	0.2% YS ksi	Elong %	RA %	Modulus Msi	Ult. Load lbf	0.2% YLD. lbf	Orig. Dia. (in.)	Final Dia. (in.)	4D Orig GL (in.)	4D Final GL (in.)	Orig. Area (sq. in.)	Machine Number	A\U\R
A2-Z1	C90232	-320	164.0	99.7	59	55	24.9	15870	9645	0.3510	0.2344	1.40	2.22	0.09676184	M9	A
A2-Z2	C90233	-320	166.8	100.3	56	53	25.1	16160	9713	0.3512	0.2419	1.40	2.19	0.09687214	M9	A
A2-Z3	C90234	-320	165.2	99.8	54	51	25.9	16010	9674	0.3513	0.2462	1.40	2.16	0.09692731	M9	A

A\U\R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

Customer supplied requirements.

Roy E. Starr\Matt Wojton 12-28-05
Technical Services Manager Tensile Supervisor December 28, 2005

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

November 3, 2005
Lab No. 05P-3331
P.O. No. 21324

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): A2- COIL, Z1, Z2, Z3

SPECIFICATION: ASTM A 370-03a

SPECIMEN TYPE: "A" Vee Notch

SPECIMEN SIZE: 10 mm x 10 mm

TEMPERATURE OF TEST: 77°K

REQUIREMENTS: 35 ft / lbs

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z1-4	81	0.051	40
Z1-5	71	0.036	50
Z1-6	110	0.028	60
Average	87	0.038	50
SAMPLE ID	**FOOT LBS.**	**LATERAL EXPANSION**	**% SHEAR**
Z2-4	75	0.031	40
Z2-5	74	0.054	50
Z2-6	78	0.029	30
Average	76	0.038	40
SAMPLE ID	**FOOT LBS.**	**LATERAL EXPANSION**	**% SHEAR**
Z3-4	82	0.048	40
Z3-5	73	0.046	50
Z3-6	67	0.031	40
Average	74	0.042	43

Identification of tested specimen provided by client.

Karl Schmitz, Director
Materials Testing

ACCREDITED
Certificate No. 0397-01
Certificate No. 0397-02

MEMBER ACIL

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

November 3, 2005
Lab No. 05P-3331
P.O. No. 21324

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): A2- COIL, Z1, Z2, Z3

SPECIFICATION: ASTM A 370-03a

SPECIMEN TYPE: "A" Vee Notch

SPECIMEN SIZE: 10 mm x 10 mm

TEMPERATURE OF TEST: + 293°

REQUIREMENTS: ~~60~~ 50 ft / lbs

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z1-4	180	0.111	90
Z1-5	158	0.076	80
Z1-6	174	0.096	80
Average	171	0.094	83
SAMPLE ID	**FOOT LBS.**	**LATERAL EXPANSION**	**% SHEAR**
Z2-4	160	0.091	90
Z2-5	204	0.066	90
Z2-6	170	0.092	90
Average	178	0.083	90
SAMPLE ID	**FOOT LBS.**	**LATERAL EXPANSION**	**% SHEAR**
Z3-4	140	0.096	90
Z3-5	140	0.076	90
Z3-6	148	0.056	90
Average	143	0.076	90

Identification of tested specimen provided by client.

Karl Schmitz, Director
Materials Testing

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

November 3, 2005
Lab No. 05P-3331
P.O. No. 21324

Attention: Chuck Ruud

REPORT OF MECHANICAL TESTS

SAMPLE ID: A-2 COIL, Z1, Z2, Z3

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Modulus of Elasticity	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length) in.	Elongation (2.0" Gage Length) %
Z1	0.1948	0.1007	48.3	22.5 Msi	44400	83200	1.13	56.5
Z2	0.1924	0.0755	60.8	21.7 Msi	42100	83700	1.14	57.0
Z3	0.1987	0.0774	61.0	22.3 Msi	43300	84300	1.10	55.0

Round, reduced section tensiles

Yield taken at .2% offset

Tested in accordance with ASTM A 370-03a

Identification of tested specimens provided by the client.

Karl Schmitz, Director
Materials Testing

KS/tlv

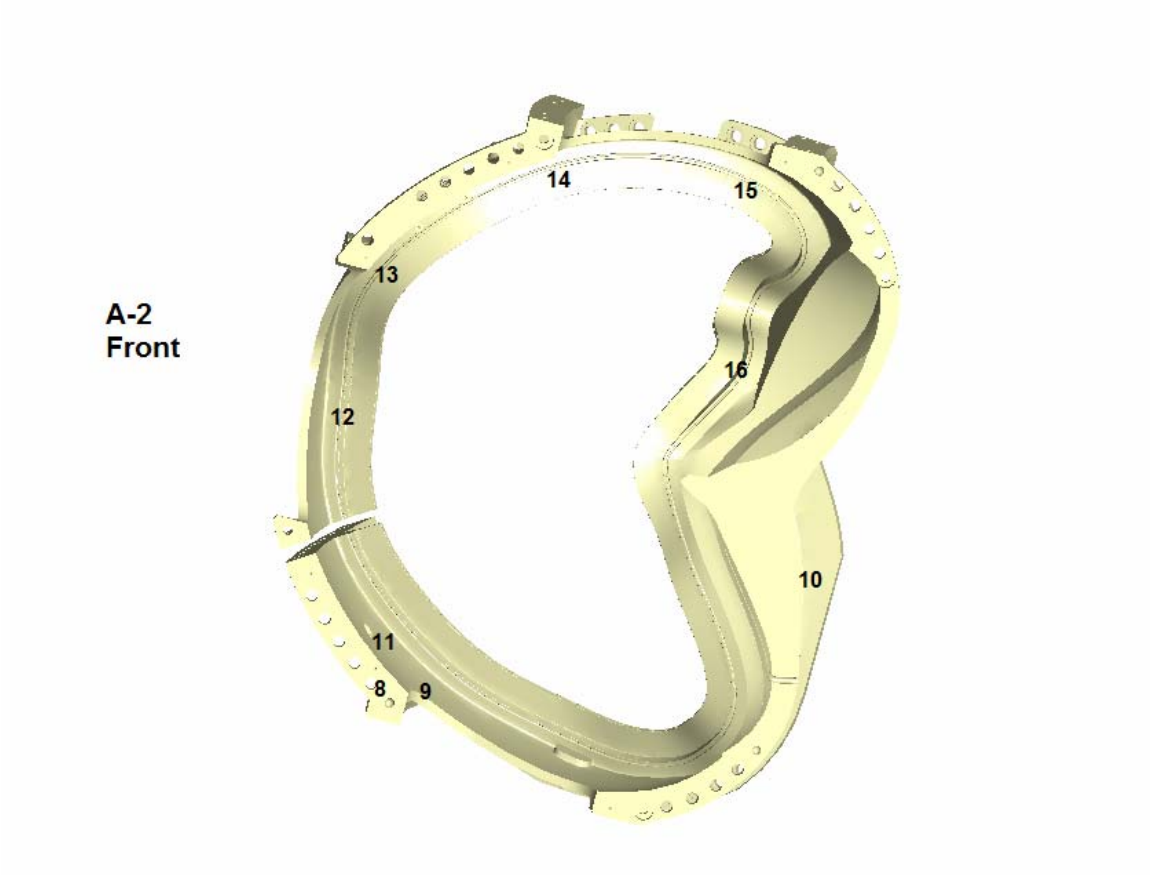
A-2 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10^2 inches

Defect Number	Drawing View	Length (inches)	Width (inches)	Depth (inches)
1	Right	4 ¾	2	1⅛
2	Right	2 ½	2 ⅞	1
3	Right	16	3	Thru
4	Right	23	2 ½	2
5	Right	6 ¾	2 ¾	2 ½
6	Right	5 ¾	3 ½	1 ½
7	Right	11	1 ⅛	¼
8	Front	2 ¾	3	2
9	Front	4 ¾	2 ¾	2
10	Front	2 ½	2 ½	1
11	Front	13	3	2
12	Front	8	3	2
13	Front	9 ¼	2 ½	Thru
14	Front	6	2 ½	1
15	Front	7 ¾	6 ½	½
16	Front	11	4 ½	1
17	Right	4 ½	4	1
18	Right	4 ¼	2 ½	Thru
19	Right	3 ⅞	3 ¾	1 ⅛
20	Back	4	3 ¾	1 ⅛
21	Back	29	4	Thru
22	Back	7	1 ¾	1
23	Back	6	3 ¼	1 ½
24	Back	13 ¾	1 ½	1
25	Back	13 ½	1 ½	¾
26	Back	10	1 ¾	1 ½
27	Back	10 ½	1	¾
28	Back	5	3	1 ¼

A-2 Coil Weld Map – Metal Tek

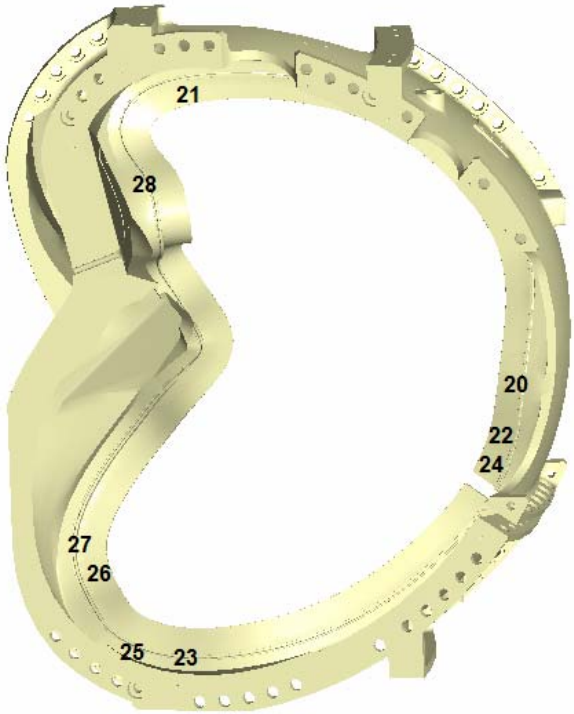
Map of all major welds exceeding 20% of wall, over 1 inch or over 10^2 inches



A-2 Coil Weld Map – Metal Tek

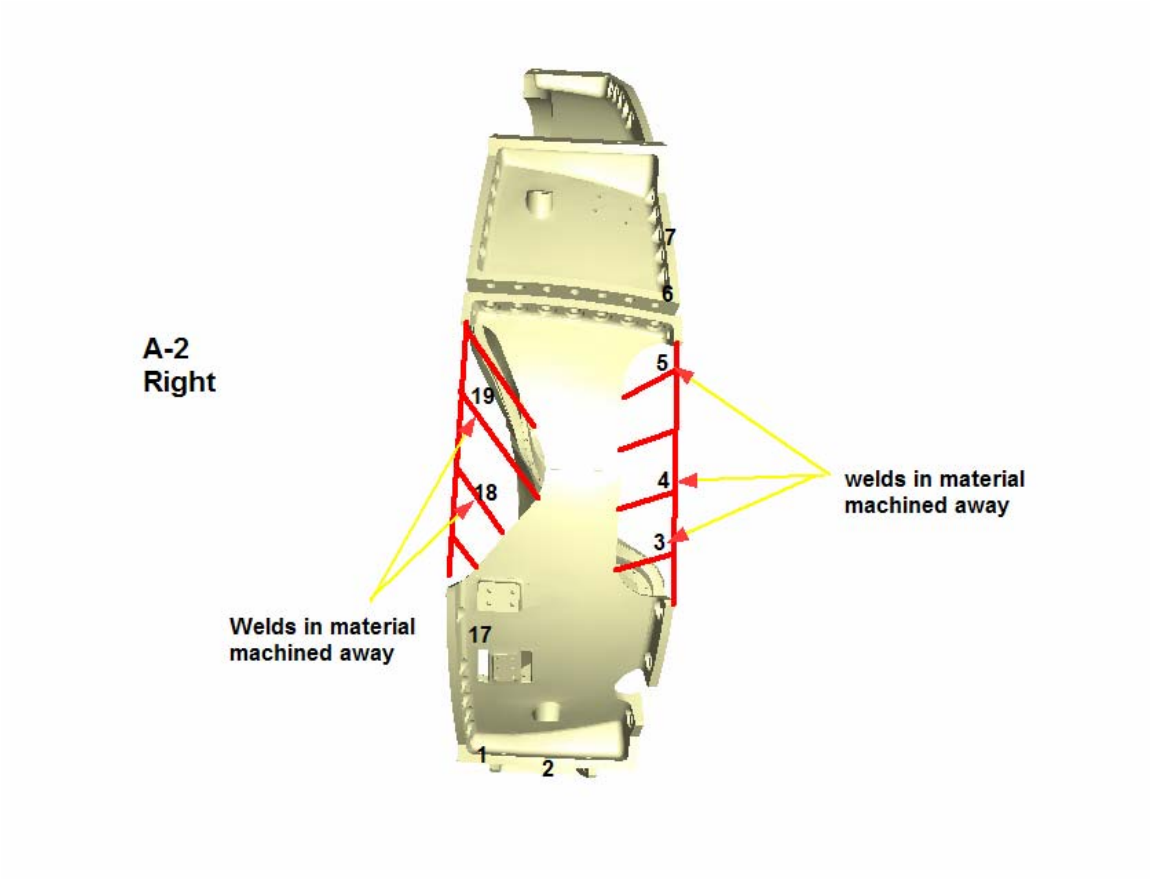
Map of all major welds exceeding 20% of wall, over 1 inch or over 10^2 inches

A-2
Back



A-2 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10^2 inches



TEAM COOPERHEAT-MQS, INC.

CERTIFIED RADIOGRAPHIC INSPECTION REPORT

FORM 6061-RT- 002 Rev.2

5512 W. State St. Milwaukee, WI 53208 Tel:(414)771-3060 Fax:(414)771-9481 (800)818-6403 www.cooperheat-mqs.com

CUSTOMER

NAME METAL TEK INTERNATIONAL

ADDRESS 8600 COMMERCIAL BLVD

CITY PEVELY STATE MO ZIP 63070

DATE 10/07/2005

WORK ORDER NO. 361-02661

P.O. NUMBER 22409

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Dross Inclusion	Dross or Slag	Incomplete Penetration: Porosity	Lack of Fusion	Shrinkage: Gas	Cracks	Hot Tears	Under cut	Film Artifacts: Surface	REMARKS
MCWFA-2	2	1-2	✓										✓	
		2-3		R							R			
Z103990		3-4	✓										✓	
HT# M175410		4-5	✓											
CO 40851		5-6	✓						2-3					
		6-7	✓						2-3					
		7-8		R					4					
		8-9	✓						2					
		9-10	✓											
		10-11	✓						1-2					
		11-12	✓		2									
		12-13		R							R			
		13-14	✓		2					1-2				
		V15	✓											
		16-17	✓											
		17-18	✓											
		18-19	✓											
		19-20	✓											
		20-21	✓											
		21-22		R							R		✓	
		22-23	✓										✓	
		23-24		R							R			
		24-25		R							R			
		25-26	✓						2					
		26-27	✓											

NO. ACCEPTED 0 NO. REJECTED 1

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS

REVIEWER John Petroske

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

TEAM COOPERHEAT-MQS, INC.

CERTIFIED RADIOGRAPHIC INSPECTION REPORT

FORM 6061-RT- 002 Rev.2

5512 W. State St. Milwaukee, WI 53208 Tel:(414)771-3060 Fax:(414)771-9481 (800)818-6403 www.cooperheat-mqs.com

CUSTOMER

NAME METAL TEK INTERNATIONAL

ADDRESS 8600 COMMERCIAL BLVD

CITY PEVELY STATE MO ZIP 63070

DATE 10/07/2005

WORK ORDER NO. 361-02661

P.O. NUMBER 22409

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Incomplete Penetration: Rejected	Dross Inclusion	Dross or Slag	Porosity	Lack of Fusion	Gas	Shrinkage: Cracks	Hot Tears	Under cut	Film Artifacts: Surface		REMARKS
MCWFA-2	1	27-28	~~XOM~~	R						R		R			
		28-29	✓										✓		
Z103990		29-1	✓										-		
HT# M175410		30-31	✓										✓		
CO 40851		31-32		R							R				
		32-33	✓												
		33-34	✓										✓		
		34-35	✓		1										
		35-36		R	5						R				
		37-38		R							R				
		38-39	✓		1										
		39-40	✓												
		41-42	✓										✓		
		43-44		R	4										
		44-45	✓						1						
		45-46	✓												
		46-47	✓										✓		
		47-48	✓												
		48-49	✓												
		50-51	✓										✓		
		51-52	✓											✓	
		52-53		R							R				
		54-55	✓						1						
		55-56		R							4	R			
		57-58	✓												

NO. ACCEPTED 40 NO. REJECTED 1

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS

REVIEWER John Petroske

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

TEAM COOPERHEAT-MQS, INC.

CERTIFIED RADIOGRAPHIC INSPECTION REPORT

FORM 6061-RT- 002 Rev.2

5512 W. State St. Milwaukee, WI 53208 Tel:(414)771-3060 Fax:(414)771-9481 (800)818-6403 www.cooperheat-mqs.com

CUSTOMER

NAME METAL TEK INTERNATIONAL

ADDRESS 8600 COMMERCIAL BLVD

CITY PEVELY STATE MO ZIP 63070

DATE 10/07/2005

WORK ORDER NO. 361-02661

P.O. NUMBER 22409

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Accep-table	Rejected	Dross or Slag Inclusion	Incomplete Penetration: Porosity	Lack of Fusion	Shrinkage: Gas	Cracks	Hot Tears	Under cut	Film Artifacts: Surface		REMARKS
MCWFA-2	1	58-58A-59	✓							1				
		59-60	✓		1									
Z103990		60-61	✓							2				
HT# M175410		61-62	✓							2				
CO 40851		62-63		R							R			
		63A-63A		R							R			
		63-64	✓									✓		
		64-65	✓											
	65	65A-66	✓									✓		
		66-67		R					R			✓		
		67-68		R						4				
		68-69		R				2		4				
		69-70	✓											
		70-71	✓							1				
		71-72		R						4				
		72-73		R				4						
		73-74	✓											
		74-75	✓					2						
		75-76	✓											
		76-77		R	3-4			4						
		77-78	✓											
		78-79	✓											
		79-80	✓											
		80-81	✓									✓		
		81-82	✓		2									

NO. ACCEPTED 4 NO. REJECTED 1

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS

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ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Incomplete Penetration: Inclusion	Dross or Slag	Porosity	Lack of Fusion	Shrinkage: Gas	Cracks	Hot Tears	Under cut	Surface	Film Artifacts	REMARKS
MCWFA-2	1	82-83	✓		2										
		84-85	✓											✓	
Z103990		85-86	✓											✓	
HT# M175410		86-87	✓												
CO 40851		87-88A	✓												
		88-89	✓										✓		
		89-90	✓										✓		
		90-91		R					4				✓		
		92-93	✓												
		94-95		R							4		✓		
		95-96		R							4-5		✓		
		96-97		R							5		✓		
		97-98	✓								2-3		✓		
		98-99		R							4		✓		
		99-100		R					4		3-4		✓		
		100-101	✓						3		3		✓		
		102-103		R					4						
		103-104	✓								3				
		104-105	✓								3				
		106-107	✓												
		107-108	✓												
		108-109		R	5						2				
		109-110	✓								2				
		111-112	✓												
		112-113	✓								1				

NO. ACCEPTED 0

NO. REJECTED 1

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS

REVIEWER

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

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P.O. NUMBER 22409

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Inclusion	Dross or Slag	Porosity	Incomplete Penetration: Lack of Fusion	Gas	Cracks	Shrinkage	Hot Tears	Under cut	Surface	Film Artifacts	REMARKS
MCWFA-2	1	113-114	✓								1					
		115-116	✓													
Z103990		116-117	✓													
HT# M175410		118-119	✓								1					
CO 40851		119-120	✓						2							
		121-122	✓													
		122-123	✓											✓		
		123-124	✓		2											
		124-125		R								R				
		125-126		R								R				
		126-127	✓													
		127-128	✓									1				
		128-129		R								R				
		130-131	✓													
		131-132	✓						2							
		V133	✓													
		V134	✓													

NO. ACCEPTED 0 NO. REJECTED 1

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS

REVIEWER John Petroske

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

TEAM COOPERHEAT-MQS, INC.

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CUSTOMER

NAME METAL TEK INTERNATIONAL

ADDRESS 8600 COMMERCIAL BLVD

CITY PEVELY STATE MO ZIP 63070

DATE 12/19/2005

WORK ORDER NO. 361-02763

P.O. NUMBER Chuck Rudd

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Incomplete Penetration: Inclusion	Dross or Slag	Porosity	Lack of Fusion	Shrinkage: Gas Cracks	Hot Tears	Under cut	Film Artifacts: Surface		REMARKS
MCWFA-2		2-3	✓										✓	
	(R1)	7-8	✓						2					
Z103990		12-13	✓						2					
HT# M175410		21-22	✓											
CO 40851		23-24	✓						1					
		24-25	✓										✓	
		31-32	✓											
		35-36	✓											
		37-38	✓											
		43-44	✓											*
		52-53	✓											
		55-56	✓											
		62-63	✓										✓	
		63A-63A	✓											
		66-67	✓										✓	
		67-68	✓									✓		
		68-69	✓									✓		
		71-72	✓						1-2		1	✓		
		72-73	✓									✓		
		76-77	✓											
		90-91	✓						1			✓		
		94-95	✓											
		95-96	✓											
		96-97	✓											
		99-100	✓						2					

NO. ACCEPTED 1 NO. REJECTED 0

COMMENTS * Extra shot Taken for densities.

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

REVIEWER John Petroske

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

TEAM COOPERHEAT-MQS, INC.

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DATE 12/19/2005

WORK ORDER NO. 361-02763

P.O. NUMBER Chuck Rudd

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Inclusion	Dross or Slag	Incomplete Penetration: Porosity	Lack of Fusion	Shrinkage: Gas	Cracks	Hot Tears	Under cut	Film Artifacts: Surface		REMARKS
MCWFA-2		98-99	✓						1						
	(R1)	102-103	✓						2-3						
Z103990		108-109	✓												
HT# M175410		124-125	✓										✓		
CO 40851		125-126	✓										✓		
		128-129	✓												

NO. ACCEPTED 1 NO. REJECTED 0

COMMENTS

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

REVIEWER John Petroske

CERTIFIED NDT LEVEL (RT)

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DATE 12/19/2005

WORK ORDER NO. 361-02763

P.O. NUMBER Chuck Rudd

XRAY X

GAMMA

PROCEDURE SPECIFICATION ASTM E94-93

ACCEPTANCE CRITERIA MSS-SP-54-1999

SHEET ____ OF ____

PART NUMBER	Serial No	View	No Apparent Indications: Acceptable	Rejected	Inclusion	Dross or Slag	Incomplete Penetration: Porosity	Lack of Fusion	Shrinkage: Gas	Cracks	Hot Tears	Under cut	Surface	Film Artifacts	REMARKS
MCWFA-2		7475	✓												
		9293	✓												
Z103990															
HT# M175410	*	2526	✓						2						
CO 40851	*	26-27	✓												

NO. ACCEPTED 1

NO. REJECTED 0

MQS TECH. NO. 12970 SHT. REV.

CUST. RSS NO. SHT. REV.

COMMENTS * Did No Reshoot 25-29, 26-27. These views Originaly had Large Chill Blocks in These views. They Have since Been CUT out. Thus The called out Pens Have No where on Part To be placed.

REVIEWER J. Petroske

CERTIFIED NDT LEVEL (RT)

John Petroske RT II Exp. 01/08

MetalTek INTERNATIONAL

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER	PURCHASE ORDER NUMBER	DATE	CONTROL NO.	PAGE
Energy Industries of Ohio	PPPL-FP-LTS-2	12-28-05	40851	1 of 1

PART NO.	SPECIFICATION	CLASS	TOTAL PIECES	PIECES ACCEPTED
MCW FA-2	E186/E280	see spec	1	1

RADIOGRAPHED BY:	INTERPRETED BY:	ASNT LEVEL
Kelley/Midgett	Kelley/Midgett	II

FILM TYPE	MATERIAL	ISOTOPE	CODE
29/59/80	CF8M/MN/MN Mod	IRIDIUM 192 / COBALT 60	ASTM E94 Y ASME MIL-STD-453

	VIEW	PENE	ACCEPT	REJECT	SHRINK	INCLUSION	POROSITY	LINEAR	SURFACE	LOF/LOP	COMMENTS
M175410 R1	27-28	50/80/100	/				1		/		

Metal Tek INTERNATIONAL

RADIOGRAPHIC STANDARD SHOOTING SKETCH

Customer Energy Industries of OHIO	Pattern Number MCWFA-2
Material CF8MNMN mod	Traceability Number
Film Manufactuer Fuji	Source Number 82ci IR. 192
IQI LEVEL 2-2T From CQP 401 X Other (Specify, E.G. 2-4T, 2-1T) N/A	

Exposures (views)	27-28												
Thickness (IN.)	2 3/4-7"												
S/F Distance (IN.)	18"												
Penetrameter	50 100 80												
Time (MIN.)	2hr												
Focal Spot (IN.)	.1												
Film Size (IN.)	14X17												
Screen Size (Pb) Front/Back	.01												
S.W.E./D.W.E.	SWE												
S.W.V/D.W.V.	SWV												
Film Type	2954 80x2												
Acceptance Standard	E 186 E 280												
Severity Level	SP 54												

Shooting Sketch (Use Additional Pages as Needed)

See original Technique Drawing.

Technique Prepared By: Doug Midgett Level: II Date: 12-28-05

Technique Approved By: _____ Level: _____ Date: _____

MetalTek INTERNATIONAL

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER	PURCHASE ORDER NUMBER	DATE	CONTROL NO.	PAGE
Energy Industries of Ohio	PPL-FP-LTS-2	12-16-05	40851	1 of 1

PART NO.	SPECIFICATION	CLASS	TOTAL PIECES	PIECES ACCEPTED
SE-141-033-2	E186	III	1	1

RADIOGRAPHED BY:	INTERPRETED BY:	ASNT LEVEL
Kelley	Kelley	II

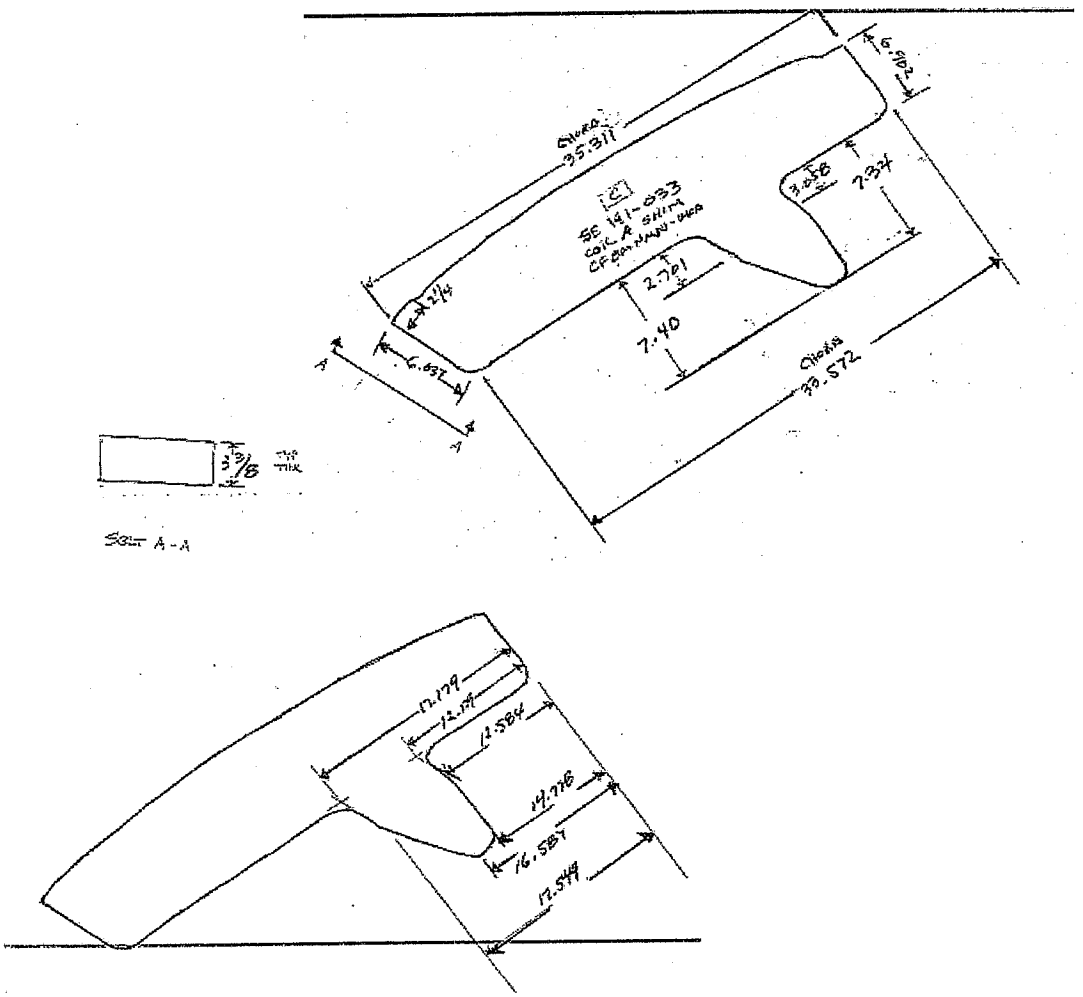
FILM TYPE	MATERIAL	ISOTOPE	CODE
8D	CF8MNMN MOD	IRIDIUM 192 COBALT 60 ✓	ASTM E94 ✓ ASME MIL-STD-453

MS76220

	VIEW	PENE	ACCEPT	REJECT	SHRINK	INCLUSION	POROSITY	LINEAR	SURFACE	LOF/LOP	COMMENTS
RT-2	A	50	✓								Film Scratch
	B	↓	✓								
	C		✓			1			✓		
	D		✓								

Welcome to

MetalTek INTERNATIONAL



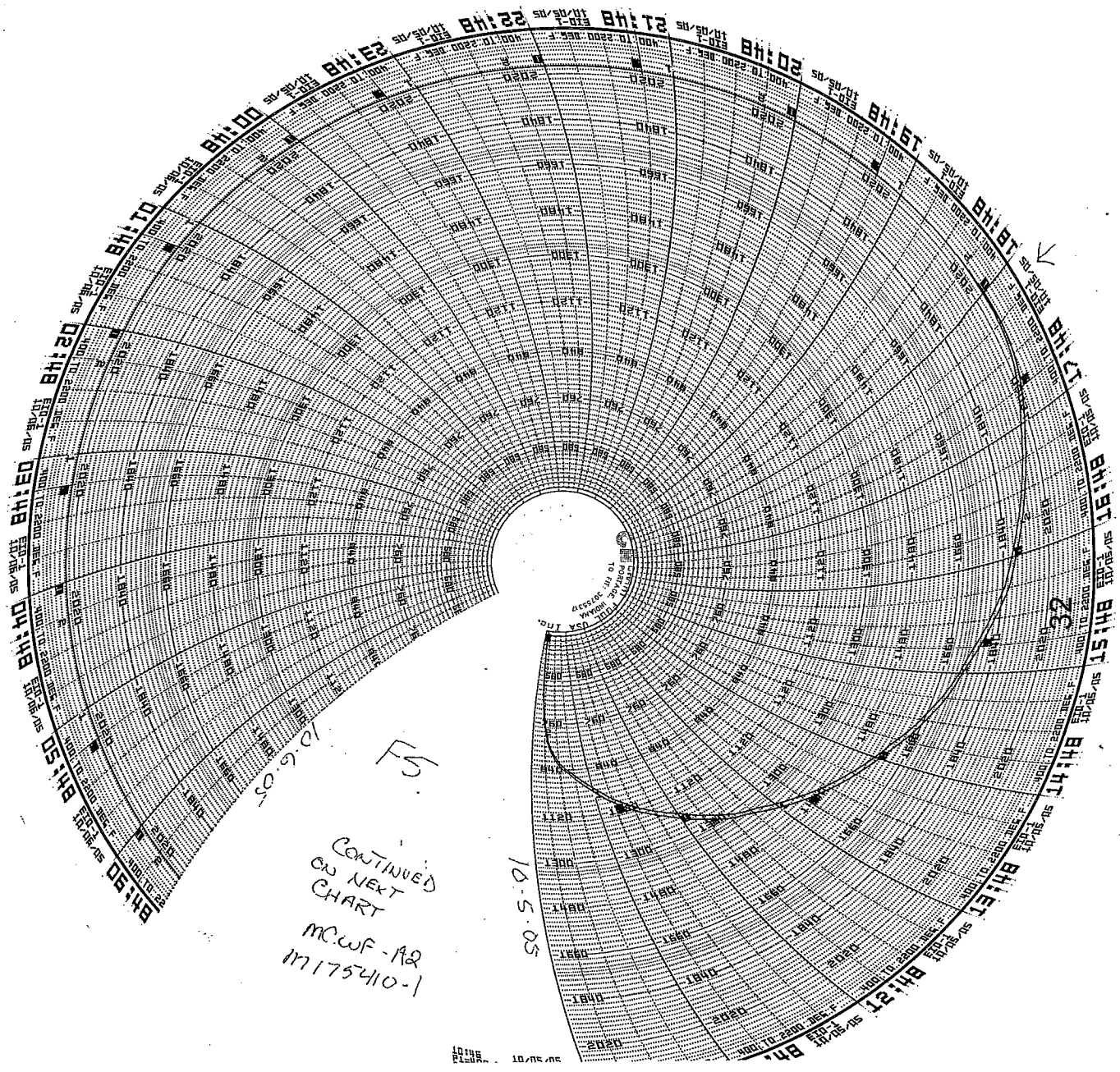
SE-141-033-2 MS76220-1 12/28/05 JJOHNSON

EIO

MCWF-A2 CO12

F-5

175410-1



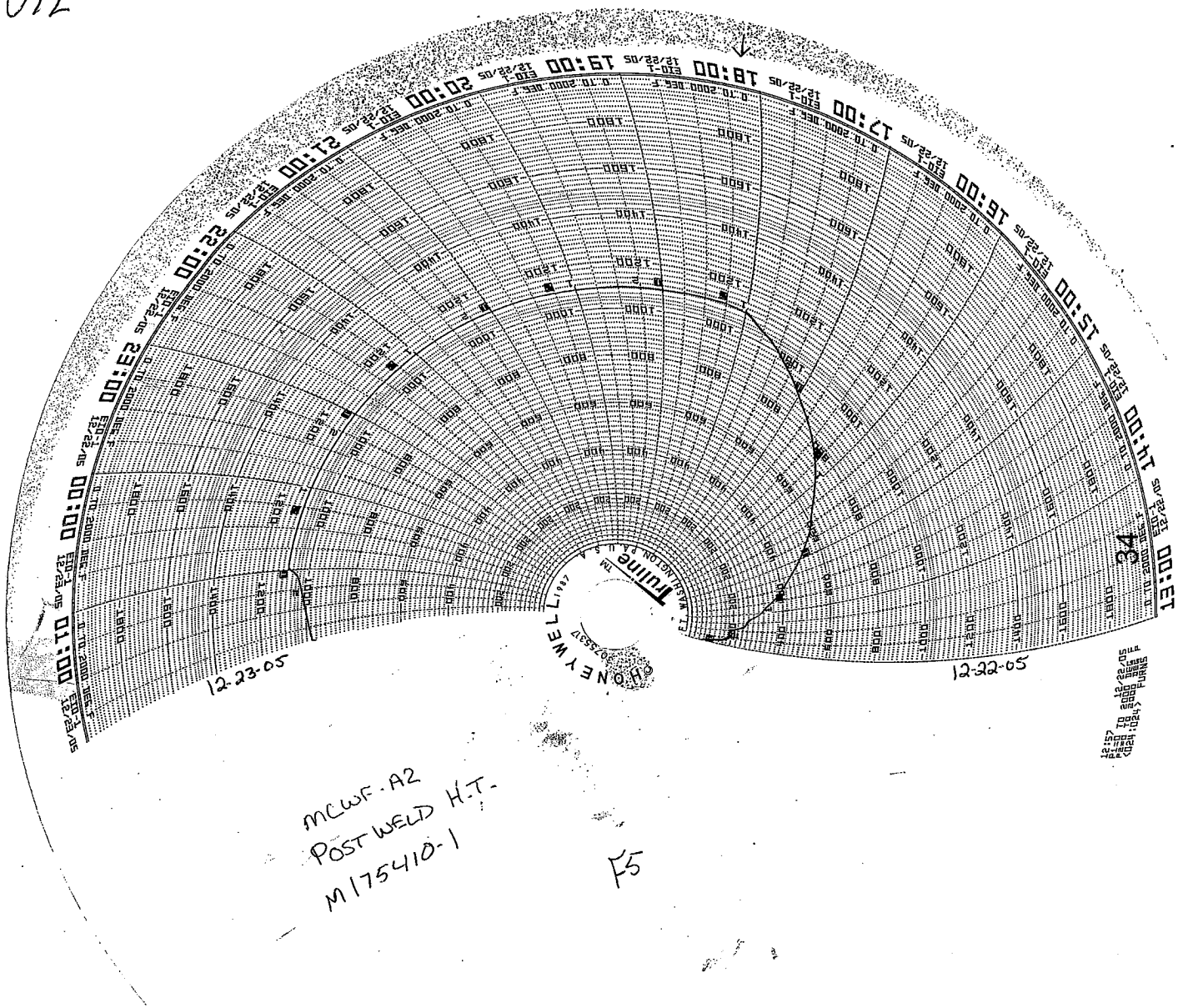
E10
MCWP-A2
E-5
175410-1

EIO

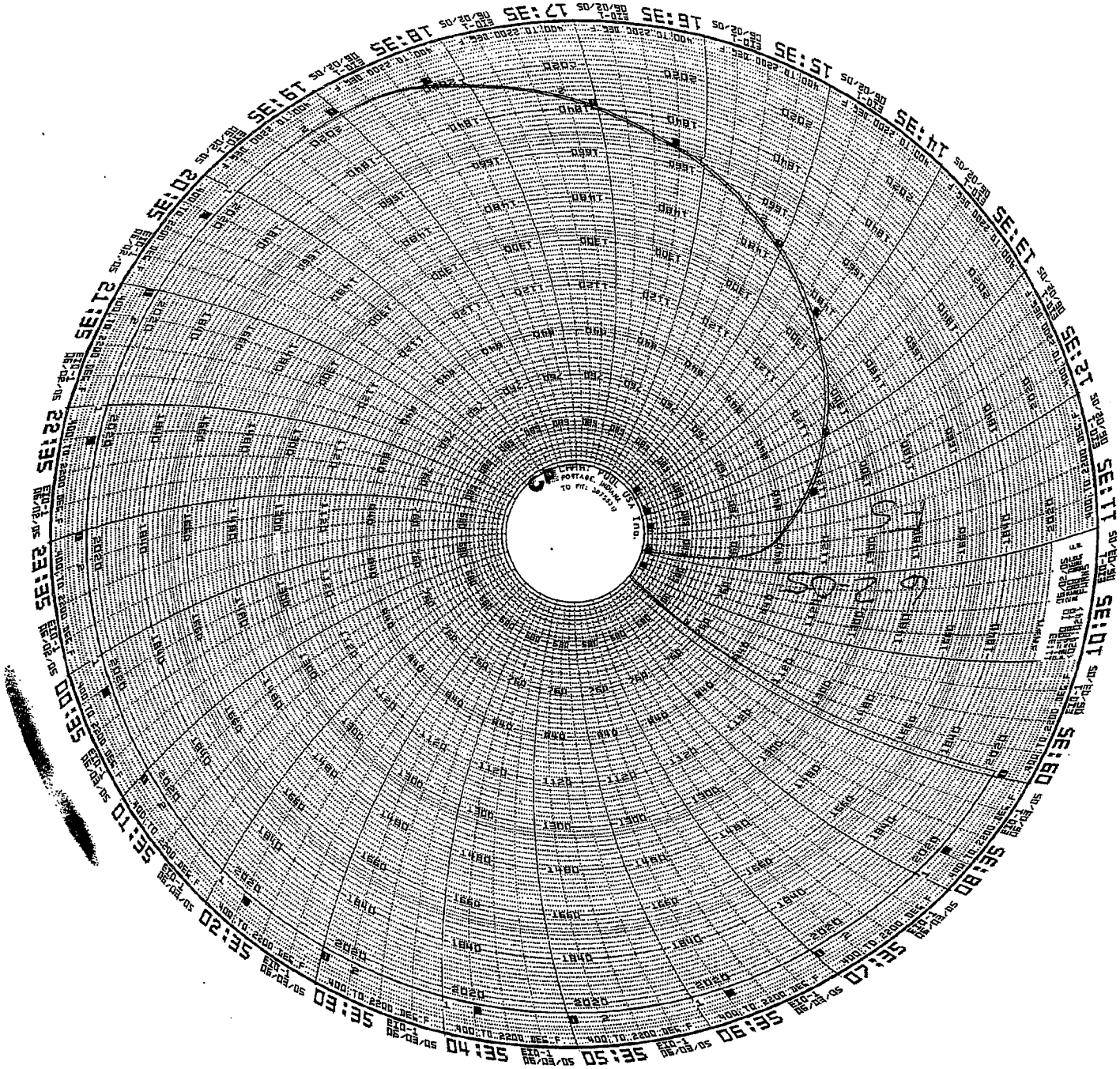
MCWF A-2 COIL

F-5

175410-1



A+C Shims CTR



Energy Industries of Ohio
Manufacturing and Test Sequence (MTS) A 2 Coil
1 OF 11 **CO# 40851 Dated 3-9-05 Revision: Rev 9 Dated Issued:9/26/05**

OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON ~~xxxxx~~ FROM _Pete D._ SIGNED QUALITY MANAGER	CdR	9/26/05
15	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, AND FOUNDRY MARK, TO THE PATTERN. CAST ON TEST BARS AND CAST ON BLOCKS (extra 3"x3"x1" specimens) REQUIRED, ID AS TO COIL NUMBER AND ZONE LOCATION.		9/26/05
20	COREMAKE CORE SOP 0100 REV 6 CALIBRATION PER CORE SOP 0200R4/0300R6	MAKE CORES IN SAND MIXTURES AS DESCRIBED BY METALTEK ENGINEERING AND VERIFIED IN MODELING TRIALS. METALTEK CORE SOP 0100 REV 6) CORE WASH WITH ZIRCONIUM CORE WASH. (CALIBRATION OF EQUIPMENT REQUIRED PER CORE SOP 0200,R4 / 0300,R6) VERIFY COUNT AND INSPECT.		9/26-05
30	MOLD MOLD SOP 0400 REV 8 CALIBRATION PER MOLD SOP 0900 REV 5 PREPARATION PER MOLD SOP 1100R2/1200R2/1300R1 SAND TESTING PER MOLD SOP 1400R2/1500R3/1600R2	MOLD PER WORK INSTRUCTIONS IN MAPICS ROUTING AND SOPS REFERENCED. ENGINEER OF RECORD – ROGER BROMAN, CONSULT ON MOLD-RELATED CONCERNS. MOLD MATERIALS REQUIRED PER MAPICS BOM. NOTIFY ENGINEER OF ANY SUBSTITUTIONS. Change Fire crackers		9-26-05
40	POUR MELT SOP 0100R5 MELT SOP 0700R2 MELT SOP 0600R2	METAL MUST BE AOD REFINED OR AOD INGOT. VIRGIN METAL ADDITIONS ALLOWED. RECORD POURING TEMPERATURE: 2750 CASTING POURED AT: 2750 DATE: 9/27/05 HEAT #"s: 31041, 31042, 31043, 31044, 31045 ELAPSED POUR TIME 1 min 10 sec KEEL BLOCKS POURED: NA 0 Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: GR Analyzed: Q.A. Date: 9-27-05	SR	9/27/05
50	MELT SOP 0800R2	SHAKEOUT	CA	10/1
60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.	MW	10-11-05

70	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. MAKE SURE TO BLOCK ALL FLANGES OF FORM AND RACETRACK TO MINIMIZE CREEP DISTORTION. Soak Temp: 2050F, Soak Time: At least 7 hours , Quench Type: Air Cool MAKE SURE TEST MATERIAL IS PLACED IN THE CORRECT ZONE.	DLS	10/5/05
80	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 530. DCMA IS TO WITNESS CHARPY TESTING AT LAB.	WH	10/6
NOTE		**THE ORDER OF CLEANING PROCESSES MAY BE ALTERED DUE TO CAPACITY CONSTRAINTS. HOLD POINTS AND COMPLIANCE WILL NOT BE COMPROMISED. EIO WILL BE ADVISED OF ALL CHANGES THAT MAY RESULT IN A REQUEST FOR DEVIATION FROM REQUIREMENTS.**		
90	GRIND GSWA SOP 0100R3	SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED.		10-11-05
100	GRIND GCHI SOP 0100R2	CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED FOR CONTOUR.	DWP T.U	P.N
110	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	P.N	CHH Pre X-Ray blast 11-02-05
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF X-RAY . EIO NOTIFIED ON 10/19 DCMA NOTIFIED ON 10/19/05	Q ENG OR QA MGR	
120	X-RAY AT MQS MQS PROCEDURE 20.H.010 REV 0	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. WHEN MARKING USE BLACK MARKERS. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	RT – LEVEL II Dwm	11-11-05
130	X-RAY CQP 401 REV 5	X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE _____ AND SEND TO STEP 160. REJECTED CHECK HERE ___√___ MARK UP DEFECTS AND SEND THE CASTING TO STEP 140.	RT – LEVEL II	Dwm 11-11-05
140	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% RT INSPECTION.	TLS 11-14-05	
150	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION AS REQUIRED.	WH	11/14

160	INTERIM VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 IN NON MACHINED AREAS AND LEVEL 2 IN MACHINED AREAS. IF OK CHECK HERE _____. IF REJECTED CHECK HERE ✓. MARK AND REPAIR AT STEP 190.	VT - LEVEL II KA	11/15
170	INTERIM 100% L.P. CQP 0300 REV 10	L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____GO TO 190. IF REJECTED CHECK HERE ✓	LP - LEVEL II TRS	11/15
180	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION.	RLS	11/17/05
190	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION OR VISUAL DEFECTS AS REQUIRED.	CA	11-20-05
200	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE ✓ IF REJECTED SEND BACK TO STEP 190	LP - LEVEL II TRS	11-25
210	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	AB	
220	WELD MAP	MAP ALL MAJOR WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. SUBMIT MAP WITHIN 24 HOURS OF START OF WELDING. MUST INDICATE ON MAP ALL MAJOR WELDS, DEFINED AS GREATER THAN 20% OF THE WALL OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES APPROXIMATLY 3.3"X3.3".	JB	11-17 11-18
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON 11/19 DCMA NOTIFIED ON 11/19	Q ENG OR QA MGR	CK
230	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: 5-6MAW-CF8MNMN/MOD _____, _____ LIST ALL MATERIAL/LOTS USED: 361851378308 _____, _____ QUALITY ENG. Name: 11/19 Date: CK		
240	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1(Flat) or 25 SMAW-CF8MNMN MOD	RBD	11/20

		REV 0 (Vertical) FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2						
250	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.				RBD		
260	L.P. WELD CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE ✓ WASH AND SEND TO STEP 280. IF REJECTED CHECK HERE _____				LP - LEVEL II CC		12/9/05
270	REPEAT	REPEAT STEPS S180 TO S250AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. IF OK CHECK HERE _____ AND PROCEED TO STEP 280.				NA		
280	REPEAT STEPS	SUPPLEMENTAL REPAIR STEPS	1ST	2ND	3RD	4TH	5TH	
S180	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.						
S190	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION OR VISUAL DEFECTS AS REQUIRED.						
S200	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING.	LP - LEVEL II					
S210	WELD MAP	MAP ALL MAJOR WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. MUST INDICATE ON MAP ALL MAJOR WELDS, DEFINED AS GREATER THAN 20% OF THE WALL OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES APPROXIMATLY 3.3"X3.3". SUBMIT MAP WITHIN 24 HOURS OF START OF WELDING.						
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR					
S220	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____, _____, _____ MATERIAL /LOT USED :_____, _____, _____ QUALITY ENG. Name: _____ Date: _____						
S230	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1(Flat) or 25 SMAW-CF8MNMN MOD REV 0 (Vertical)						

		FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2		NA				
S240	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.						
S250	L.P. WELD CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ WASH AND SEND TO STEP 280. IF REJECTED CHECK HERE _____AND RETURN TO STEP S180.	LP - LEVEL II	OK REJ	OK REJ	OK REJ	OK REJ	
	REPEAT	REPEAT STEPS S180 TO S250 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION.	QA ENG.					
280	TEST MAG PERM SOP MAG PERM 100, REV 1	TEST MAG PERMEABILITY REPAIR AREAS TEST AT LEAST EVERY 2 INCH SQUARE OF WELD. ACCEPTANCE 1.02. IF OK CHECK HERE ___✓___ AND GO TO STEP 300. IF REJECTED CHECK HERE _____.					CA	12/9
290	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 280. REPEAT UNTIL COMPLIANCE IS ACHIEVED.					NA	
300	X-RAY (NOTE)	IF RADIO GRAPHED AREAS ARE GREATER THAN FOUR TO FIVE INCHES THE CASTING WILL BE SENT TO MQS. SEND TO MQS CHECK HERE_____✓_____. RADIOGRAPH AT CAF CHECK HERE _____.					QA ENGINEER	RBK 12/6/05
310 A	MQS X-RAY DEFECTS REPAIRED BY WELDING	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. **ALL RT REJECTS, INCLUDING SURFACE DEFECTS WILL BE VERIFIED BY RT.** ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.					LEVEL II RBK	12/9/05
310 B	CAF X-RAY DEFECTS REPAIRED BY WELDING CQP 401 REV 5	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. **ALL RT REJECTS, INCLUDING SURFACE DEFECTS WILL BE VERIFIED BY RT.** ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.					RT - LEVEL II NA	
320	X-RAY CQP 401 REV 5	X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE ___✓___ AND SEND TO STEP 340. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP S321.					RT - LEVEL II RBK	12/22/05
	REPEAT STEPS	SUPPLEMENTAL REPAIR STEPS	1ST	2ND	3RD	4TH	5TH	

S321	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.			NA		
S322	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING.	LP - LEVEL II				
S323	WELD MAP	MAP ALL MAJOR WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. MUST INDICATE ON MAP ALL MAJOR WELDS, DEFINED AS GREATER THAN 20% OF THE WALL OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES APPROXIMATLY 3.3"X3.3". SUBMIT MAP WITHIN 24 HOURS OF START OF WELDING. SUBMIT MAP WITHIN 24 HOURS OF START OF WELDING.					
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR				
S324	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____, _____, _____ MATERIAL /LOT USED :_____, _____, _____ QUALITY ENG. Name: _____ Date: _____					
S325	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1(Flat) or 25 SMAW-CF8MNMN MOD REV 0 (Vertical) FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2					
S326	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.					
S327	L.P. WELD CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ WASH AND SEND TO STEP S328. IF REJECTED CHECK HERE _____AND RETURN TO STEP S321.	LP - LEVEL II	OK REJ	OK REJ	OK REJ	OK REJ
S 328 A	MQS X-RAY DEFECTS REPAIRED BY WELDING	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. **ALL RT REJECTS, INCLUDING SURFACE DEFECTS WILL BE VERIFIED BY RT.** ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	RT-LEVEL II				

N/A

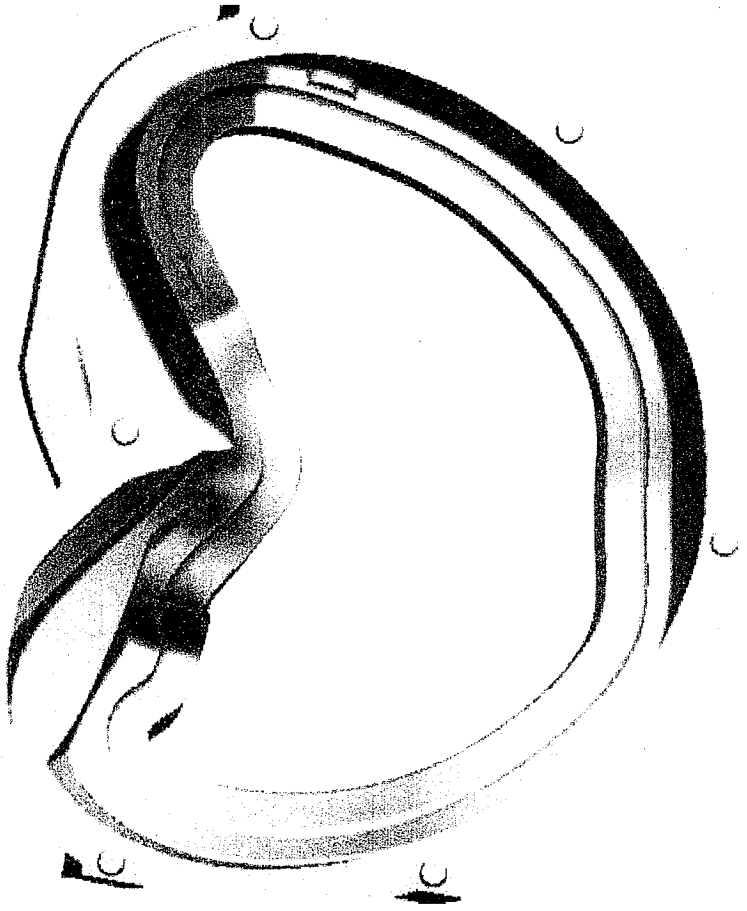
S 328 B	CAF X-RAY DEFECTS REPAIRED BY WELDING CQP 401 REV 5	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. **ALL RT REJECTS, INCLUDING SURFACE DEFECTS WILL BE VERIFIED BY RT.** ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	RT - LEVEL II					
S 329	X-RAY CQP 401 REV 5	X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE _____ AND SEND TO STEP 340. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP S321.	RT - LEVEL II					
	REPEAT	REPEAT STEPS S321 TO S329 AS REQUIRED TILL CLEAR THROUGH VISUAL, PENETRANT AND RT INSPECTION.	QA ENG.					
340	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.				DS		
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON 12/16 DCMA NOTIFIED ON 12/14				Q ENG OR QA MGR		
350	FINAL VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 IN NON MACHINED AREAS AND LEVEL 2 IN MACHINED AREAS. IF OK CHECK HERE ✓. SEND TO STEP 453. IF REJECTED CHECK HERE _____. MARK AND REPAIR. INITIAL WHEN COMPLETE. MUST BE PERFORMED BY LEVEL II in VT.				VT - LEVEL II KA		12/14
360	FINAL L.P. CQP 0300 REV 10	FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE ✓ WASH AND SEND TO STEP 453. IF REJECTED CHECK HERE _____				LP - LEVEL II JS		12/14
380	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION.				NA		
385	GRIND GCHI SOP 0100R2	CHIP AND HAD GRIND EXCAVATION AS REQUIRED.				JS		

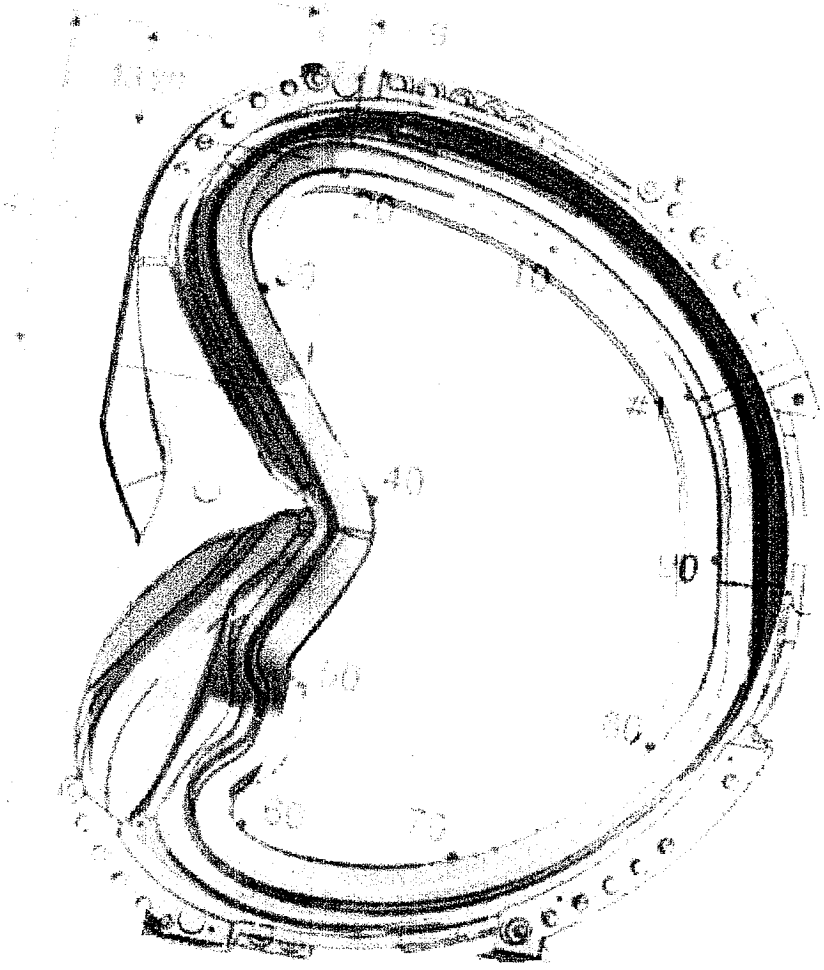
390	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. IF OK CHECK HERE _____ IF REJECTED SEND BACK TO STEP 385.	LP - LEVEL II	
400	WELD MAP	MAP ALL MAJOR WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. SEND MAPS WITHIN 24 HOURS OF WELDING. MUST INDICATE ON MAP ALL MAJOR WELDS, DEFINED AS GREATER THAN 20% OF THE WALL OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES APPROXIMATLY 3.3"X3.3".		
420	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED:_____ QUALITY ENG. Name: _____ Date: _____		
430	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1(Flat) or 25 SMAW-CF8MNMN MOD REV 0 (Vertical) FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2		
440	GRIND GCHI SOP 0100 REV 2	HAND GRIND WELDS.		
450	L.P. WELDS CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. IF OK CHECK HERE _____ WASH AND SEND TO STEP 453. IF REJECTED CHECK HERE _____AND RETURN TO STEP 440.	LP - LEVEL II	
	REPEAT	REPEAT STEPS ___350 TO 450_____AS REQUIRED TILL WELDS CLEAR FINAL LIQUID PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG.	
451	TEST MAG PERM SOP MAG PERM 100, REV 1	TEST MAG PERMEABILITY REPAIR AREAS. RECORD ON WELD MAP LIST. TEST AT LEAST EVERY 2" SQUARE OF WELD. ACCEPTANCE 1.02. IF OK CHECK HERE _____AND GO TO STEP 430. IF REJECTED CHECK HERE _____.		
452	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 451. REPEAT UNTIL COMPLIANCE IS ACHIEVED.		
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LAYOUT. EIO NOTIFIED ON 12/16 DCMA NOTIFIED ON 12/16 APPROVAL RECEIVED ON NA	Q ENG OR QA MGR	

453	INTERIM LAYOUT SOP LAYOUT 0100	INSPECT CASTING TO VERIFY DIMENSIONS. THIS STEP MAY BE MOVED. NOTE: THE FIRST PART PRODUCED OF EACH TYPE A, B AND C WILL BE DIMENSIONED BY LAWTON PATTERN. IF DIMENSIONED BY LAWTON IT WILL BE DOCUMENTED HERE. Subsequent casting done internally per Romer Arm.	JJ	12/29
455	HEAT TREAT	STRESS RELIEF. Load casting into cold furnace. Ramp up to 1100 F at rate of 200 F per hour. Hold at temp 4 hours. Furnace cool to 500 F at 50 F per hour. Air cool. Submit furnace charts to QA.	KMR	12/22/05
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON 12/22 DCMA NOTIFIED ON 12/22	Q ENG OR QA MGR	CMR
460	FINAL VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 ALL CONDITIONS. THIS STEP MAY BE UNNECESSARY IF OK AT STEP 350. IF OK CHECK HERE ✓. IF REJECTED CHECK HERE _____. MARK AND REPAIR AT STEP 510. MUST BE PERFORMED BY LEVEL II in VT.	VT - LEVEL II KA	12/27
470	FINAL L.P. CQP 0300 REV 10	FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. THIS STEP MAY BE UNNECESSARY IF OK AT STEP 360. IF OK CHECK HERE ✓ WASH AND SEND TO STEP 500. IF REJECTED CHECK HERE _____. DOCUMENT REPAIRS USING A SUPPLEMENTAL MTS.	LP - LEVEL II JSR	12/28
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEPS. EIO NOTIFIED ON 12/22 DCMA NOTIFIED ON 12/22	Q ENG OR QA MGR	CMR
500	FINAL MAG PERM INSPECTION SOP MAG PERM 100, REV 1	PERFORM MAG PERM TESTING WITH SEVRIN GAUGE. ACCEPTANCE 1.02. CHECK THE ENTIRE SURFACE ON A 6"BY6" GRID. REPORT RESULTS. USE A 6" SQUARE BLOCK TO INDICATE TEST LOCATIONS AND RECORD RESULTS. COMPLIANT AREAS WILL NOT BE MARKED. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. OK CHECK HERE ✓ AND GO TO STEP 530. IF REJECTED CHECK HERE _____.	CMR	12/29
510	GRIND GCHI SOP 0100 REV 2	HAND GRIND WITH SUITABLE CONE OR OTHER SIMILAR GRINDER AS REQUIRED TO ENSURE REMOVAL OF MATERIAL TO ACHIEVE MAG PERM REQUIREMENT. CIRCLE AREA REMEDIATE FOR RETEST.	NA	
520	RETEST MAG PERM SOP MAG PERM 100, REV 1	RETEST MAG PERMEABILITY AT FAILED TEST POINTS. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. ACCEPTANCE 1.02. IF OK CHECK HERE _____. IF REJECTED CHECK HERE _____ RETURN TO STEP 510.	NA	
530	DOC. REVIEW	REVIEW DOCUMENTS AS REQUIRED IN CAF CHECKLIST, ALL DOCUMENTS NOTED TO BE ACCESSIBLE FOR AUDITING. (SHIPPER, C OF C, M.T.R., M.T.S., INSPECTION REPORT, X-RAY READER SHEETS AND HEAT TREAT CHARTS)	12/29	CMR

NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON 12/28 BY _____. RECEIVED RELEASE FROM EIO ON 12/29.	Q ENG OR QA MGR	
540	PACK AND SHIP	PACKAGE AND SHIP TO MAJOR TOOL.		
1000	REVISION HISTORY	ORIGINAL 12-14-04. Approved 12-14-04. Revision level 1- Revised 1-26-05 new page 8, correct High stress areas, Revision level 2 3-16-05, delete LO step 455. Revision 3 3-28-05 Added note regarding hold point at weld step 400. Revision level 4 written for C-2 casting 4-18-05. Rev 5 added Layout SOP# and note regarding first casting layout responsibility. 5-10-05. Rev 6 added word LOT to weld material steps. 5-29-05. Rev 7 6-14-05 added "LOT" to weld step on supplement page. Rev. 8 7-29-05 added stress relief , deleted weld hold points, added vertical weld procedure, and several editorial changes. REV 9 8-28-05 – MODIFIED RT STEPS AND ADDED REQUIREMENT TO RT ALL RT DEFECTS INCLUDING SURFACE.	CARUUD	

RED AREA INDICATES HIGH STRESSED AREA





MetalTek International – Carondelet Division
Manufacturing and Test Sequence (MTS) Coil Shim A COIL S/N 2
Dated 12-14-04 Revision:1 Dated Issued:10-25-05

OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON 11-1-05 FROM Pete D. SIGNED QUALITY MANAGER. **SHADED BOXES NEED NOT BE SIGNED.**	CAR	11-1-05
20	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, FOUNDRY MARK, TO THE PATTERN.		
30	MOLD	MOLD PER WORK INSTRUCTIONS IN MAPICS ROUTING AND SOPS REFERENCED. MOLD MATERIALS REQUIRED PER MAPICS BOM. NOTIFY ENGINEER OF ANY SUBSTITUTIONS. MOLD SOP 0400 REV 8 CALIBRATION PER MOLD SOP 0900 REV 5 PREPARATION PER MOLD SOP 1100R2/1200R2/1300R1 SAND TESTING PER MOLD SOP 1400R2/1500R3/1600R2		
40	POUR MELT SOP 0100R5 MELT SOP 0700R2 MELT SOP 0600R2	METAL MUST BE AOD REFINED OR AOD INGOT. VIRGIN METAL ADDITIONS ALLOWED. HEAT #: 29198 Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: SR Analyzed: GH	J G	4/28/05
50	MELT SOP 0800R2	SHAKEOUT		
60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.		
70	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. MINIMUM 4 HOURS AT 2050 F. AIR COOL.	DLS	6/2/05
80	GRIND GSWA SOP 0100R3 GCHI SOP 0100R2	SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED. CHIP AND HAND GRIND SURFACE OF PART AS REQUIRED.		
90	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.		
100	VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 ALL CONDITIONS. IF OK CHECK HERE ✓. IF REJECTED CHECK HERE ___. MARK AND REPAIR AT STEP 130OR 140 IF WELDING IS REQUIRED. MAY PERFORM STEPS 110 AND 120 TOGETHER.	VT - LEVEL II KA	12/27

120	100% L.P. CQP 0300 REV 10	L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA- LEVEL 2. IF OK CHECK HERE _____ GO TO 150. IF REJECTED CHECK HERE ___✓___ MARK AND REPAIR AT STEP 130 OR 140 IF WELDING IS REQUIRED.	LP - LEVEL II	SSB 12-27-05
130	GRIND GCHI SOP 0100R2	HAND GRIND DEFECTS. CONFIRM REPAIRS VISUALL AND BY LP. ACCEPTANCE AS NOTED ABOVE. IF OK, CHECK HERE ___✓___ AND GO TO STEP 170. IF WELDING IS NEEDED GO TO STEP 130.	CA	12/27/05
140 IF NEEDED		IF REPAIRS BY WELDING ARE REQUIRED DOCUMENT ON SUPPLEMENTAL MTS ON LAST PAGE.		
150	CAF X-RAY DEFECTS REPAIRED BY WELDING CQP 401 REV 5	X-RAY PER TECHNIQUE: SE-141-073-C SHIM. USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	RT - LEVEL II DM	12-16
160	X-RAY CQP 401 REV 5	X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE ___✓___ AND SEND TO STEP 200. REJECTED CHECK HERE _____ MARK UP DEFECTS. DOCUMENT REPAIRS ON S10 TO S70.	RT - LEVEL II DM	12-16
	REPEAT	REPEAT STEPS S10 TO S70 AS REQUIRED TILL WELDS CLEAR X-RAY.	QA ENG.	NA
170	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.		
180	LAYOUT SOP 0100 ORIGINAL	INSPECT CASTING TO VERIFY DIMENSIONS. THIS MAY BE PERFORMED EARLIER IF DESIRED. SUBMIT RPORT TO QA.		12/28/05
190	FINAL VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 2 ALL CONDITIONS. IF OK CHECK HERE ___✓___. IF REJECTED CHECK HERE _____. MARK AND REPAIR DOCUMENT REWORK ON A SUPPLEMENTAL MTS	VT - LEVEL II KA	12-28
200	FINAL L.P. CQP 0300 REV 10	FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA- LEVEL 2 ALL AREAS. IF OK CHECK HERE ___✓___ WASH AND SEND TO NEXT STEP. IF REJECTED CHECK HERE _____ MAKE REPAIRS AND DOCUMENT ON SUPPLEMENTL MTS.	LP - LEVEL II	SSB 12-27-05
210	FINAL MAG PERM INSPECTION SOP MAG PERM 100, REV 1 GRIND GCHI SOP 0100 REV 2	PERFORM MAG PERM TESTING WITH SEVRIN GAUGE. ACCEPTANCE 1.02. CHECK THE ENTIRE SURFACE ON A 6"BY6" GRID. REPORT RESULTS. HAND GRIND WITH SUITABLE CONE OR OTHER SIMILAR GRINDER AS REQUIRED TO ENSURE REMOVAL OF MATERIAL TO ACHIEVE MAG PERM REQUIREMENT.	AR	12-29-05
220	DOC. REVIEW	REVIEW DOCUMENTS ALL DOCUMENTS NOTED TO BE ACCESSIBLE FOR AUDITING. (C OF C, M.T.R., SIGNED M.T.S., LAYOUT INSPECTION REPORT, X-RAY READER SHEETS AND HEAT TREAT CHARTS)		

NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON _____ BY _____. RECEIVED RELEASE FROM EIO ON _____.	Q ENG OR QA MGR	
	PACK AND SHIP	PACKAGE AND SHIP TO MAJOR TOOL.		
1000	REVISION HISTORY	ORIGINAL12-14-04. Rev1 complete rewrite due to specification changes.	CARUUD	
SUPPLEMENTAL MTS FOR WELD REPAIRS.			FOR VT&LP/ FOR RT	
S10	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS.		
S20	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA- LEVEL 2.	LP - LEVEL II	LP - LEVEL II
S30	WELD MAP	MAP ALL WELDS WITH DIGITAL PHOTO/MAPS. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA.. USE YELLOW MARKER. MUST SEND REPORT ON ALL AJOR WELDS, DEFINED AS OVER 20% OF WALL THICKNESS OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES TO CUSTOMER. MAJOR WELDS YES _____, REPORT SENT BY _____ DATE_____ NO MAJOR WELDS CHECK HERE_____ AND GO TO STEP 170.		
S40	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL USED:_____ QUALITY ENG. Name: _____ Date: _____		
S50	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1 FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2		
S60	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.		
S70	L.P. WELD CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 2. IF OK CHECK HERE _____ WASH AND SEND TO STEP 300. IF REJECTED CHECK HERE _____AND RETURN TO STEP 220.	LP - LEVEL II	LP - LEVEL II
	REPEAT	REPEAT STEPSS10 TO S70 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION.	QA ENG.	QA ENG.
S80	TEST MAG PERM SOP MAG PERM 100, REV 1	TEST MAG PERMEABILITY REPAIR AREAS RECORD ON WELD MAP LIST. TEST AT LEAST 5 POINTS PER WELD. ACCEPTANCE 1.02. IF OK CHECK HERE _____AND GO TO STEP 170. GRIND AS NEEDED TO REMEDIATE.		

4

MetalTek INTERNATIONAL

Corrective Action 1308
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 6/13/2005
CA Originator C. Ruud
Pattern Number: C and A Coil Shims 11 Pieces

Description of Defect / Non-Conformance
Chemistry for 11 shim castings is out of specification.

Root Cause
Chemistry specification was not changed in system and not communicated to Lab personnel.

Corrective Action
Specification was corrected in system and Lab personnel trained. Mag permeability was checked on the parts and are less than 1.02u.

Verification of Corrective Action
Chemistries were checked on subsequent parts and are within specification.

Preventive Action
Create Inspection and Test Plan summarizing all requirements.

Estimated Completion Date
6/15/05

Actual Completion Date
Complete.

Signed: C. Ruud

CC: Roger Broman, Barry Craig, Joe Edwards, E.J. Kubick

Nonconformance Report: CA 1323 (phosphorus levels exceeds specification limits for castings C1- C4 and A1 and C1 shim and four Type C and six A coil shims)

Project Disposition:

The erroneous levels were due to calibration errors with the spectrometer. As reported in MTK's attached report, preventive maintenance has since been performed on the spectrometer. The reported chemistry will be accepted for the castings and shims noted above. The specification chemistry will not be changed at this time.

Approvals:

Phil Heitzenroeder

Digitally signed by Phil Heitzenroeder
DN: CN = Phil Heitzenroeder, C = US, O = PPPL, OU = Mech. Eng. Division
Reason: I egree to 'specified' portions of this document
Date: 2006.02.21 11:49:56 -05'00'

Procurement Technical Representative

Brad Nelson

Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL, ou=FED, email=nelsonbe@ornl.gov
Date: 2006.02.21 14:16:12 -05'00'

Responsible Line Manager:

Corrective Action 1323
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 7/27/2005
CA Originator C. Ruud
Applies to: Coil castings C-1, C-2, C-3, C-4 and A-1 and C 1 shim and four C coil and six A coil shims

Description of Defect / Non-Conformance
Phosphorus levels in material produced to date exceed specification limits. Both phosphorus and sulfur readings reported erroneously in certifications.

Certification reports have shown phosphorus and sulfur levels in the <.01% range. Independent laboratory data confirmed phosphorus in the .018 to .033% range and sulfur in the .005 to .022% range. Actual levels of some tests are above those in PPPL Specification NCSX-CSPEC-141-03-07 Rev 7.

Nonconformance was first suspected as a result of analysis of zoned attached test specimens volunteered by MetalTek International as response to PPPL questions on weighted average chemical analysis and quality of blending in the gating system. Nonconformance was verified on the bars used in the study and has been extended to evaluation of previously poured products.

Root Cause
Specification limits were set below the levels achievable through use of available raw materials. Spectrometer did not properly calibrate for phosphorus and sulfur at levels of specification due to equipment malfunction.
The chemical specification of EIO heats uses alloy CF8MNMn-Mod which incorporates a type standard calibration with a certified reference material (CRM) BS180. This enables the operator of the spectrometer to match the elemental concentrations of this alloy with corrective factors. These factors are determined by analyzing the CRM and having them compared with the calibration curves for each element. The phosphorus and sulfur content have very low measured intensities due to low concentrations. Intermittent failure of the spectrometer intensity measuring card caused higher intensity readings for phosphorus and sulfur. Subsequent checks with the CRM resulted in low corrective factors that were not detected. This in turn resulted in low reported concentrations for the EIO samples. All the major elements, which are measured on other intensity cards, have been closely monitored and matched very well with the CRM and thus were reported correctly.

Corrective Action
Modification to specification for phosphorus and sulfur will be requested. Limits will be set based on process capability and consistent with other stainless steel grades.
Replacement of deficient card in spectrometer will be made upon delivery.

Subsequent immediate analysis of chemistry results, obtained by wet analysis, is attached and demonstrate top of specification for sulfur and over specification for phosphorus. The spectrometer manufacturer has performed an analysis to determine the cause of the malfunction and verified that the intensity card has an intermittent fault and must be replaced. The card has been ordered and scheduled for replacement on August 15, 2005.
Until the card is replaced we will be performing additional type standardizations to ensure accurate sulfur and phosphorus analysis. Additionally, for coils made until the card is replaced, an independent laboratory will perform a verification of the chemical analysis.

Verification of Corrective Action
Will be determined at a later date.

Preventive Action
In addition to spectrometer faults, we have identified that the specification ranges for sulfur and phosphorus is unattainable. Analysis and specifications for virgin charge materials predict sulfur at 0.040% maximum and phosphorus at 0.040% maximum. We have no way to remove phosphorus from the melt and do not intentionally add phosphorus. So, the confirmed coil analyses, along with analyses of virgin material heats, demonstrate sulfur in the range of 0.010% to 0.022% and phosphorus in the range of 0.018% to 0.033%. These results are consistent with our charge material analysis. We will request a deviation for phosphorus in the subject parts and also request a permanent specification change to 0.040% maximum for both phosphorus and sulfur, to allow us to provide non-discrepant material. This change will not affect, in any way, the physical properties or material performance because all coils and test material exhibited sulfur and phosphorus within the new ranges despite inaccurate reporting.
Other actions: Specifications have been added to the BS 180 standard and the type standard will be measured against the criteria.

Estimated Completion Date
August 15, 2005

Actual Completion Date TBD

Signed: C. Ruud 

CC: Jim Galaske, Barry Craig, Joe Edwards, E.J. Kubick

Guide to St Louis Testing Report Dated 7-26-05

Sample name	Sample origin
A1Z1	Cast on bar A-1 coil, zone 1
A1Z2	Cast on bar A-1 coil, zone 2
A1Z3	Cast on bar A-1 coil, zone 3
C1	Cast on bar C-1 coil
C2Z1	Cast on bar C-2 coil, zone 1
C2Z2	Cast on bar C-2 coil, zone 2
C2Z3	Cast on bar C-2 coil, zone 3
C3Z1	Cast on bar C-3 coil, zone 1
C3Z2	Cast on bar C-3 coil, zone 2
C3Z3	Cast on bar C-3 coil, zone 3
F1	Final analysis button from ladle for C-4 coil
F2	Final analysis button from ladle for C-4 coil
F3	Final analysis button from ladle for C-4 coil
P1	Preliminary analysis button from ladle for C-4 coil

Testing is underway of the heat used to pour the four C coil and six A coil shims.

Attachment 40
CA 1323

Founded 1929 St. Louis Testing Laboratories INCORPORATED

Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

July 26, 2005
Lab No. 05C-0608
Invoice No. 59891
P.O. No. 21324
Page 1 of 1

METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

Attention: Chuck Ruud

REPORT OF CHEMICAL ANALYSIS

SAMPLE ID: A1 Z1, A1 Z2, A1 Z3, C1, C2 Z1, C2 Z2, C2 Z3, C3 Z1, C3 Z2, C3 Z3, F1, F2, F3, P1

RESULTS: %

ANALYTE	A1Z1	A1Z2	A1Z3
Sulfur	.013	.005	.010
Phosphorus	.025	.023	.018

ANALYTE	C1	C2Z1	C2Z2	C2Z3
Sulfur	.014	.022	.018	.015
Phosphorus	.018	.024	.021	.025

ANALYTE	C3Z1	C3Z2	C3Z3
Sulfur	.013	.014	.012
Phosphorus	.024	.025	.021

ANALYTE	F1	F2	F3	P1
Sulfur	.014	.015	.012	.010
Phosphorus	.029	.033	.028	.030

Sulfur Test Method: ASTM E1019-03

Phosphorous Test Method: Colormetric

Identification of tested specimen provided by the client.

Robin E. Sinn
Laboratory Director

RES/nmc

MetalTek INTERNATIONAL

Corrective Action 1525
Carondelet Division
Corrective Action Type NCR
Date 1-9-06
CA Originator C. Ruud
Applies to: A-2 Coil

Description of Defect / Non-Conformance
A-2 Coil has excess stock in 2 areas.

Root Cause
Excess material is feed pads for risers. They were not removed during arc air operation. There is no work instruction for the A coil.

Corrective Action
Remove excess material at CAF. Verify repairs.

Verification of Corrective Action
Inspect coil prior to shipping.

Preventive Action
Create work instruction for arc air process.

Verification Of Preventative Action
Work instruction completed and will be verified on A-4.

Estimated Completion Date
1-20-06

Actual Completion Date

Signed: C. Ruud 

CC: R. Broman, B. Craig, J. Edwards, E.J. Kubick, J. Markham, B. Carlton

MetalTek INTERNATIONAL

Corrective Action 1530
Carondelet Division
Corrective Action Type NCR
Date 1-11-06
CA Originator C. Ruud
Applies to: A-2 Coil

Description of Defect / Non-Conformance
Markings on A-2 Coil are incorrect. Serial number "A-2" was not on coil.

Root Cause
Serial numbers in core box was not changed to A-2. Certification number on A-2 was in an area that was repaired and as a result it was ground off.

Corrective Action
Serial numbers in the core box have been changed. The MTS has been revised to have the markings verified at final inspection.

Verification of Corrective Action
Numbers in A-5 were checked on 1-12-06 prior to pouring and found to be compliant.

Estimated Completion Date
Prior to pouring of A-5.

Actual Completion Date
1/12/06

Signed: C. Ruud

CC: R. Broman, B. Craig, J. Edwards, E.J. Kubick, J. Markham, B. Carlton

MetalTek INTERNATIONAL

Carondelet Division
8600 Commericial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Final Inspection Report

Customer ENERGY INDUSTRIES OF OHIO

Pattern: MCWF-A2 COIL

Order PPPL-FP-LTS-2

ASTM Metal CF8MNMN MOD

Date 12/29/2005

Type Description	Cert Number	Procedure	Acceptance Criteria	Actual
Liquid Penetrant	175410-1	CQP - 300 Rev 9	SEE NOTE	Acceptable
Notes Acceptance per ASTM A903. Acceptance criteria - level 1 for high stressed areas, level 2 for all other areas.				
Mag Perm	175410-1	SOP Mag Perm 100 Rev 1	<1.02	Acceptable
Radiographic	175410-1	Technique # 12726	MSS SP 54	Acceptable
Visual	175410-1	CQP - 500 REV 4	ASTM A802 LEVEL 2	Acceptable

Liquid Penetrant

Technician: Jim Shanahan
ASNT Level II

Visual

Technician: Kevin Anderson
ASNT Level II

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

MetalTek INTERNATIONAL

Carondelet Division

8600 Commercial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Certificate of Conformance

ENERGY INDUSTRIES OF OHIO

Order Number PPPL-FP-LTS-2
Pattern MCWF-A2 COIL
ASTM CF8MNMN MOD

Date 12/29/2005

Cert Number
175410-1

We certify that we have complied in accordance with the drawings(s) and specifications(s) listed on the above purchase order. The articles furnished were made and/or processed from parts and/or materials in accordance with all applicable drawings(s) and specifications(s) pursuant to the afore mention purchase order.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

MetalTek INTERNATIONAL

Carondelet Division

8600 Commericial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Final Inspection Report

Customer Name: ENERGY INDUSTRIES OF OHIO

Pattern: SE-141-033 COIL A SHIM
S/N 2

Order Number: PPPL-FP-LTS-2

ASTM Metal CF8MNMN MOD

Date 12/28/2005

Type Description	Cert Number	Procedure	Acceptance Criteria	Actual
Liquid Penetrant	S76220-1	CQP - 300 Rev 9	ASTM A903 Level II	Acceptable
Mag Perm	S76220-1	SOP Mag Perm 100 Rev 1	<1.02	Acceptable
Radiographic	S76220-1	Technique # 12726	MSS SP 54	Acceptable
Visual	S76220-1	CQP - 500 REV 4	ASTM A802 LEVEL 2	Acceptable

Liquid Penetrant
Technician: Sharon Bader
ASNT Level II

Visual
Technician: Kevin Anderson
ASNT Level II

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

MetalTek INTERNATIONAL

Carondelet Division

8600 Commercial Blvd. - Pevely, MO 63070 USA
Phone: 636-479-4499 - Fax: 636-479-3399

Certificate of Conformance

ENERGY INDUSTRIES OF OHIO

Order Number	PPPL-FP-LTS-2		
Pattern	SE-141-033 COIL A SHIM	S/N 2	
Alloy	CF8MNMnMOD	Date	12/29/2005

Cert Number

S76220-1

A shim for A-2 coil was poured from heat number 29198. No weld repairs were necessary.

We certify that we have complied in accordance with the drawings(s) and specifications(s) listed on the above purchase order. The articles furnished were made and/or processed from parts and/or materials in accordance with all applicable drawings(s) and specifications(s) pursuant to the afore mention purchase order except as noted by corrective actions.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

EIO
Energy Industries of Ohio
SUPPLIER QUALITY RELEASE

		Date: 12-29-05

I. General Information:			
Project Name:	Modular Coil Winding Form A2		
PO No:	NCSX-SOW-141-02-01	Rev.:	9
Supplier:	MetalTek		
Procurement Agent:	EIO		
Shipment:	☒ Partial ☐ Final		

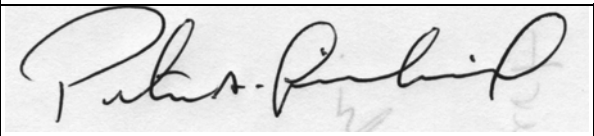
II. Material Description
Casting A2 Coil Shim A coil S/N 2

III. Release Checklist	
Plan Requirements Complete?	☒ Yes ☐ No ☐ N/A (If identified "No" provide explanation in comments section below)
Variances?	☒ Yes ☐ No ☐ N/A (If identified "No" provide explanation in comments section below)
Princeton Notified of Shipment?	☒ Yes ☐ No ☐ N/A (If identified "No" provide explanation in comments section below)
DCMA Notified of Shipment?	☒ Yes ☐ No ☐ N/A (If identified "No" provide explanation in comments section below)
☒ Conditional ☐ Unconditional	Explain conditional releases in comments section.

IV. Comments
Metallurgical variance per NCR 1323 &WC specs (Pending PPPL approval and final disposition) Manganese high

By signing below you acknowledge that the casting has met all applicable standards and contractual requirements

V. Supplier Quality Representative Sign Off		
Charles Ruud	X	12-29-05
Supplier Quality Representative (SQR) Print/Type Name	Supplier Quality Representative (SQR) Signature	Date

VI. Supplier Approval For Shipment		
Procurement Agent Notified of Shipment	Date: 12-29-05	
Required Vendor Data Ready for Shipment	Date: 12-29-05	
Peter A Djordjevich	 X	12-29-05

EIO
Energy Industries of Ohio
SUPPLIER QUALITY RELEASE

		Date: 12-29-05

I. General Information:			
Project Name:	Modular Coil Winding Form A2		
PO No:	NCSX-SOW-141-02-01	Rev.:	9
Supplier:	MetalTek		
Procurement Agent:	EIO		
Shipment:	☒ Partial ☐ Final		

Supplier's Representative Print/Type Name	Supplier's Signature	Date

1. Enter:
   Project Name
   PO Number
   Supplier
   Procurement Agent

2. Enter a brief description of items being released, including applicable drawing number(s), dash or item number(s), drawing revision letter, specification(s), and serial number(s).

3. Self-Explanatory

4. Record any unusual circumstance, such as a conditional release.

5. The Supplier's representative shall sign and date.

7. Signature and date of the Supplier's authorized representative indicating shipping date.

8. In case of partial release, the supplier shall maintain copies of each sequential "Supplier Quality Release" and establish complete accountability of material release on final shipment.

9. Supplier shall include a copy of the completed form with each shipment.

Energy Industries of Ohio

Contract # S005242-F

Modular Coil Winding Form

A-2 Documentation Package

Part 2

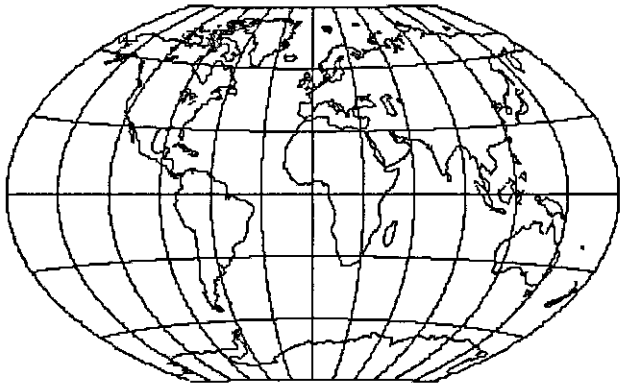
Major Tool & Machine

Revised 8/29/2006

****Note – The table of contents that follows a supplemental EIO TOC as an aide to locating documents. Documents may be duplicated in this package; 1st as an attachment to a NC (not listed) & the 2nd time in the order noted in the MTM TOC.**

A-2 Documentation Package

List of Documents 8-29-06



ENERGY INDUSTRIES OF OH

Purchase Order Number:
S005242-F

Part Number:
SE141-114

Part Name:
MCWF A-2

MTM Work Order Number:
65709/2.0

Major Tool & Machine, Inc.

Customer: 8909 - ENERGY INDUSTRIES OF OHIO
Customer P.O.: S005242-F
Customer Part ID: SE141-114 - MCWF A-2

Customer: 8909 - ENERGY INDUSTRIES OF OHIO
Customer P.O.: S005242-F
Customer Part ID: SE141-114 - MCWF A-2

SE141-141 - BEARING PLATE DETAIL TYPE "A" SHORT

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
20	14	30		Inspection Data Checklist: 1 steps

SE141-142 - BEARING PLATE DETAIL TYPE "A" LONG

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
21	15	30		Inspection Data Checklist: 1 steps

CERTIFICATE OF CONFORMANCE

TO: ENERGY INDUSTRIES OF OHIO **DATE: 06/28/2006**

ATTENTION: Receiving Department

Seller certifies that:

Part Number: **SE141-114** Purchase Order: **S005242-F**

Part Name: **MCWF A-2** Workorder: **65709/2.0**

Part Serial Number: **A-2** Quantity: **1**

1. These materials and/or parts were produced in conformance with all contractually applicable Government and/or Customer specifications referred in, or furnished with, the above Purchase Order.
2. The materials and/or parts furnished under the above Purchase Order were produced:

   [X] From materials furnished by Customer for the production of such parts.

   [X] From materials for which the seller has available for examination chemical and/or physical test reports or other evidence of conformance to applicable specifications.
3. All processes required in the production of these part and/or materials are listed below and were performed by a facility or personnel approved or certified by the Seller and the customer when such approval or certification is required by contract.

Certifications are on file at this plant.

Other Requirements:

MANUFACTURED PER B.P. SE141-101 REV. 3 AND P.O. REQUIREMENTS.

Signature: _____ Title: Quality Mgr Date: 8/2/06

Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
Manufacturing Planning- QA planning- Production Support	65709/2.0 -Sub:0 Op#:10	Closed	6/27/2006	840-G.Masood
PREPARE DOCUMENTATION TO PRESENT TO GOVERNMENT SOURCE INSPECTOR.	65709/2.0 -Sub:0 Op#:20	Closed	6/27/2006	840-G.Masood
REVIEW RESULTS FROM THE FOLLOWING INSEPCTIONS:-- PENETRANT INSPECTION (PT)--RADIOGRAPHIC INSPECTION (RT)-- FINAL DIMENSIONAL INSPECTION--MAG PERMEABILITY-- ELECTRICAL RESISTANCE--	65709/2.0 -Sub:0 Op#:30	Closed	6/27/2006	840-G.Masood
ORIENT PART WITH DATUM E FLANGE DOWN.---ENUSURE PART SURFACES ARE CLEAN AND FREE OF GRIT AND DEBRIS. THE PART IS NOT TO BE OILED.--THE ENTIRE PART IS TO BE WRAPPED IN PLASTIC.--PLACE FOAM ON THE 4X6 BEAMS THAT THE FLANGE WILL BE SITTING ON. LOWER THE PAR	65709/2.0 -Sub:0 Op#:40	Closed	6/29/2006	567-R.Hupp
Receive customer supplied material. ------Part Number: SE141-114 Rev: 5-- Part Description: PRODUCTION WINDING FORM TYPE-A	65709/2.0 -Sub:1 Op#:10	Closed	1/5/2006	437-J.Hiatt
SETUP 1 - MTMFX -3101 WITH DATUM E SIDE OF PART AGAINST FIXTURE.--SETUP 2 - MTMFX-3102 WITH DATUM D SIDE OF PART AGAINST FIXTURE.---SETUP AND MACHINE THE FLANGE FACES AND FLANGE PERIPHERY TO WITHIN .100- STOCK. --FINISH MACHINE THE WING SURFACES ABOVE EA	65709/2.0 -Sub:1 Op#:18	Closed	2/27/2006	535-S.Lentz
WELD A U-SHAPED BRACE ACROSS THE TOP OF THE -T-.----PLACE PART ON RISERS OR TIMBERS WITH THE SIDE FACING UP THAT HAS THREE OF THE FOUR AREAS TO BE CUT OUT. ----THE BOTTOM CUT OUT WILL BE PREFORMED FIRST- THEN PROCEED WITH THE 3 UPPER CUT OUTS- DO NOT FLIP	65709/2.0 -Sub:1 Op#:19	Closed	2/27/2006	233-G.Stupples
SET CASTING ON RISERS WITH DATUM -E- FLANGE DOWN. TAB DATUM -E- FLANGE TO THE RISER ON EITHER SIDE OF THE BREAK TO PREVENT MOVEMENT AFTER MACHINING THE BREAK THROUGH. WELD CHANNEL BRACE ACROSS THE LARGE CUTOUT ADJACENT TO THE BREAK.--FINISH MACHINE THE PO	65709/2.0 -Sub:1 Op#:20	Closed	3/7/2006	535-S.Lentz
SET UP FIXTURE PLATE MTMFX-3101 AND MACHINE LOCATING PADS AS NECESSARY.--SET UP CASTING WITH DATUM -E- AGAINST THE FIXTURE.--- FINISH MACHINE ALL AREAS BELOW THE T SECTION.--- MACHINE T SECTION TO WITHIN .030-.--- FINISH MACHINE DATUM -D- FLANGE.--	65709/2.0 -Sub:1 Op#:30	Closed	5/26/2006	345-D.Sauser

Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
SET UP FIXTURE PLATE MTMFX-3102 AND MACHINE LOCATING PADS AS NECESSARY.--SET UP CASTING WITH DATUM -D- AGAINST THE FIXTURE.--- FINISH MACHINE ALL AREAS BELOW THE T SECTION.--- MACHINE T SECTION TO WITHIN .030-.--- FINISH MACHINE DATUM -E- FLANGE.--	65709/2.0 -Sub:1 Op#:35	Closed	6/7/2006	576-J.Geisinger
THIS OPERATION CONSISTS OF 3 SETUPS.--SETUP #1: ANGLE BASE AND FIXTURE MTMFX-3101-- DATUM -E- FLANGE DOWN.--SETUP #2: ANGLE BASE AND FIXTURE MTMFX-3102-- DATUM -D- FLANGE DOWN.--SETUP #3: RISERS AND FIXTURE MTMFX-3102-- DATUM -D- FLANGE DOWN.----MACHINE P	65709/2.0 -Sub:1 Op#:50	Closed	6/16/2006	274-M.Moorman
PROTECT PART FROM METAL CONTAMINATION DUE TO CONTACT WITH IRON- SPECIFICALLY WHEN RIGGING PART FOR MOVEMENT.--ALL GRINDING WHEELS AND DISKS MUST BE VIRGIN MATERIAL NOT PREVIOUSLY USED ON ANY OTHER MATERIAL TO AVOID MATERIAL CONTAMINATION.---- CAREFULLY R	65709/2.0 -Sub:1 Op#:88	Closed	6/21/2006	219-T.Laird
PROTECT PART FROM METAL CONTAMINATION DUE TO CONTACT WITH IRON- SPECIFICALLY WHEN RIGGING PART FOR MOVEMENT.--MOVE PART INTO WASH BOOTH. --THOROUGHLY CLEAN AND DRY ALL SURFACES AND HOLES PER SECTION 9 OF PS583. --PARTS TO BE WASHED USING HEATED- DE-MINERA	65709/2.0 -Sub:1 Op#:90	Closed	6/19/2006	219-T.Laird
PT 100% OF ALL MACHINED AND GROUND SURFACES. EXCLUDE THE PROCESSING OF ANY AS-CAST SURFACE.--SEE PS582 FOR PROCESSING INSTRUCTIONS. ----TAKE PHOTOS OF ALL REJECTIONS AND NUMBER THEM. IF THERE ARE SEVERAL INDICATIONS CLOSE TOGETHER- NUMBER THE GROUP AND RE	65709/2.0 -Sub:1 Op#:100	Closed	6/21/2006	053-M.Dunn
SET PART ON RISERS WITH DATUM -D- FLANGE DOWN. PLACE A RISER ON EITHER SIDE OF THE POLOIDAL BREAK TO ENABLE CLAMPING TO ENSURE THAT THE DATUMS ARE COPLANER. LAY A STRAIGHT EDGE ACROSS THE DATUM -D- FLANGE TO VERIFY ALIGNMENT. ENSURE RADIAL ALIGNMENT BY LA	65709/2.0 -Sub:1 Op#:130	Closed	6/27/2006	825-B.Jarrett

Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
-CMM INSPECT DATUM E SIDE OF CASTING. ---PERFORM ALL HARD GAGING OF THE DATUM E SIDE. ---CONDUCT PERMEABILITY CHECK OF DATUM E SIDE PER OPERATION 136.---CONSULT ENGINEERING ON ANY OUT OF TOLERANCE CONDITIONS PRIOR TO FLIPPING THE PART AND STARTING INSPECT	65709/2.0 -Sub:1 Op#:132	Closed	6/27/2006	339-E.Root
THE -T- AREAS DEFINED AS -HIGH STRESS- ARE TO BE RT 100%. SEE PS581 FOR PROCESS INSTRUCTIONS.---HAND SKETCH A LAYOUT OF ALL FILM LOCATIONS ON ATTACHED RT MAP. ---ALL FILM IS TO BE DOUBLED UP IN ORDER TO SUPPLY THE CUSTOMER WITH A COMPLETE SET OF FILM.--	65709/2.0 -Sub:1 Op#:134	Closed	6/27/2006	010-R.Contractor
PERFORM A MAG PERMEABILITY CHECK OF THE MACHINED SURFACES USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02µ.---CHECK THE PERMEABILITY IN 3 PLACES ON EACH SIDE OF THE T SECTION AT LOCATIONS ADJACENT TO EVERY 5TH HOLE	65709/2.0 -Sub:1 Op#:136	Closed	6/21/2006	667-J.Bannister
THE RESISTANCE OF THE MID-PLANE ELECTRICAL INSULATION SHALL BE GREATER THAN 500 KOHMS WHEN TESTED AT 100 VDC.---TEST 1:--THE INSULATION RESISTANCE BETWEEN THE MID-PLANE POLOIDAL BREAK SHIM AND WINDING FORM SHALL BE MEASURED. DURING THIS TEST- THE BOLTS S	65709/2.0 -Sub:1 Op#:140	Closed	6/23/2006	840-G.Masood
PERFORM FINAL COSMETICS AS REQUIRED.--THOROUGHLY CLEAN CASTING WITH ISOPROPYL ALCOHOL. VERIFY THAT ALL HOLES ARE CLEAN AND FREE OF CHIPS.	65709/2.0 -Sub:1 Op#:150	Closed	6/27/2006	219-T.Laird
Receive customer supplied material. Part had been returned to vendor for rework.-----Part Number: SE141-114 Rev: 5--Part Description: PRODUCTION WINDING FORM TYPE-A	65709/2.0 -Sub:8 Op#:10	Closed	1/21/2006	437-J.Hiatt
SAW MATERIAL TO LENGTH PER MATERIAL CARD.	65709/2.0 -Sub:11 Op#:10	Closed	3/15/2006	266-R.Keith
MACHINE SLAVE HARDWARE BUSHINGS TO THE FOLLOWING:---1.620 O.D.+0/-.002--1.376 I.D. +.004/-.000--LENGTH 1.350 +/-.010---- THESE BUSHINGS ARE FOR SLAVE HARDWARE SHIM MOUNTING. DELIVERY THESE PARTS TO RON BACK WHEN COMPLETE. THEY ARE TEMPORARY BUSHINGS THAT	65709/2.0 -Sub:11 Op#:20	Closed	4/13/2006	821-J.Leggins
RECEIVE CUSTOMER SUPPLIED CASTING	65709/2.0 -Sub:2 Op#:10	Closed	1/5/2006	437-J.Hiatt

Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
MACHINE THE SHIM COMPLETE PER THE DRAWING AND CNC PROGRAMS.	65709/2.0 -Sub:2 Op#:20	Closed	3/6/2006	744-P.Schumacher
PRE FIT EACH BUSHING TO MAKE SURE THEY SLIP INTO THE POLOIDAL BREAK FLANGE HOLES.--APPLY LOCTITE 411 TO THE OD OF EACH BUSHING AND INSTALL FLUSH TO ONE SIDE OF THE BREAK SHIM. GRIND THE OPPOSITE SIDE OF THE BUSHINGS FLUSH TO THE SHIM.	65709/2.0 -Sub:2 Op#:30	Closed		
SAW OFF 16- AND MOVE TO NEXT WORK CENTER.	65709/2.0 -Sub:3 Op#:10	Closed	6/1/2005	227-D.Bockover
MACHINE OD OF BUSHING .001- - .002- SMALLER THAN SIZE OF THE HOLES IN POLOIDAL BREAK SHIM. IF HOLE SIZES VARY- MARK THE SHIM AND BUSHINGS 1 THRU 7.--MACHINE THE ID OF THE BUSHING TO 1.375- - 1.376-.--MACHINE THE LENGTH TO 2.19-. BUSHINGS WILL BE GROUND FL	65709/2.0 -Sub:3 Op#:20	Closed	6/20/2006	236-M.Jennings
RECEIVE MATERIAL--NOTIFY CFT AND FORWARD MATERIAL STORES.	65709/2.0 -Sub:4 Op#:10	Closed	6/1/2005	131-W.Allen
SAW OFF 30- LENGTH AND MOVE TO NEXT WORK CENTER.	65709/2.0 -Sub:5 Op#:10	Closed	6/1/2005	227-D.Bockover
MACHINE PER THE DRAWING FOR A .001- - .002- SLIP FIT WITH THE MATING DETAIL. --MEASURE THE HOLE SIZES IN THE TWO CASTING FLANGES AND SIZE THE BUSHINGS ACCORDINGLY. IF THE HOLE SIZES VARY- MARK EACH BUSHING 1 THRU 14 AND MAP OUT THE CORRESPONDING HOLE LOCA	65709/2.0 -Sub:5 Op#:20	Closed	6/20/2006	821-J.Leggins
SAW 13- LENGTH AND MOVE TO NEXT WORK CENTER.	65709/2.0 -Sub:6 Op#:10	Closed	6/1/2005	227-D.Bockover
RECEIVE MATERIAL	65709/2.0 -Sub:7 Op#:10	Closed	4/5/2005	131-W.Allen
MACHINE THE PROFILE LEAVING STOCK PER PROGRAM.	65709/2.0 -Sub:7 Op#:20	Closed	6/1/2006	332-J.Bagwill
SAW PER MATERIAL CARD	65709/2.0 -Sub:9 Op#:10	Closed	2/6/2006	266-R.Keith
SAW PER MATERIAL CARD	65709/2.0 -Sub:10 Op#:10	Closed	2/6/2006	266-R.Keith
RECEIVE HARDWARE- SCAN CERTIFICATIONS AND COMPLETE IDC.--MOVE TO STORES--	65709/2.0 -Sub:12 Op#:10	Closed	5/26/2006	503-B.Houk
PLACE THE FOLLOWING IN STORES:--7 PCS - DS141-036 STUD--14 PCS - DS141-060 NUT	65709/2.0 -Sub:12 Op#:20	Closed	5/26/2006	419-J.Smith
MACHINE THICKNESS OF SHIM TO 2.125 +/- .001-.--REMOVE AN EVEN AMOUNT OF STOCK FROM EACH FACE OF THE SHIM. THERE IS APPROXIMATELY 1/16- PER SIDE OF STOCK ON THE PART.	65709/2.0 -Sub:13 Op#:10	Closed	6/22/2006	332-J.Bagwill

Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
NO CERTIFICATIONS REQUIRED.--VERIFY QUANTITY AND FORWARD PARTS TO NEXT WORK CENTER.	65709/2.0 -Sub:14 Op#:10	Closed	5/12/2006	437-J.Hiatt
MACHINE COMPLETE PER PRINT	65709/2.0 -Sub:14 Op#:20	Closed	6/19/2006	506-R.Liston
PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02µ.--Part Number: SE141-141--Part Description: BEARING PLATE TYPE -A- SHORT	65709/2.0 -Sub:14 Op#:30	Closed	6/20/2006	503-B.Houk
NO CERTIFICATIONS REQUIRED.--VERIFY QUANTITY AND FORWARD PARTS TO NEXT WORK CENTER.	65709/2.0 -Sub:15 Op#:10	Closed	5/12/2006	437-J.Hiatt
MACHINE COMPLETE PER PRINT	65709/2.0 -Sub:15 Op#:20	Closed	6/19/2006	234-E.Booher
PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02µ.--Part Number: SE141-142--Part Description: BEARING PLATE TYPE -A- LONG	65709/2.0 -Sub:15 Op#:30	Closed	6/20/2006	503-B.Houk

Major Tool & Machine, Inc.
1458 East 19th Street
Indianapolis, IN 46218-4289

MTM N/C: 20044

Date: 06/22/06
User ID: GRIFFITH

Customer: ENERGY INDUSTRIES OF OHIO
Contact: NANCY HORTON — Telephone: 216-496-2314
E-Mail: NKHFlowen@aol.com — Fax: 216-328-2001

Part: SE141-114 / MODULAR COIL WINDING FORM TYPE — Customer P.O.: S005242-F/Ln:2
Drawing ID: SE141-114 Revision: 6 — Serial No./Qty: A2

Reported By: MIKE GRIFFITH — Telephone: 317-636-6433
E-Mail: mGriffith@MajorTool.com — Fax: 317-634-9420

Problem: PART IS REJECTED PER ASTM A903/A903M LEVEL 1.
SEE ATTACHMENT FOR SIZES AND LOCATIONS.

Proposed Disposition:
PROPOSE TO USE AS IS.

Number of additional pages: 8 page attachment

Customer Disposition: **[X] Use As Is** **[ ] Rework** **[ ] Repair** **[ ] Scrap** **[ ] Replace**

The indications were reviewed by David Williamson (see below). Since all but one small cluster was in a low stress area, they are accepted "use as is".
From: "Williamson, David E." <williamsonde@ornl.gov>
Date: June 23, 2006 9:57:52 AM EDT
To: "Frank A. Malinowski" <fmalinow@pppl.gov>, "Nelson, Brad E." <nelsonbe@ornl.gov>, Phil Heitzenroeder <pheitzen@pppl.gov>
Cc: "Colin F. Phelps" <cphelps@pppl.gov>
Subject: RE: A2 PT rejections
Phil, Frank,
There are four PT indications on the winding surface (#2, 4, 5, 17), but only one small cluster in the high stress region (#4). I would recommend that we accept the part as-is.
Thanks,
David

Approved by:

Phil Heitzenroeder
Digitally signed by Phil Heitzenroeder
DN: cn=Phil Heitzenroeder, c=US, o=PPPL, ou=Mech. Eng. Division
Reason: I am approving this document
Date: 2006.06.27 22:44:11 -04'00'

Brad Nelson
Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL, ou=FED, email=nelsonbe@ornl.gov
Date: 2006.06.28 09:34:46 -04'00'

Tech. Rep. RLM

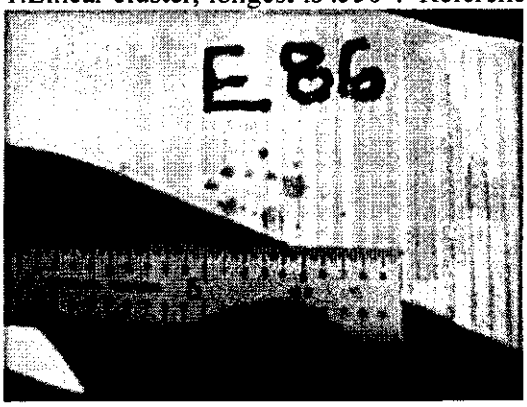
Mike Griffith
Digitally signed by Mike Griffith
DN: cn=Mike Griffith, c=US, o=Major Tool and Machine, ou=CFT - White, email=mgriffith@majortool.com
Reason: I agree to the terms defined by the placement of my signature on this document
Date: 2006.06.29 15:16:23 -04'00'

Major Tool Implemented By: _____ **Title:** _____ **Date:** _____

n:\mtmapps\Mmonc14.qrp

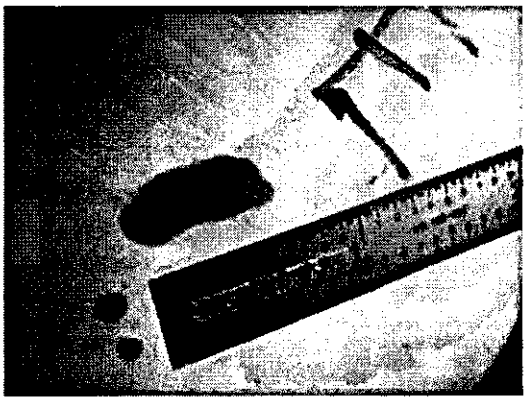
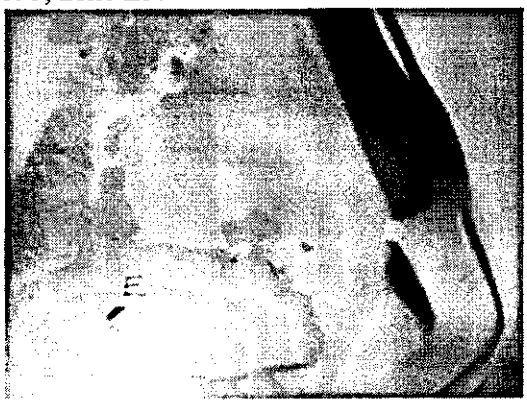
PT Inspection Results of A2 – NC20044

1.Linear cluster, longest is .550". Reference cutout on drawing sheet 5, zone C6.

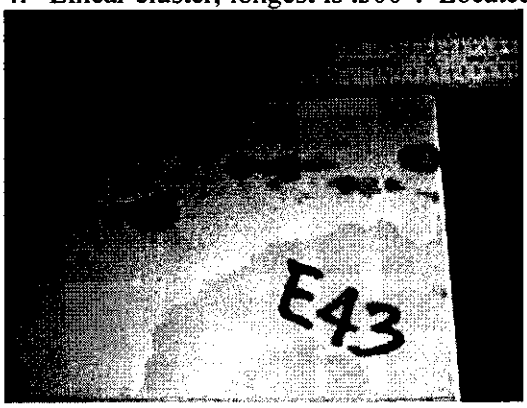


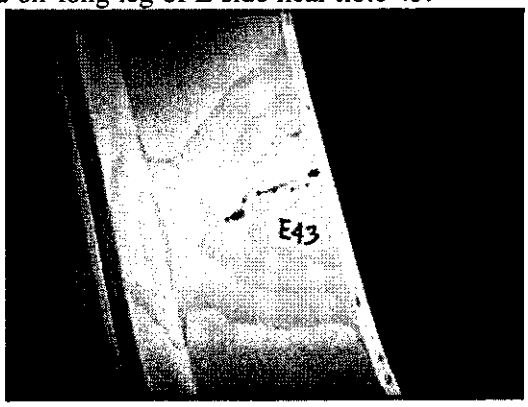
2. Linear indication, .150" long. Located on E side short leg near hole 78.


3. .600" long linear located on E side of inner cast wall. This area has been machined due to excess cast stock. Reference sheet 5, zone E5.

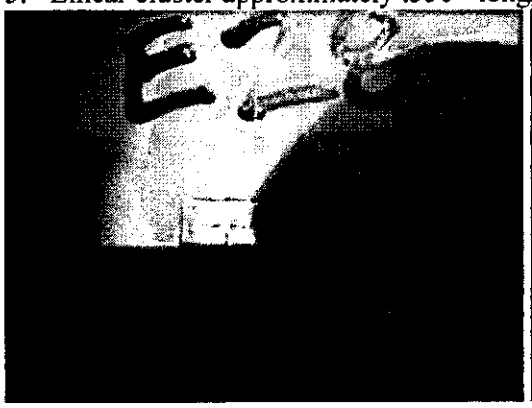



4. Linear cluster, longest is .300". Located on long leg of E side near hole 43.

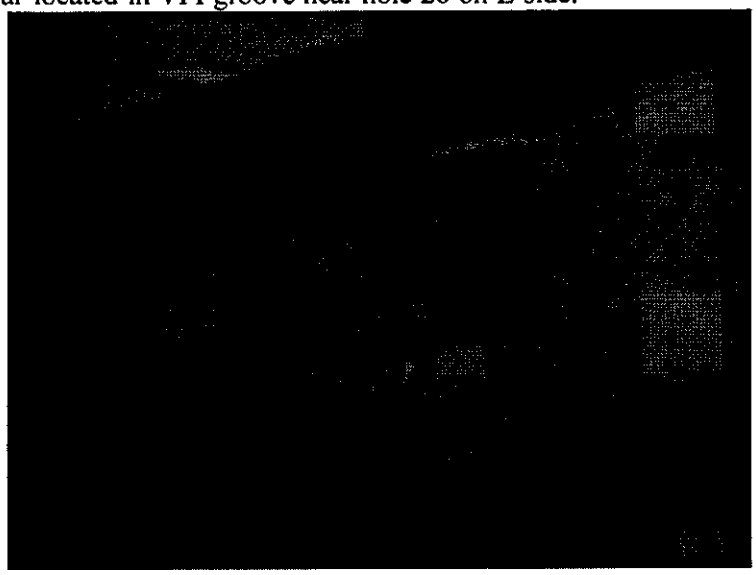




5. Linear cluster approximately .550" long, located on long leg of E side near hole 28.

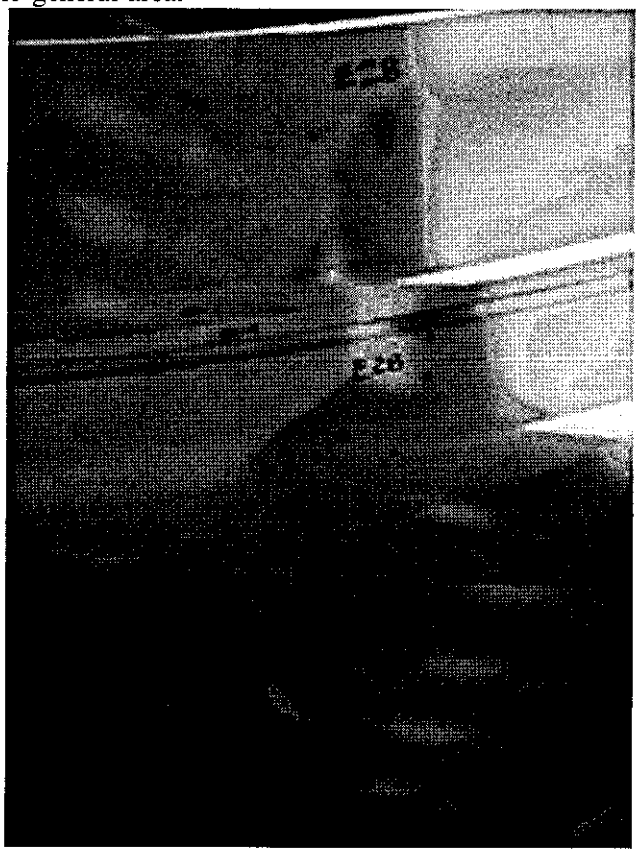


6. .350" linear located in VPI groove near hole 28 on E side.

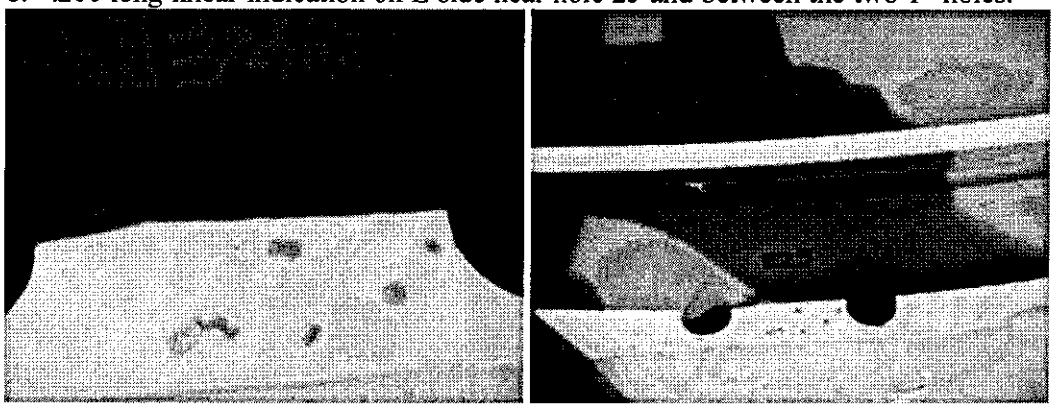


7. Linear indications in 1.885 thru hole in datum E flange. Longest is .200"

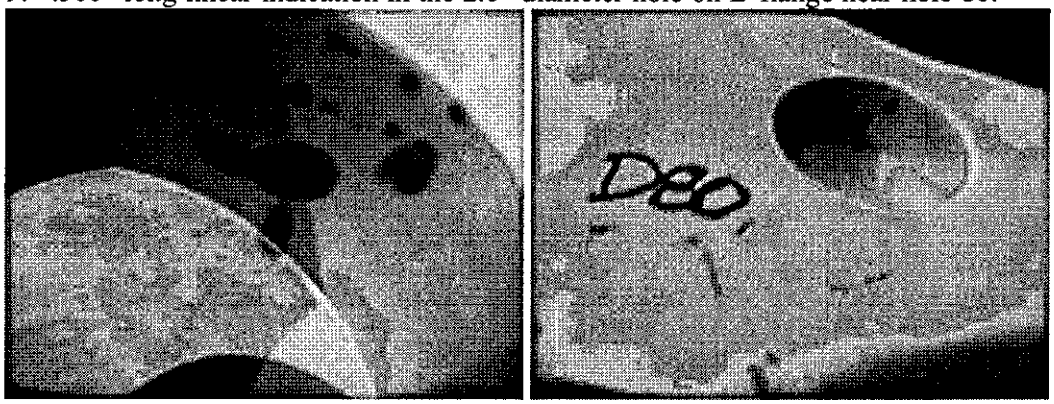
The picture below is a wide view of indications 5, 6 and 7. All of the indications are grouped in the same general area.



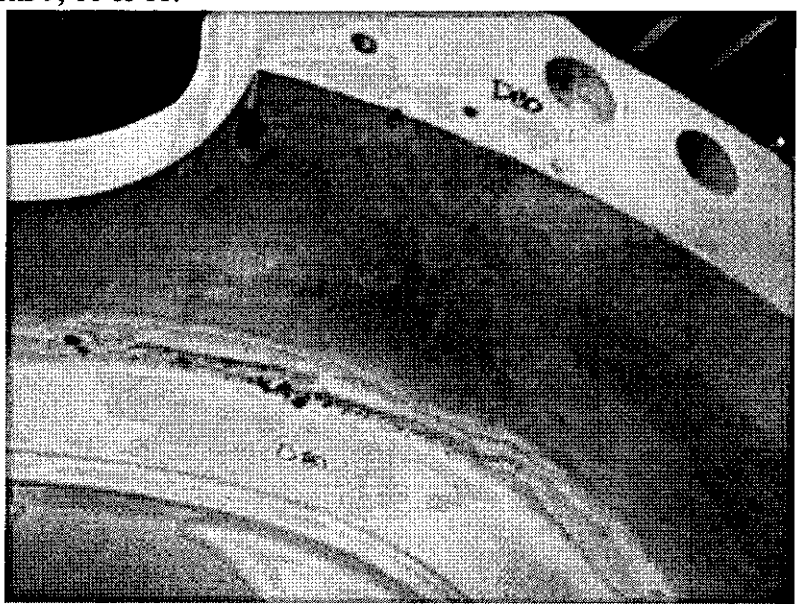
8. .200 long linear indication on E side near hole 25 and between the two 1" holes.



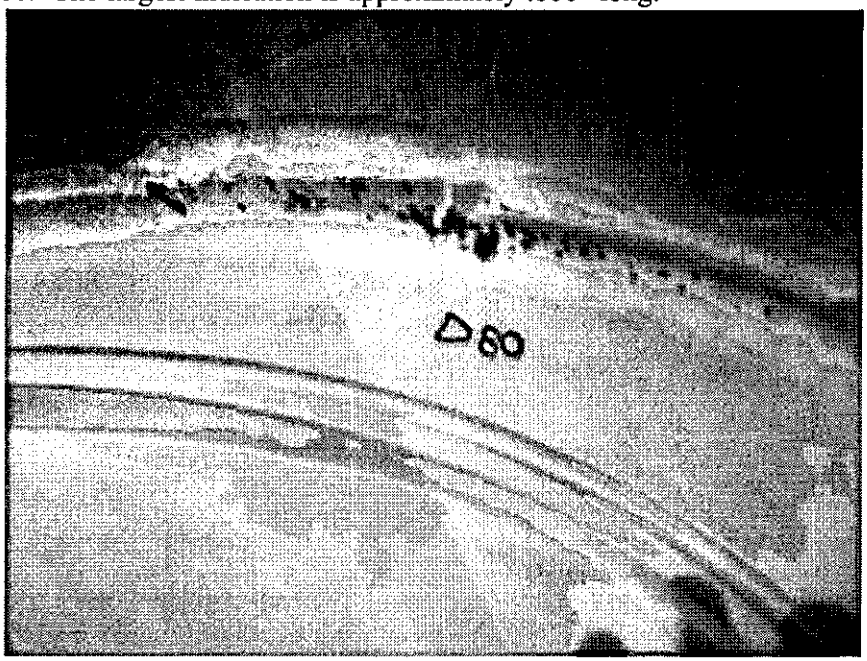
9. .500" long linear indication in the 2.0" diameter hole on D flange near hole 80.



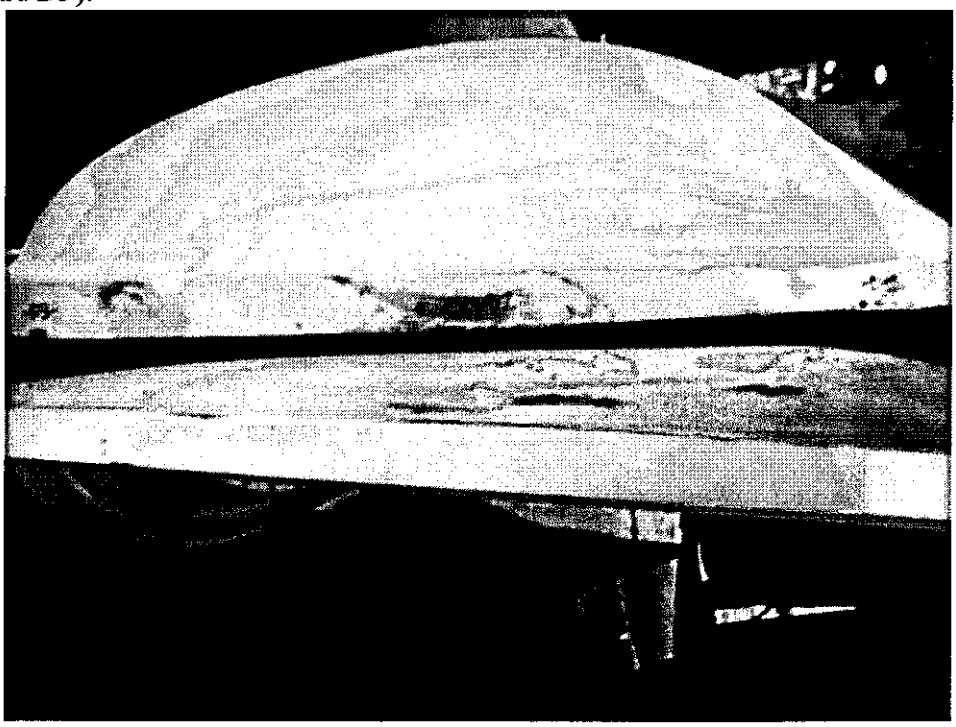
10. .200" long linear on D flange face near hole 80. This picture shows a wide view of indications 9, 10 & 11.



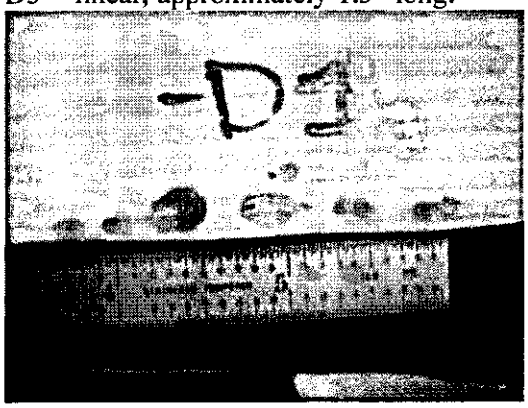
11. Cluster of indications below VPI groove on D side of casting. Cluster is in area near hole 80. The largest indication is approximately .800" long.

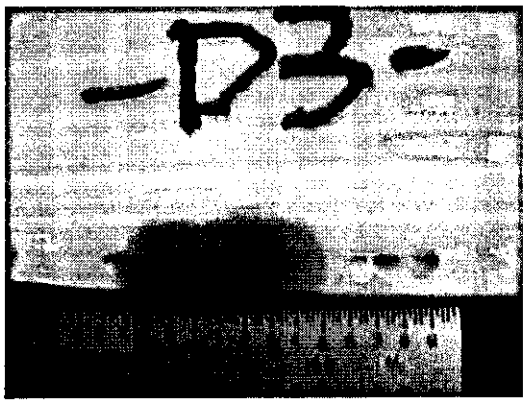


12. The following photos show indications on the outer edge of the D flange (labeled D1 thru D3).



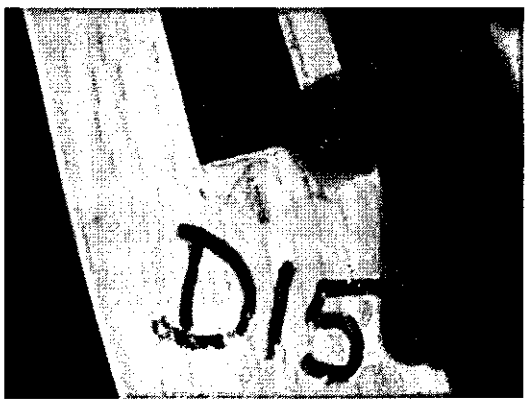
D1 = linear cluster, longest is .800".
D2 = rounded indication, .100".
D3 = linear, approximately 1.3" long.

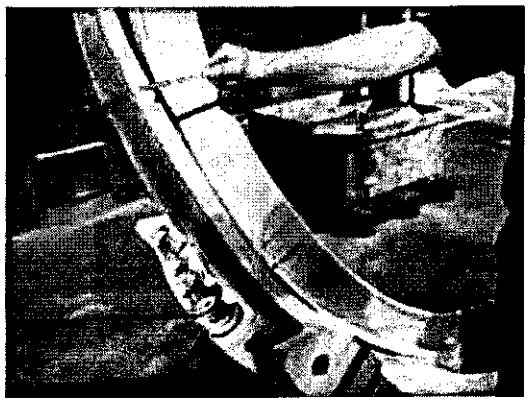




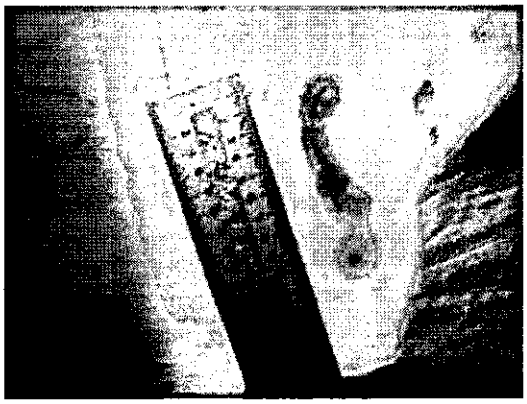
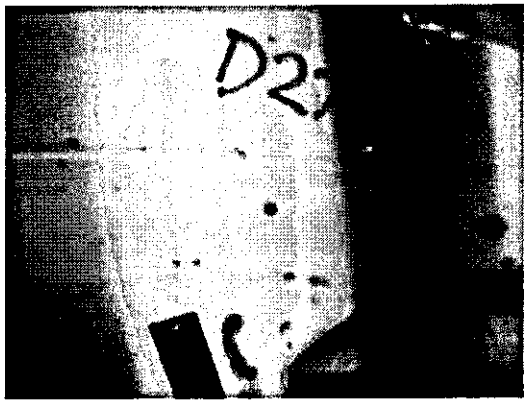
13. Rounded indication, approximately .150" located in large cut out of D flange near hole 5.

14. Rounded indication, approximately .125" located in large cut out of D flange near hole 15.

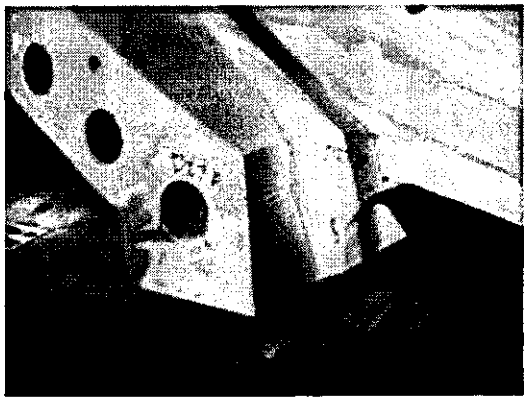




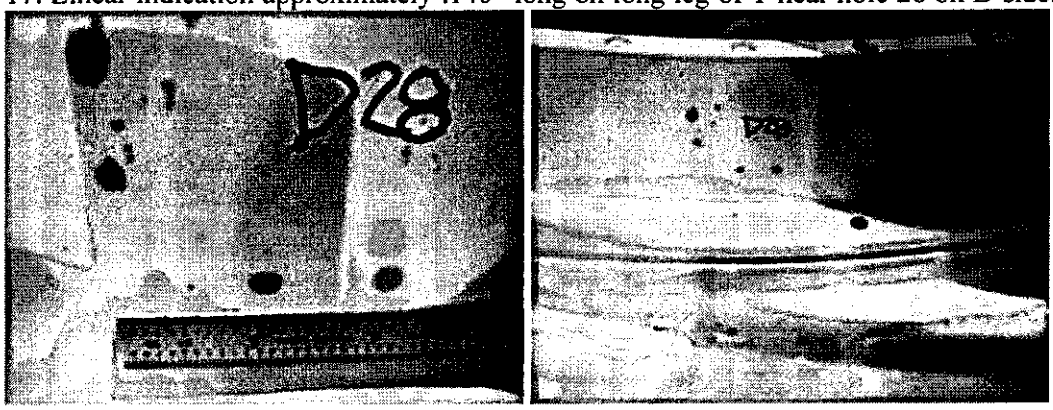
15. Cluster of linear indications in large cut out. Largest is a .600". Reference sheet 4, zone G6.

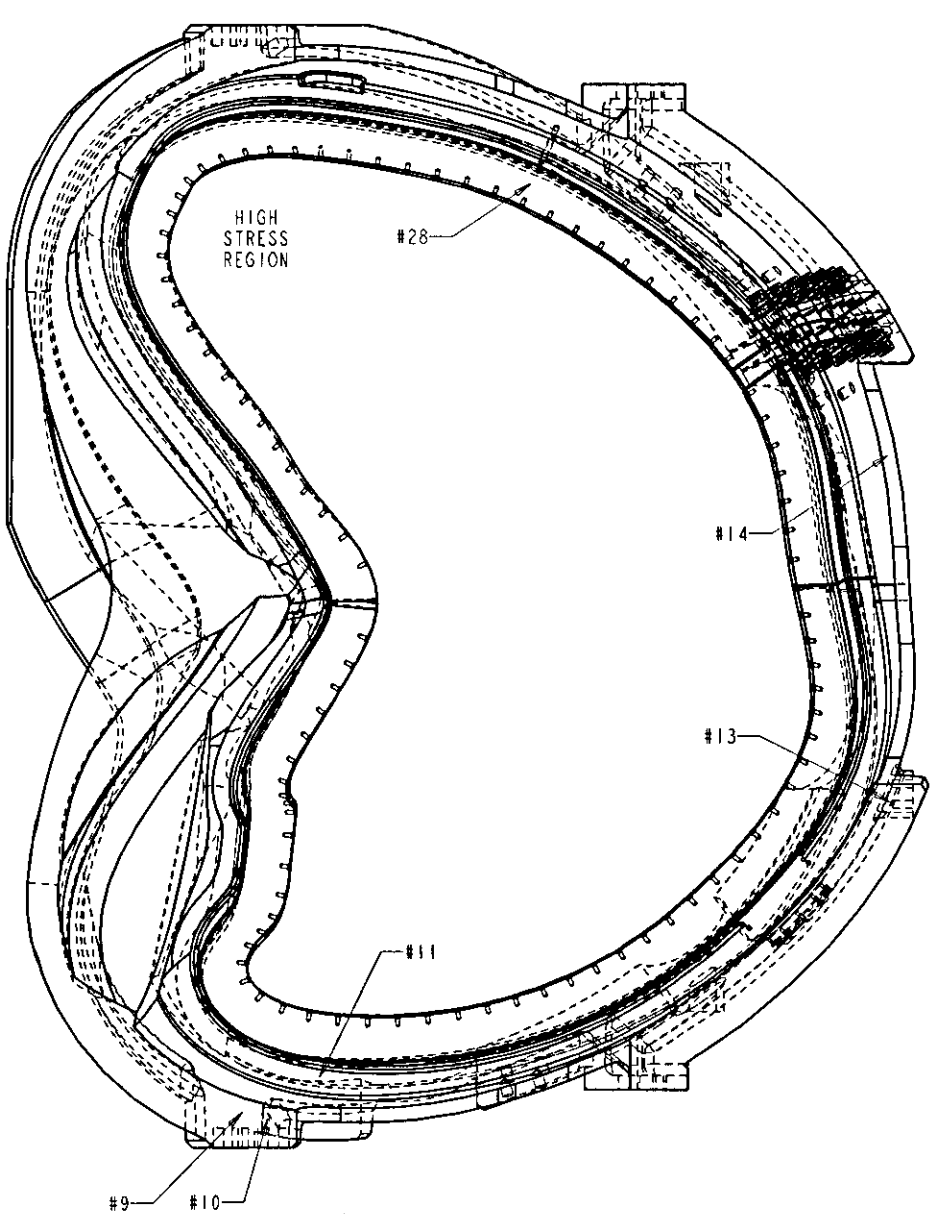
16. Cluster of linear indications near 2" diameter bore on D flange near hole 27. Picture at the bottom right shows indications for both 15 and 16.



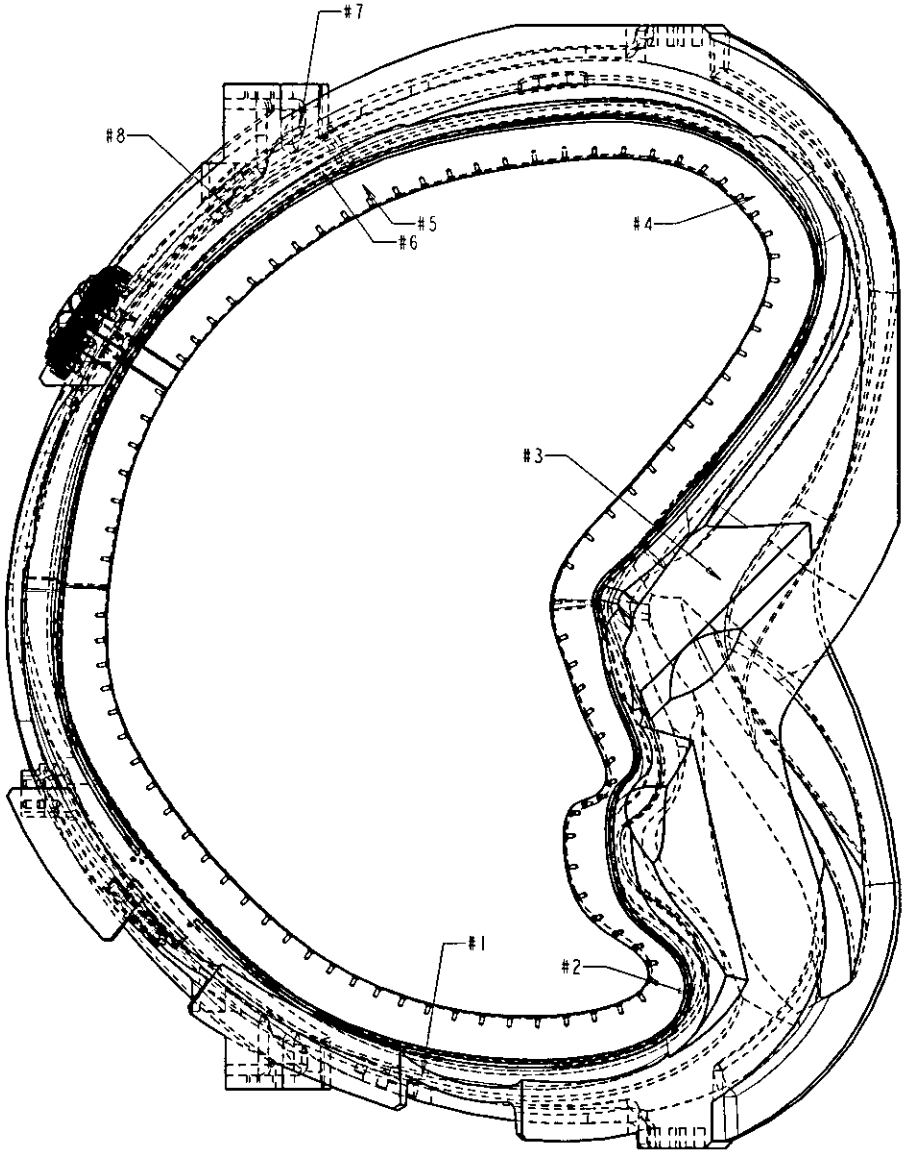
17. Linear indication approximately .140" long on long leg of T near hole 28 on D side.



A2 PT INDICATIONS



FLANGE DATUM-D



FLANGE DATUM-E

Major Tool & Machine, Inc.
1458 East 19th Street
Indianapolis, IN 46218-4289

MTM N/C: 20080

Date: 06/27/06
User ID: GRIFFITH

Customer: ENERGY INDUSTRIES OF OHIO
Contact: NANCY HORTON
E-Mail: NKHFlowen@aol.com
Telephone: 216-496-2314
Fax: 216-328-2001

Part: /
Drawing ID: SE141-114 Revision: 7
Customer P.O.: S005242-F/Ln:2
Serial No./Qty: 1

Reported By: MIKE GRIFFITH
E-Mail: mGriffith@MajorTool.com
Telephone: 317-636-6433
Fax: 317-634-9420

Problem: Inspection Test #: 130 rejected: OUTER AS CAST SURFACES: {g|,5|A|B|C}: -.092 TO .553
Inspection Test #: 140 rejected: 2 X .40: : .395 TO .435 ON E SIDE, .355 TO .410 ON D SIDE
Inspection Test #: 150 rejected: 4 X .03 X 45: : .035 ON E SIDE, .010 TO .035 ON D SIDE
Inspection Test #: 180 rejected: DATUM D SIDE
VERIFY SHELL INTERSECT CLEARANCE WITH GAGE MTMFX-3473: : REJECT - MODEL DOES NOT ALLOW FOR CLEARANCE
Inspection Test #: 190 rejected: M TO M1: {g|,02|R|T|S}: -.021 TO .012
Inspection Test #: 230 rejected: N TO N1: {g|,02|R|T|S}: -.017 TO .027
Inspection Test #: 240 rejected: 2 X .06/.09 X 45: : .025 TO .050
Inspection Test #: 260 rejected: : bd.625 y .188: .618 TO .627 DEPTH .165 TO .193
Inspection Test #: 280 rejected: DATUM E FLANGE: {f|,01}: .015
Inspection Test #: 290 rejected: DATUM D FLANGE: {f|,01}: .032
Inspection Test #: 330 rejected: 8X Ø1-8 UNC: {#|,010|A|B|C}: .016 TO .060
Inspection Test #: 350 rejected: 8X Ø1-8 UNC: {d|,010|A|B|C}: .016 TO .066
Inspection Test #: 460 rejected: : 6X .25-20 UNC y .5
.5 X 82` CHAMFER: THE THREADS ARE ACCEPTABLE BUT THE CHAMFER IS TOO BIG .500
Inspection Test #: 480 rejected: Ø1.885: {#|d,06|N|A|E}: .003 TO .074
Inspection Test #: 540 rejected: : 6X .25 - 20 UNC y .6
d.5 X 82` CHAMFER: .375 DIA. CHAMFER
Inspection Test #: 780 rejected: INNER AS CAST SURFACES: {g|,5|A|B|C}: -.034 TO -.337 / -.341 TO .073
Inspection Test #: 790 rejected: WING SURFACES: {g|-,12;;;\,25|A|B|C}: -.164 TO -.197 / -.016 TO -.206

Additional Items:
1) Tool Gouge on top edge of T, datum D side. Gouge is approximtately .300" long and .015" in depth. See pictures.
2) G11 shim is below flush on the outer surface of the datum D flange. G11 is approximately .08" below flange surface. See pictures.
3) Tool marks did not clean up on the short leg of the D flange from holes 16 to 19. Tool marks appear to be less than .005" in depth. See pictures.

Proposed Disposition:
Propose to accept deviations As-Is.

Number of additional pages: Dimensional IDC and Final Visual Pictures

Customer Disposition: **[X] Use As Is** **[ ] Rework** **[ ] Repair** **[ ] Scrap** **[ ] Replace**

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Nonconformance Report: NC 20080
A-2 dimensional deviations and surface discontinuities.

Project Disposition:
All deviations and discontinuities were evaluated and reviewed by NCSX in a teleconference on 6/28/06. All were determined to be acceptable as-is.

Approvals:

Larry Dudek

Digitally signed by Larry Dudek
DN: cn=Larry Dudek, c=US
Date: 2006.06.28 10:45:00 -04'00'

Procurement Technical Representative

Brad Nelson

Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL, ou=FED, email=nelsonbe@ornl.gov
Date: 2006.06.28 13:30:32 -04'00'

Responsible Line Manager:

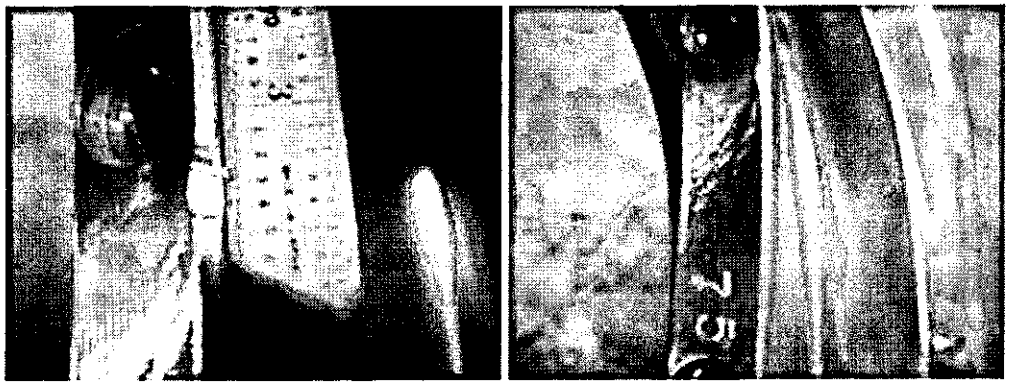
Major Tool Implemented By: Mike Griffith Digitally signed by Mike Griffith DN: cn=Mike Griffith, o=US, ou=Major Tool and Machine, ou=CFT - White, email=mgriffith@majortool.com Reason: I agree to the terms defined by the placement of my signature on this document. Date: 2006.08.02 08:23:47 -04'00' Title: _____ Date: _____

n:\mtmapps\Mtnonc14.qrp

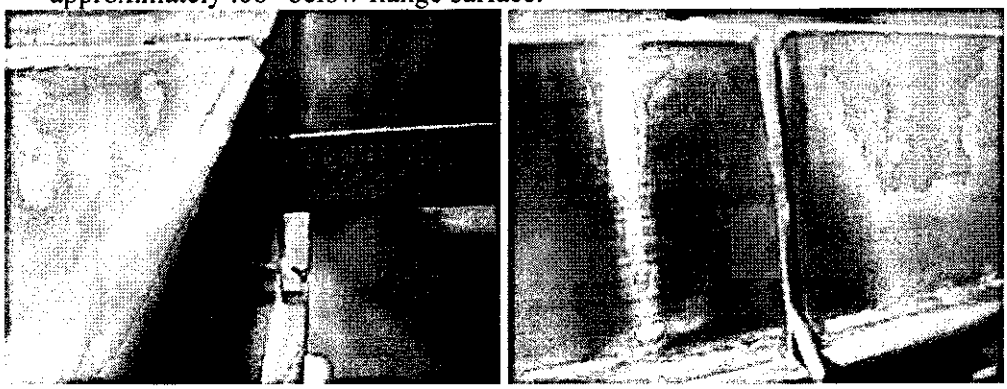
SE141-114 A2

NC20080 attachment

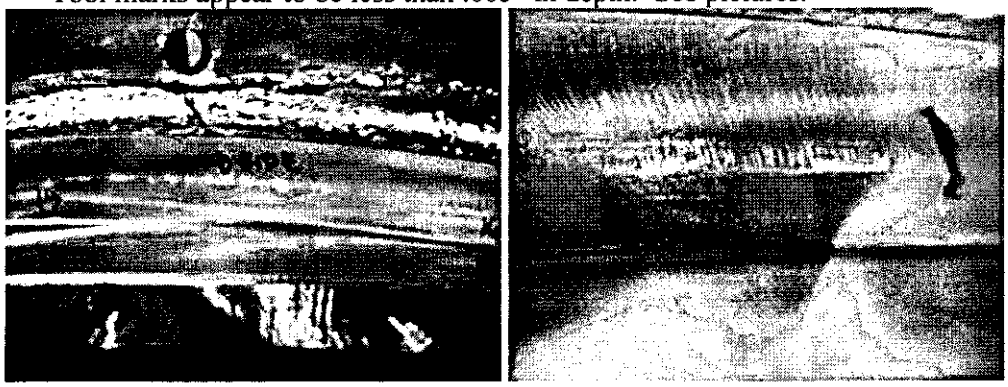
1. Tool gouge on top edge of T section on the datum D side of the part. Gouge is near hole 76.



2. G11 shim is below flush on the outer surface of the datum D flange. G11 is approximately .08" below flange surface.



3. Tool marks did not clean up on the short leg of the D flange from holes 16 to 19. Tool marks appear to be less than .005" in depth. See pictures.



mc106320.tif (1751x2242x2 tiff)

MAJOR TOOL & MACHINE INC
1458 E 19TH ST
INDIANAPOLIS IN 46218

YOUR PURCHASE ORDER NUMBER
P05-01332
Today's Date:

MCMASTER-CARR
600 COUNTY LINE ROAD
ELMHURST IL 60126-2081
IF THERE ARE ANY QUESTIONS ABOUT THIS SHIPMENT CONTACT OUR SALES DEPARTMENT
(630)833-0300

PAGE 1 (MORE)
MCM NUMBER 6241663-02

PACKING LIST

EXTRA

Warehouse Location	McMaster-Carr Part Number	Fill Quantity	Item Description	Your Line	Your Order	This Shipment
	74765 A86	1 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR 1	5	1 EA	1
	74765 A86	1 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR 1	6	1 EA	1
	74765 A86	1 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR 1	7	1 EA	1
	74765 A86	1 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR 1	8	1 EA	1
	74765 A86	0 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR Balance of 1 EA expected to ship by 3/9/2005	9	1 EA	0
	74765 A86	0 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR Balance of 1 EA expected to ship by 3/9/2005	10	1 EA	0
	74765 A86	0 EA	LOCTITE PRISM SUPER GLUE HZ-N TOUGHENED,NUMBER 411,1-POUND BOTTLE,CLEAR Balance of 1 EA expected to ship by 3/9/2005	11	1 EA	0

REFER TO: 6241663-02
MAJOR TOOL & MACHINE INC

3/10/05

TAG
CCP

MTM 09
3/10/05

9415
Lines 5-8

PACKER	Number of CARTONS	PTELLER

LNS: 7

WEIGHT 4

CYCLE

CERTIFICATION OF COMPLIANCE

This is to certify that, according to our records, the above item(s) furnished on your purchase order was supplied in accordance with the description and as illustrated in our catalog.

Sincerely,

Brian Hedstrom
Quality Manager

X

MCM NO. 6241663-02 04

PURCHASE ORDER
P05-01332

FROM:
MCMASTER-CARR
600 COUNTY LINE ROAD
ELMHURST IL 60126-2081 USA

SHIP TO:

MAJOR TOOL & MACHINE INC
1458 E 19TH ST
INDIANAPOLIS IN 46218

CCP

mc108545.tif (1628x2145x2 tiff)

Spaulding COMPOSITES
55 Nadeau Drive
Rochester, NH 03867
Ph: (603) 332-0555 Fax: (603) 332-5357
www.spauldingcom.com

Shipping List 072435
Customer No 101193
Sales Order Shipper

Sold to : STANDARD GRINDING & MFG CO
3721 W. CHASE AVENUE
SKOKIE, IL 60076
United States

Ship to : STANDARD GRINDING & MFG CO
3721 W. CHASE AVENUE
SKOKIE, IL 60076
United States

Ship Date	Customer PO	Sales Order	# of Boxes	Weight	Ship VIA	Bill of Lading	FOB
05/17/2005	50624	085171-00	1	0	YELLOW	072435	DE

Item	Part / Description / Details	Order Quantity	Ship Qty
000001	39G1CNT73125NMWLF U/M SHT SO Item 4 G-11-CR 48" +untrimmed X 36"+untrimmed Thickness: 3.125" +/-.110" PLEASE NOTE THAT THERE IS NO NEMA STANDARD FOR G-11 CR SHEET SPAULDING C OF C TO G-11 CR SHEET NO TESTING REQUIRED AT TIME OF ORDER Sheet test 3.550 Th	1.00000	1.00000

RECEIVED MAY 19 2005 By

MAY 31 2005
96507
Lines 1,2
5/31/05

CERTIFICATE of CONFORMANCE

WE HEREBY CERTIFY THAT THE MATERIAL SUPPLIED ON THIS ORDER WAS MADE IN ACCORDANCE WITH THE STANDARDS AND PROCESSES ESTABLISHED BY SPAULDING COMPOSITES COMPANY FOR THE REQUIREMENTS OF MATERIAL DESCIBED ABOVE.

LOT # DOM.

Authorized By: Mark [signature] Date: 05/17/2005

Customer Copy Page # 1 Form: SCSHIP Rev: 8/99

05/26/05 13:00 847 674 1723 ATLAS FIBRE CO. 002/003

mc108545.tif (1644x2177x2 tiff) [2]

Spaulding COMPOSITES
55 Nadeau Drive
Rochester, NH 03867
Ph: (603) 332-0555 Fax: (603) 332-5357
www.spauldingcom.com

Shipping List 072434
Customer No 101193
Sales Order Shipper

Sold to : STANDARD GRINDING & MFG CO
3721 W. CHASE AVENUE
SKOKIE, IL 60076
United States

Ship to : STANDARD GRINDING & MFG CO
3721 W. CHASE AVENUE
SKOKIE, IL 60076
United States

Ship Date	Customer PO	Sales Order	# of Boxes	Weight	Ship VIA	Bill of Lading	F O B
05/17/2005	60624	065169-00	1	716	YELLOW	072434	DE

Item	Part / Description / Details	Order Quantity	Ship Qty
000001	39G1CNT71650NMWLF U/M SHT SO Item 5	1.00000	
	G-11CR 48" +UNTRIMMED X 36"+UNTRIMMED THK: 1.650" +/-.070" PLEASE NOTE THAT THERE IS NO NEMA STANDARD FOR G-11 CR SHEET SPAULDING C OF C TO G-11 CR SHEET NO TESTING REQUIRED AT TIME OF ORDER		1.00000

RECEIVED
MAY 19 2005
By

5/31/05
MTM 09

CERTIFICATE of CONFORMANCE

WE HEREBY CERTIFY THAT THE MATERIAL SUPPLIED ON THIS ORDER WAS MADE IN ACCORDANCE WITH THE STANDARDS AND PROCESSES ESTABLISHED BY SPAULDING COMPOSITES COMPANY FOR THE REQUIREMENTS OF MATERIAL DESCIBED ABOVE.

LOT # DOM.

Authorized By: Mark F Cardillo Date: 05/17/2005

Customer Copy

Page # 1

Form: SCSHIP Rev: 8/99

INSPECTION DATA CHECKLIST

Quality Assurance Documentation for Part ID: SE141-101 - Item: 7

Workorder: 65709/2-0 Sub:1 Op:140

Part: SE141-101 - MODULAR COIL WINDING FORM TYPE-A - PRODUCTION MODULAR COIL WINDING FORM TYPE-A

Drawing ID: SE141-101 Rev: 3			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
*		TEST 1 RESISTANCE TO BE >500 kohms CHECK RESISTANCE BETWEEN THE MID-PLANE POLOIDAL BREAK SHIM	MULTIMETER	QA		J-1358	MEASURED AT 2.2 GIG AOHMS	840-G.M			A
(10)		AND THE WINDING FORM.						06-23-06			
*		TEST 2 RESISTANCE TO BE >500 kohms CHECK RESISTANCE BETWEEN THE JUMPERED BOLTS AND JUMPERED MID-PLANE CASTING AND WINDING	MULTIMETER	QA		J-1358	MEASURE AT 33 TO 40 MEGA OHMS	840-G.M			A
(20)		FORM.						06-23-06			

METRODE PRODUCTS LTD
HANWORTH LANE
CHERTSEY SURREY
ENGLAND KT16 9LL
Tel +44 (0)1932 566721
Fax. +44 (0)1932 565168
Email mfo@metrode.com
Internet http/www.metrode.com

TEST CERTIFICATE

THIS PRODUCT HAS BEEN MANUFACTURED AND SUPPLIED THROUGH A SYSTEM APPROVED TO ISO 9001 & 2 OR EQUIVALENT

TEST CERTIFICATE NUMBER 194277

METRODE WELDING CONSUMABLES

BATCH No.	W020132
OUR ORDER REF.	C01708013 / 1
DATE	09/03/05
PRODUCT	ER316MNNF TIG 2.4MM
FORM	TIG WIRE
SPECIFICATION	BS EN 12072:2000 W 20 16 3 Mn L

INVOICE TO	DESPATCHED TO
EUROWELD LTD 255 ROLLING HILLS ROAD MOORESVILLE NC 28117 USA	EUROWELD LTD 255 ROLLING HILLS ROAD MOORESVILLE NC 28117 USA

IMPORTANT: Any liability arising from either reliance on this certificate, or use of our products, is strictly limited and governed by our conditions of business.

CUSTOMER ORDER No.	DELIVERY NOTE DOCUMENT No.	QUANTITY (Kg)
N. 05-39	DN0106163	17.5000

CHEMICAL ANALYSIS (WEIGHT %) TYPE CERTIFIED MATERIAL TEST REPORT: BS EN 10204: 3.1.B

C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu			
0.015	7.43	0.42	0.006	0.014	19.9	15.4	2.62	0.14	0.20			

TYPICAL ALL-WELD METAL MECH. PROPERTIES, AS WELDED:-
TS: >600 N/mm2; 0.2%PS: >400 N/mm2; EL. ON 4D: 40 %;
CVN @ -196 DEG.C: 70 J.

3/23/05 44534 Line1 B-2

3/23/05 MTM 09

Metrode Products Ltd. certifies that the above material conforms to the indicated specifications

B. KYIET
Q A MANAGER

NOTES *Ni includes incidental Co unless otherwise specified
*Nb (Cb) includes incidental Ta unless otherwise specified
Ferrite is given as FN (Ferrite Number) and measured on all-weld pad using instrument calibrated against NBS related secondary standards (See AWS A4 2-97) unless otherwise specified

All Test certificates issued by METRODE will contain this embossed seal
Any recipient of a copy of METRODE Test Certificate without the seal should ensure from the supplier that it is a true and accurate reproduction of the original

mc106579.tif (1652x2103x2 tiff)

mc106164.pdf

METRODE PRODUCTS LIMITED
HANWORTH LANE, CHERTSEY
SURREY, UK, KT16 9LL
Tel: +44 (0) 1932 566721
Fax: +44 (0) 1932 565180
Email: info@metrode.com
Website: www.metrode.com

CERTIFIED MATERIAL TEST REPORT

THIS PRODUCT HAS BEEN MANUFACTURED AND SUPPLIED THROUGH A SYSTEM APPROVED TO ISO 9001 & 2 OR EQUIVALENT

METRODE WELDING CONSUMABLES

TEST CERTIFICATE NUMBER

193695

INVOICE TO
EUROWELD LTD
255 ROLLING HILLS ROAD
MOORESVILLE
NC 28117
USA

DESPATCHED TO
EUROWELD LTD
255 ROLLING HILLS ROAD
MOORESVILLE
NC 28117
USA

CUSTOMER ORDER NUMBER	N.05-34
DELIVERY NOTE DOCUMENT NUMBER	DN0105859
QUANTITY (KG)	15.0000
OUR ORDER REFERENCE	SO1787730 / 1
DATE	02/03/05

METRODE WELDING CONSUMABLE	ER316MNNF TIG 2.4mm
FORM	TIG WIRE
BATCH NUMBER	WO20132
SPECIFICATION	BS EN 12072:2000 W 20 16 3 Mn L

Chemical Analysis (Weight %) — Type: BS EN 10204: 3.1.B / ASME SFA-5.01: Sch. H

C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu		
0.015	7.43	0.42	0.006	0.014	19.9	15.4	2.62	0.14	0.20		

Mechanical Tests — Type: BS EN 10204: 2.2 / ASME SFA-5.01: Sch. G

Tensile Tests | Impact Energies

Condition	Test Temperature	$Rp_{0.2\%}$ (MPa)	Rm (MPa)	A4 (%)	Z (%)	Temperature (°C)	Impact Energy (J)	Lateral Expansion (mm)
AS-WELDED	ROOM	>400	>600	40	-	-196	70	-

Metrode Products Limited certifies that the above material conforms to the indicated specifications

This document is produced electronically and is valid without signature.

IMPORTANT Any liability arising from either reliance on this certificate, or use of our products, is strictly limited and governed by our conditions of business

Barrie Kyte – Q.A.Manager

ASME SFA-5.01: Lot classification S4

3/3/05
93911
Line 1 B.1

Notes:
% Mn includes incidental Co unless otherwise specified.
% Nb (Cb) includes incidental Ta unless otherwise specified
Ferrite is given as FN (Ferrite number) and measured on all-weld pad using instrument calibrated against WRC-related secondary standards (See AWS A4.2-97) unless otherwise specified

MTH 09 3/7/05

FROM : EUROWELD-LTD FAX NO. : 704 662 9820 Mar. 02 2005 09:57AM P2

Westmoreland Mechanical Testing & Research, Inc.
P.O. Box 388
Westmoreland Drive
Youngstown, Pa. 15696-0388 U.S.A.
Telephone: 724-537-3131 Fax: 724-537-3151
Website: www.wmtr.com
WMT&R is a technical leader in the material testing industry.

ACCREDITED
621-01 & 621-02

Accredited Nadcap Materials Testing Laboratory

April 22, 2005

CERTIFICATION

Page IM1 of 1

WMT&R Report No. 5-25008
P.O. No. P05-01764
PQR No. 434
Welder Jason Bever #465

Major Tool & Machine Inc.
1458 East 19th Street
Indianapolis, IN 46218

Corrected Date
May 4, 2005

Attention: Josh Mayne

Subject: All processes, performed upon the material as received, were conducted at WMT&R, Inc. in accordance with the WMT&R Quality Assurance Manual, Rev. 9, dated 4/1/2000.
The following tests were performed on this order: IMPACT and TENSILE

IMPACT RESULTS: ASME Section IX and AWS B2.1, ASTM E23-02
No Requirements
MATERIAL: Metaltek CF8MNMN MOD
SAMPLE TYPE: Charpy V-Notch **DISPOSITION: Report**

Specimen ID	TestLog Number	Sample Size	Temp. °F\°C	Energy ft-lbs	Energy joules	Mils Lat Exp	A\U\R
Weld-1	B65835	Standard	68\20	173	234.6	84	Report
Weld-2	B65836	Standard	68\20	160	216.9	68	Report
Weld-3	B65837	Standard	68\20	157	212.9	81	Report

A\U\R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

Richard G. Parks
Project Manager/Industrial Technology Engineer

5/4/05
May 4, 2005

Westmoreland Mechanical Testing & Research, Inc.
P.O. Box 388
Westmoreland Drive
Youngstown, Pa. 15696-0388 U.S.A.
Telephone: 724-537-3131 Fax: 724-537-3151
Website: www.wmtr.com
WMT&R is a technical leader in the material testing industry.

ACCREDITED
621-01 & 621-02

Accredited Nadcap Materials Testing Laboratory

April 20, 2005

CERTIFICATION

Major Tool & Machine Inc.
1458 East 19th Street
Indianapolis, IN 46218

WMT&R Report No. 5-25008
P.O. No. P05-01764
PQR No. 434
Welder Jason Bever #465

Attention: Josh Mayne

Subject: All processes, performed upon the material as received, were conducted at WMT&R, Inc. In accordance with the WMT&R Quality Assurance Manual, Rev. 9, dated 4/1/2000.
The following tests were performed on this order: IMPACT and TENSILE

TENSILE RESULTS: ASME Section IX and AWS B2.1, ASTM E21-03a
SOAK TIME: 5 Minutes
SPEED OF TESTING: 0.0050 in./in./min., 0.0500 in./min./in.
MATERIAL: Metrode ER316Mnnf **DISPOSITION: Report**

Specimen ID	TestLog Number	Temp. °F/°C	UTS KSI/MPA	0.2% YS KSI/MPA	Elong %	RA %	Modulus MSI/GPA	Ult. Load LBS/NEWTONS	0.2% YLD. LBS/NEWTONS
T1	B65833	-320/-196	191.8/1320	148.7/1030	27	39	28.7/198	2630/11699	2039/9071

A/U/R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

DISPOSITION: Report

Specimen ID	TestLog Number	Orig. Width (in./mm)	Final Width (in./mm)	Orig. Thick (in./mm)	Final Thick (in./mm)	Orig. Dia. (in./mm)	4D Orig GL (in./mm)	4D Final GL (in./mm)	Orig. Area (Sq. In./Sq. mm)	Failure Location/Type	Machine Number	A/U/R
T1	B65833	0.1802/4.57708	0.1437/3.650	0.0761/1.933	0.0582/1.478	0.2511/6.378	0.70/17.78	0.89/22.61	0.04183816/26.992307	WELD/DUCTILE	M9	R

A/U/R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

Roy E. Starr/Matt Wojton
____ Technical Services Manager/____ Tensile Supervisor April 20, 2005

Westmoreland Mechanical Testing & Research, Inc.
P.O. Box 388
Westmoreland Drive
Youngstown, Pa. 15696-0388 U.S.A.
Telephone: 724-537-3131 Fax: 724-537-3151
Website: www.wmtr.com
WMT&R is a technical leader in the material testing industry.

ACCREDITED
621-01 & 621-02

Accredited Nadcap Materials Testing Laboratory

April 20, 2005

CERTIFICATION

WMT&R Report No. 5-25008
P.O. No. P05-01764

Major Tool & Machine Inc.

TENSILE RESULTS: ASME Section IX and AWS B2.1, ASTM E21-03a
SOAK TIME: 5 Minutes
SPEED OF TESTING: 0.0050 In./in./min., 0.0500 in./min./in.
MATERIAL: Metrode ER316Mnnf **DISPOSITION: Report**

Specimen ID	TestLog Number	Temp. °F/°C	UTS KSI/MPA	0.2% YS KSI/MPA	Elong %	RA %	Modulus MSI/GPA	Ult. Load LBS/NEWTONS	0.2% YLD. LBS/NEWTONS
T2	B65834	-320/-196	204.7/1410	156.5/1080	29	34	29.9/206	5095/22664	3894/17323

A/U/R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

DISPOSITION: Report

Specimen ID	TestLog Number	Orig. Dia. (in./mm)	Final Dia. (in./mm)	4D Orig GL (in./mm)	4D Final GL (in./mm)	Orig. Area (Sq. In./Sq. mm)	Failure Location/Type	Machine Number	A/U/R
T2	B65834	0.1780/4.521	0.1444/3.668	0.70/17.78	0.90/22.86	0.02488456/16.054520	WELD/DUCTILE	M9	R

A/U/R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

Roy E. Starr/Matt Wojton
Technical Services Manager/Tensile Supervisor

4.20.05
April 20, 2005

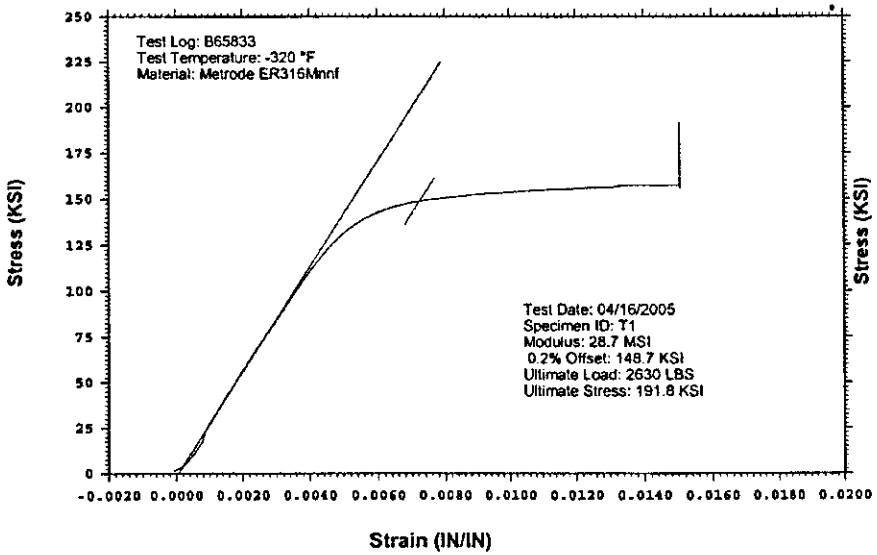
WESTMORELAND MECHANICAL TESTING & RESEARCH, Inc

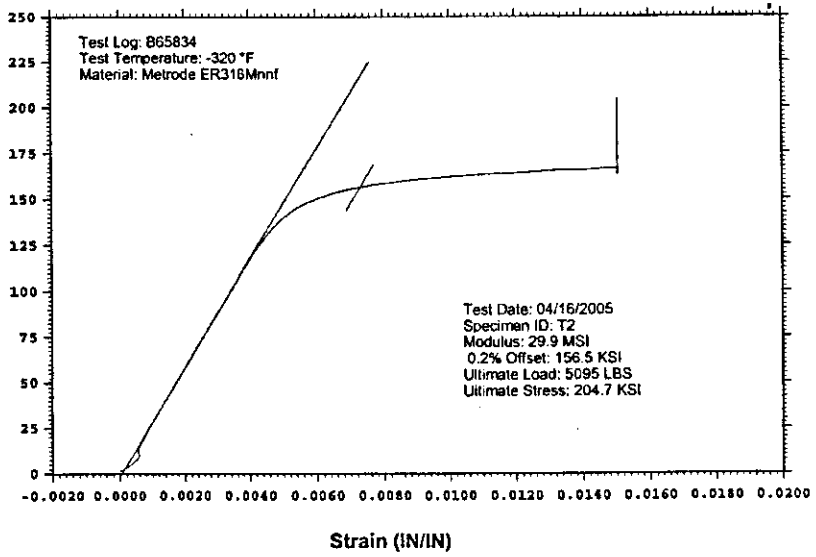
Stress vs. Strain

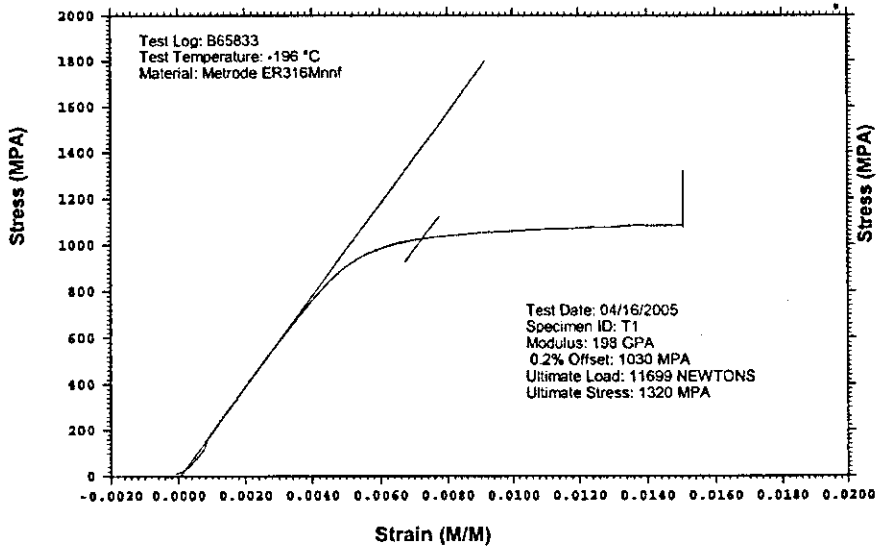
Phone: (724)537-3131

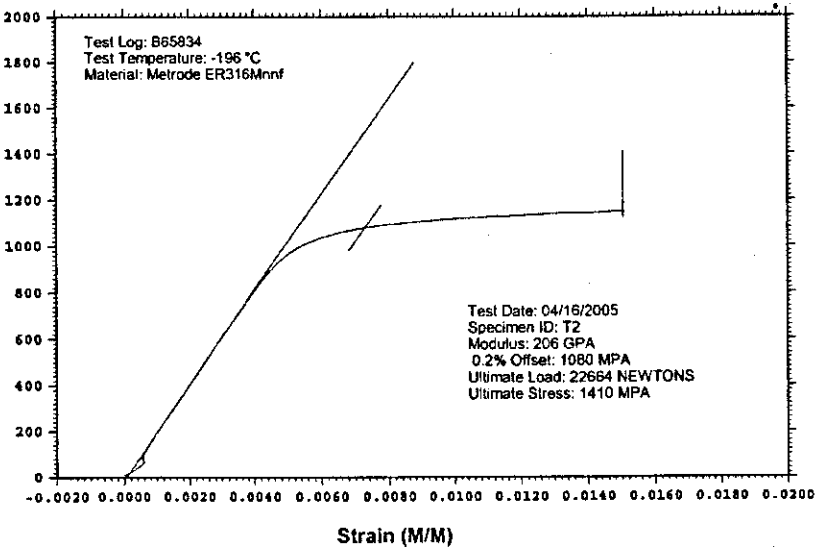
Customer: Major Tool & Machine Inc.
WMT&R Report: 5-25008

P.O. No.: P05-01764
PQR No.: 434
Welder: Jason Bever #465









mc107081.tif (1727x2247x2 tiff)

GE Advanced Materials, Polymershapes

Certificate of Conformance

Date:

Attn: Receiving Inspection
To: Major Tool + Machine
Address: 1458 E. 19th St.
Indianapolis, IN 46218

Customer P.O. Number: P05-01288
Sales Order No: 2790834

It is hereby certified that the product information provided below conforms to the corresponding information in the possession of GE Advanced Materials, Polymershapes with respect to such products. This certification and the sale of products are subject to GE Advanced Materials, Polymershapes' standard conditions of sale. This document shall not be reproduced, except in full, without prior written approval.

Quantity	Description	Lot/Specification/Standard Number
36	6IICR Plendia Sheet .062"TNLX16"X38"	No Spec / N38.009023

MTM 09
4/5/05

APR - 5 2005
94942
1-18

GE Advanced Materials, Polymershapes

By: Ernest Evans

Title: Warehouse Worker

Nondestructive Test
Certification for Liquid Penetrant Examination

1458 E. 19th Street, Indianapolis, In 46218
TEL:(317)636-6433 FAX:(317)634-9420

Quality Assurance Documentation for Part ID: SE141-114 - Item: 12

Date of Inspection:06/21/2006 **Type of Material:**CAST STAINLESS **NDT#:17119**

Stage of Inspection:	Manufacturing Process:	Surface Condition:	Test Being Run to:	Heat Treated:
[ ] Incoming Inspection	[ ] Weldment [x] Casting	[x] Machined	[x] Router Instructions	[ ] Yes
[ ] In-Process Inspection	[ ] Bar Stock [ ] Plate	[ ] Rough	[x] Drawing	[x] No
[ ] After Repair	[ ] Forging [ ] Other	[ ] Other	[ ] Test Plan	
[x] Final Inspection		FINAL MACHINED	[ ] Technique Card	
			SEE NOTES	

Part Information:
MTM Job Number: 65709/2.0 -Sub:1 -Op:100
Resource ID: 810-LIQUID PENETRANT INSPE
Part ID: SE141-114
Part Name: MODULAR COIL WINDING FOR
Serial Number:
Customer P.O.: S005242-F
Customer Unit/Plant:

Test Results:
Quantity Inspected: 1
Quantity Accepted: 0
Quantity Rejected: 1
Run Hours: 0.0

Inspection Results:
Customer N/C #:
[ ] Accepted
[x] Rejected
[ ] N/C-Report
[ ] Rework
MTM N/C #: 19891

Customer Inspection Plan: SEE NOTES
Test Step:
Revision:
Material Test Number:

Inspection Criteria:
Customer Specification: ASTM A903/A903M
MTM Spec Number: PS582 (REF NDT-WI-09)
Acceptance Standard: ASTM A903 (SEE NOTES)

Inspection Materials Used:
Manufacturer: SHERWIN
Type of Penetrant: DP-51
Batch Number: 41-E47
Developer: D-100
Batch Number: 65-C6

Penetrant Examination Processes:
Type: II (Visible) / Dwell Time: 20 Minutes
Method: A (Water Wash)
Method of Drying: Forced Air Fan
Form: e (nonaqueous for Type II visible dye) / Dwell Time: 20 Min

Inspection Requirements:

100 % of all accessible surfaces [ ] Joint Preps [ ] Root Pass [ ] Back Gouge [ ] Cover Pass [ ] Other

Notes:
INSPECT 100% OF SURFACES ON PRODUCTION MODULAR COIL WINDING FORM TYPE-A.
SPECIFICATION: ASTM A903/A903M
METHOD: ASTM E165

ACCEPTANCE CRITERIA: ASTM A903/A903M LEVEL I FOR MACHINED SURFACES INCLUDING THE ENTIRE "T" SECTION (HIGH STRESS AREAS)

PART HAS 17 REJECTABLE INDICATIONS PER CUSTOMER REQUIREMENTS ON MACHINED SURFACES. SEE NCR-20044 AND PHOTOS FOR MORE DETAILED INFO.

This is to certify that the pieces specified have been inspected in accordance with the specifications shown.

Inspector: 581-D.EDWARDS **Date:** 06/21/2006 Douglas D. Edwards Level II MTM P-10

Quality Assurance Documentation for Part ID: SE141-114 - Item: 13

Workorder: 65709/2-0 Sub:1 Op:130

Part: SE141-114 - MODULAR COIL WINDING FORM TYPE-A - PRODUCTION MODULAR COIL WINDING FORM TYPE-A

Drawing ID: SE141-101 Rev: 3			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
2* (10)	D3	Ø.001 - Ø.002 CHECK CLEARANCE OF ITEM 5 TO ITEM 6.	FEELER GAGES	MFG		J-1203	ACCEPT	242-M.G 06-26-06			A
* (15)		THE GAP BETWEEN THE POLOIDAL BREAK BUSHINGS AND FLANGE SHAL BE LESS THAN .002"	FEELER GAGES	MFG		J-1203	ACCEPT	242-M.G 06-26-06			A
* (20)		ENSURE THAT THE CUMULATIVE GAP AT ANY SINGLE CROSS SECTION OF THE POLOIDAL FLANGE ELEMENTS IS LESS THAN .005".	FEELER GAGES	MFG		J-1203	NO GAP	242-M.G 06-26-06			A
* (30)		THE MAX. GAP AT THE POLOIDAL BREAK PERIMITER IS .015" AND CANNOT EXCEED 1/8" FROM THE EDGE	FEELER GAGES	MFG		J-1203	ACCEPT	242-M.G 06-26-06			A
1* (40)	F2	TORQUE ASSEMBLY TO 1500 +/- 30 FT-LBS PER DRAWING NOTE 15.	TORQUE MULTIPLI	MFG		J-1240	DONE	825-B.J 06-27-06			A

Quality Assurance Documentation for Part ID: SE141-114 - Item: 14

Workorder: 65709/2-0 Sub:1 Op:132

Part: SE141-114 - MODULAR COIL WINDING FORM TYPE-A - PRODUCTION MODULAR COIL WINDING FORM TYPE-A

Drawing ID: SE141-114 Rev: 7			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1* (10)	F3	NOTE 14 - BACK SPOTFACE ALL THRU HOLES TO MINIMUM CLEAN UP.		QA		MTMFX3564	ACCEPT	339-E.R 06-27-06			A
1* (20)	E8	FLANGE PROFILE +/-.25 IN THIS AREA	CMM	QA		00064	-.0027 TO -.0065	339-E.R 06-27-06			A
1* (30)	D8	// .02 A	CMM	QA		00064	.006	339-E.R 06-27-06			A
1* (40)	D8	54.20 ± .03	CMM	QA		00064	54.206	339-E.R 06-27-06			A
1* (50)	C8	54.20 ± .03	CMM	QA		00064	54.205	339-E.R 06-27-06			A
1* (60)	B8	// .02 A	CMM	QA		00064	.005	339-E.R 06-27-06			A
1* (70)	D5	// .02 A	CMM	QA		00064	.002	339-E.R 06-27-06			A
1* (80)	D5	48.50 ± .03	CMM	QA		00064	48.498	339-E.R 06-27-06			A
1* (90)	C5	48.50 ± .03	CMM	QA		00064	48.494	339-E.R 06-27-06			A
1* (100)	B5	// .02 A	CMM	QA		00064	.006	339-E.R 06-27-06			A
1* (110)	D4	VERIFY PART MARKING: MAJOR TOOL SE141-114 A(casting number) (weight) LBS.		QA		VISUAL	ACCEPT	339-E.R 06-27-06			A
1* (120)	D4	RECORD WEIGHT		QA			5180	242-M.G 06-21-06			A
1* (130)	D3	⌓ .5 A B C OUTER AS CAST SURFACES	CMM	QA		00064	-.092 TO .553 [N/C: 20080-Doc:NC20080]	339-E.R 06-27-06			R
2*	F8		CALIPER	QA		P-5075	.395 TO .435 ON DAT	533-B.C			R

(140)		2 X .40					UM E SIDE, .355 TO .410 ON DATUM D SID E [N/C:20080-Doc:NC 20080]	06-23-06			
2* (150)	F8	4 X .03 X 45	CALIPER	QA		P-5075	.035 ON DATUME SIDE , .010 TO .035 ON DATUM D SIDE [N/C:2 0080-Doc:NC20080]	533-B.C 06-23-06			R
2* (160)	G6	2 X R.187 +.025 / -.005	PIN GAGE	QA		J-651-2	.187 ON DATUM E SID E, .183 TO .192 O N DATUM D SIDE	533-B.C 06-23-06			A
2* (170)	G5	⌓ .2 R T S P TO M	CMM	QA		00064	-.003 TO .081	339-E.R 06-27-06			A
2* (180)	G5	DATUM D SIDE VERIFY SHELL INTERSECT CLEARANC USING GAGE MTMFX-3473		QA		MTMFX-3473	REJECT - MODEL DOE S NOT ALLOW FOR CL ARANCE [N/C:20080-D oc:NC20080]	339-E.R 06-27-06			R
2* (190)	F5	⌓ .02 R T S M TO M1	CMM	QA		00064	-.021 TO .012 [N/C: 20080-Doc:NC20080]	339-E.R 06-27-06			R
2* (200)	E5	⌓ .1 R T S M1 TO N1	CMM	QA		00064	-.015 TO .017	339-E.R 06-27-06			A
2* (210)	G3	⌓ .2 R T S Q TO N	CMM	QA		00064	.015 TO .092	339-E.R 06-27-06			A
2* (220)	F3	DATUM E SIDE VERIFY SHELL INTERSECT CLEARANC USING GAGE MTMFX-3473		QA		MTMFX-3473	ACCEPT	339-E.R 06-27-06			A
2* (230)	F3	⌓ .02 R T S N TO N1	CMM	QA		00064	-.017 TO .027 [N/C: 20080-Doc:NC20080]	339-E.R 06-27-06			R
2* (240)	B4	2 X .06/.09 X 45	CALIPER	QA		P-5075	.025 TO .050 [N/C:2 0080-Doc:NC20080]	533-B.C 06-23-06			R
2* (250)	B5	Ø .375-16 UNC ↧ .750 +.1 -0 96 X	THREAD PLUG GA	QA	100%	A-151	ACCEPT	339-E.R 06-27-06			A
2*	B5	⌴ Ø.625 ↧ .188	PIN GAGE	QA		J-652-3	.618 TO .627 DEP TH .165 TO .193 [N/	533-B.C			R

(260)			DEPTH MICROMET			J-520	C:20080-Doc:NC20080]	06-23-06			
2* (270)	B5	⌖ .06 R T S .375-16 HOLES	CMM	QA		00064	.005 TO .055	339-E.R 06-27-06			A
3* (280)	H3	▱ .01 DATUM E FLANGE	CMM	QA		00064	.015 [N/C:20080-Doc :NC20080]	339-E.R 06-27-06			R
3* (285)	H4	√125 DATUM E FLANGE	PROFILOMETER	QA		J-1109	25 TO 81	533-B.C 06-23-06			A
3* (290)	F2	▱ .01 DATUM D FLANGE	CMM	QA		00064	.032 [N/C:20080-Doc :NC20080]	339-E.R 06-27-06			R
3* (295)	F3	√125 DATUM D FLANGE	PROFILOMETER	QA		J-1109	32 TO 78	533-B.C 06-23-06			A
3* (300)	E4	Ø2.50 THRU	DIAL BORE GAGE	QA		J-1401	2.495	533-B.C 06-23-06			A
3* (310)	F4	⌖ .060 A B C Ø2.50	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
3* (320)	C7	8X Ø1-8UNC ↧ 2	THREAD PLUG GA	QA		A-347	ACCEPT	533-B.C 06-22-06			A
3* (330)	C7	⌖ .010 A B C 8X Ø1-8 UNC	CMM	QA		00064	.016 TO .060 [N/C:2 0080-Doc:NC20080]	339-E.R 06-27-06			R
3* (340)	D5	8X Ø1-8UNC THRU	THREAD PLUG GA	QA		A-347	ACCEPT	533-B.C 06-22-06			A
3* (350)	D5	Ø .010 A B C 8X Ø1-8 UNC	CMM	QA		00064	.016 TO .066 [N/C:2 0080-Doc:NC20080]	339-E.R 06-27-06			R
3* (360)	D3	Ø2.50 THRU	DIAL BORE GAGE	QA		J-1401	2.491	533-B.C 06-23-06			A
3* (370)	D3	⌖ .060 A B C Ø2.5	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
3* (380)	D1	40.90	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
4* (390)	H6	⌴Ø2.000-2.001 ↧0.990-1.000	DIAL BORE GAGE CALIPER	QA		J-1401 P-5075	2.0005, 2.0007, 2.0 009 DEPTH .992 TO .996	533-B.C 06-24-06			A
4* (400)	F4	Ø1.375-6UNC THRU	THREAD PLUG GA	QA		A-375	ACCEPT	533-B.C 06-23-06			A
4* (410)	F4	⌖ Ø.06 M A D Ø1.375-6	CMM	QA		00064	.036	339-E.R 06-27-06			A

4* (420)	D4 &	Ø1.885 ± .003 THRU	DIAL BORE GAGE	QA		J-1400	1.883 TO 1.887	533-B.C 06-23-06			A
4* (430)	D4 &	⌖ Ø.06 M A D Ø1.885	CMM	QA		00064	.012 TO .059	339-E.R 06-27-06			A
4* (440)	B6	3X Ø1.5	CALIPER	QA		J-1103	1.500 TO 1.502	533-B.C 06-23-06			A
4* (450)	B6	⌖ .06 M A D 3X Ø1.5	CMM	QA		00064	.020 TO .058	339-E.R 06-27-06			A
4* (460)	A4	6X .25-20 UNC ↧ .5 .5 X 82° CHAMFER	THREAD PLUG GA CALIPER	QA		A-715 P-5075	THE THREADS ARE A EPTABLE BUT THE CH MFER IS TOO BIG .5 00 [N/C:20080-Doc:N C20080]	533-B.C 06-24-06			R
5* (470)	D8/D6	Ø1.885 ±.003	DIAL BORE GAGE	QA		J-1400	1.8835 TO 1.884	533-B.C 06-22-06			A
5* (480)	D8/D6	⌖ Ø.06 N A E Ø1.885	CMM	QA		00064	.003 TO .074 [N/C:2 0080-Doc:NC20080]	339-E.R 06-27-06			R
5* (490)	F8	Ø1.375-6UNC THRU	THREAD PLUG GA	QA		A-375	ACCEPT	533-B.C 06-23-06			A
5* (500)	F8	⌖ Ø.06 N A E Ø1.375-6 UNC	CMM	QA		00064	.043	339-E.R 06-27-06			A
5* (510)	F6	8X 1/4 -20 UNC-2B	THREAD PLUG GA	QA		A-715	ACCEPT	533-B.C 06-23-06			A
5* (520)	D6	3X Ø1.5 ↧ 2.33	CALIPER CALIPER	QA		J-1103 P-5075	1.498 TO 1.500 DEPTH 2.330 TO 2.34 0	533-B.C 06-22-06			A
5* (530)	D6	⌖ Ø.06 N A E 3X Ø1.5	CMM	QA		00064	.024 TO .029	339-E.R 06-27-06			A
5* (540)	B3	6X .25 - 20 UNC ↧ .6 Ø.5 X 82° CHAMFER	CALIPER	QA		P-5075	.375 DIA. CHAMFER [N/C:20080-Doc:NC200 80]	533-B.C 06-23-06			R
6* (550)	H7	6.00	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
6* (560)	H7	1.00	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
6* (570)	G8	6.70	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A

6* (600)	F8	6.70	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
6* (610)	E7	5.75	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
6* (620)	E7	1.00	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
6* (630)	E6	4X Ø1.00	PIN GAGE	QA		J-921	.995	533-B.C 06-23-06			A
6* (640)	G5	2X .88 - 1.13	CALIPER	QA		P-5075	1.115 TO 1.130	533-B.C 06-23-06			A
6* (650)	F5	.06-.09 X 45° TYP	CALIPER	QA		P-5075	.065	533-B.C 06-22-06			A
7* (660)	G2	19.00	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
7* (670)	F2	2.00	CALIPER	QA		P-5075	2.00	533-B.C 06-22-06			A
7* (680)	F2	6.75	CMM	QA		00064	SEE IGES DATA	339-E.R 06-27-06			A
7* (690)	F2	3.75	CALIPER	QA		P-5075	3.745 TO 3.750	533-B.C 06-22-06			A
7* (700)	F1	4X Ø.75-10 UNC ↧ 1.50	THREAD PLUG GA	QA		A-167	ACCEPT	533-B.C 06-22-06			A
7* (710)	D1	2X 1.56 OPEN THRU	CALIPER	QA		P-5075	1.560	533-B.C 06-22-06			A
7* (720)	C1	.375-16 UNC-2B TAP↧ .75 .03 X 45° CHAMFER 6X	THREAD PLUG GA CALIPER	QA		A-444 P-5075	ACCEPT CHAMFE R .035	533-B.C 06-22-06			A
7* (730)	C4	VERIFY THAT HOLE LOCATIONS ARE SCRIBED ON THE PART.		QA		VISUAL	ACCEPT	533-B.C 06-22-06			A
7* (740)	B3	8.50 DISTANCE BETWEEN SCRIBE MARKINGS.	CALIPER	QA		J-1389	ACCEPT	533-B.C 06-22-06			A
9* (750)	H1	2X Ø.50	PIN GAGE	QA		J-652-3	.500	533-B.C 06-23-06			A
9*	B7		PIN GAGE	QA		J-652-3	2.570 DEEP .623 D	533-B.C			A

(760)		TC2 HOLE TO BE .625" IN DIAMETER APPRO 2.52" DEEP AND .25" IN DIAMETER AT LEAST 1" DEEP.	CALIPER			P-5075	IA. 1 DEEP . 252 DIA.	06-23-06			
*			PIN GAGE	QA		J-652-3	.623 DIA. 1.150 D	533-B.C			A
(770)		TC1 LOCATION AND CONFIGURATION MODIFIED. HOLE TO HAVE .625 CLEARANCE AND AT LEAST 1" OF DEPTH AT THE .25" DI	CALIPER			P-5075	EEP .252 DIA.	06-23-06			
10*	F5	⌓ .5 A B C	CMM	QA		00064	-.034 TO -.337 / -.	339-E.R			R
(780)		INNER AS CAST SURFACES					341 TO .073 [N/C:20 080-Doc:NC20080]	06-27-06			
10*	D5	⌓ -.12 -.25 A B C	CMM	QA		00064	-.164 TO -.197 / -.	339-E.R			R
(790)		WING SURFACES					016 TO -.206 [N/C:2 0080-Doc:NC20080]	06-27-06			
Drawing ID: NCSX-CSPEC-141-03 Rev: 11			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**			
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**	
4*	3.1.1.	√125	PROFILOMETER	QA		J-1109	15 TO 30	533-B.C			A
(800)		THE TWO "L" MACHINED SURFACES O TEE MUST HAVE A RMS OF 125.						06-23-06			

4959

10520 Chester Road
Woodlawn, Ohio 45215

COOPERHEAT MQS

CLIENT	INTERPRETER/LEVEL	RADIOGRAPHER	JOB NO	P.O. NO	DATE
Major Tool & Machine	Robert Weaver/II	Robert Weaver	13860001	N/A	6/26/06

ISOTOPE/X-RAY	DIA. X LENGTH	CURIES/MA	FOCAL SPOT SIZE	SFD	SOD	TIME	FILM PROCESSING	FILM TYPE	FILM TECHNIQUE	PB SCREENS
IR192	.118"x.089"	22	.148"	17"	16.25"	4:30	AUTO	Kodak AA	Double	.010"

WELD PROCESS	MATERIAL SPEC	MATERIAL DIAMETER	MATERIAL THICKNESS	PENETRAMETER	SHIM	ACCEPTANCE STANDARD
N/A	316 SST	N/A	.75"	ASTM 1B	N/A	NO Defects > .080"

DESCRIPTION
C5709/2.0/1/134/88
SE141-114
Page 1 of 2

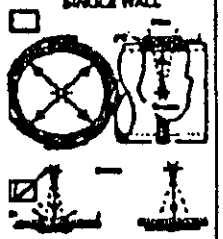
REMARKS Densitometer-12105
cal due-8-2-06

V-Shrinkage-as shown on PT-NC20044 Item 4

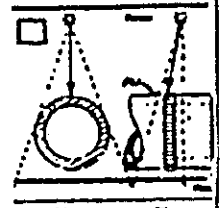
FITTING, SEAM OR FITTING	FILM INTERVAL NUMBER	WELDER IDENTIFICATION	PENETRAMETER SIZE	PENETRAMETER QUALITY LEVEL	SLAG	POROSITY	POROSITY WITH TAIL	CRACK	LACK OF PEN	LACK FUSION	EXTERNAL CONVEXITY	INTERNAL CONCAVITY	TUNGSTEN	MELT-THROUGH	BURN-THROUGH	CRATER-PIT	OXIDATION	INTERNAL UNDERCUT	EXTERNAL UNDERCUT	ALIGNED INDICATIONS	WELD CONTOUR	MIS-MATCH	FILM ARTIFACT	VISUAL CONCERNS	FILM DENSITY	SEE REMARKS	ACCEPT	REJECT
T	0-1	N/A	1B	.016"		✓																	✓				✓	
↓	1-2	↓	↓	↓																			✓				✓	
	2-3																						✓			✓	✓	
↓	3-4	↓	↓	↓																			✓				✓	

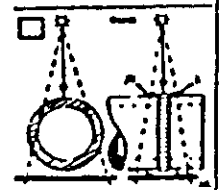
End View | Side View

SINGLE WALL



DOUBLE WALL





P Penetrameter
S Shim
L Location Marker
( ) OTHER

Robert Weaver 65554/II
Cooperheat-MQS Signature

Customer Representative Signature

6/26/06
Date

MCWF Type A
RT Map of High Stress Region

MTM Workorder Number: _____

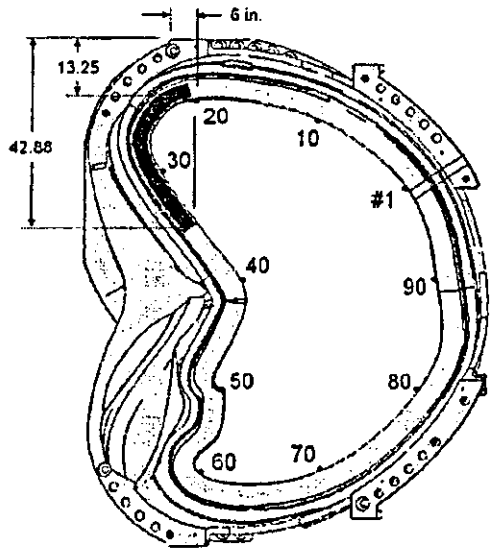
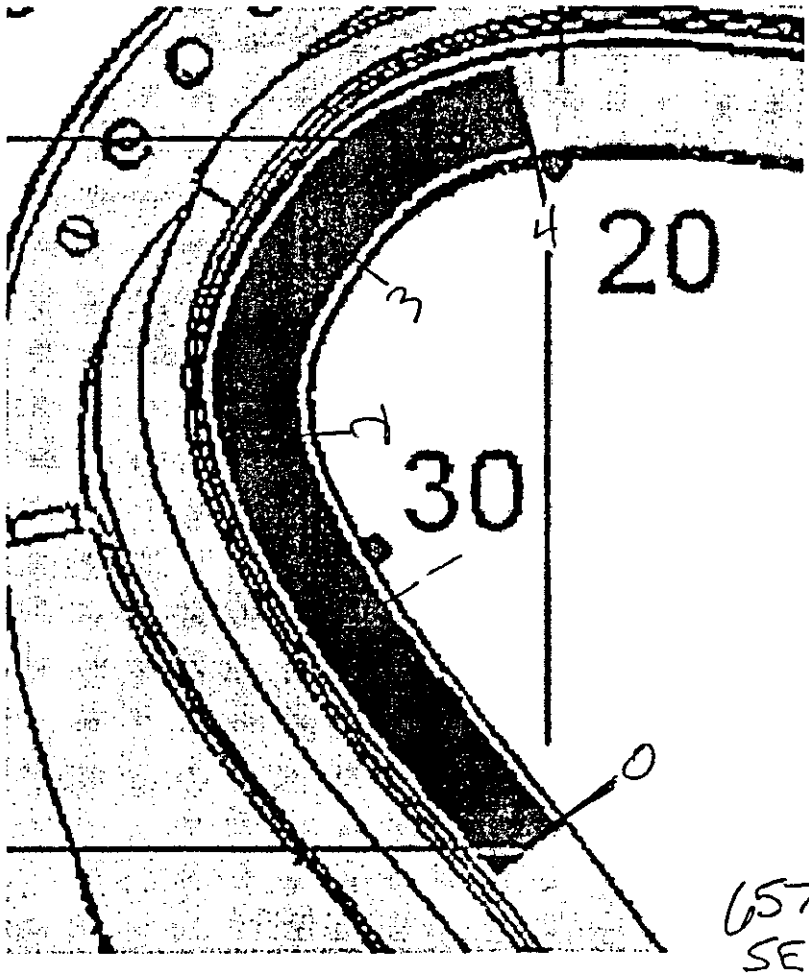


Figure 7-4– High Stress Region Identification for Type-A MCWF



65709/2.0/1/134/818
SE141-114
6/26/06
page 2 of 2

SE141-114 TYPE A2
RT ATTACHMENT

Photo of RT film 2-3

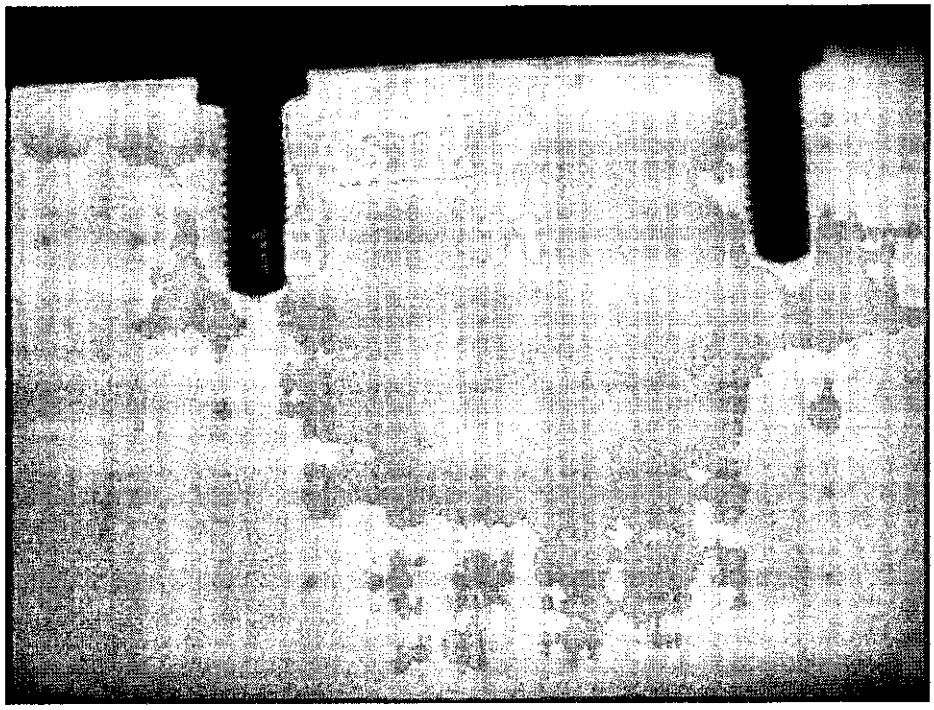
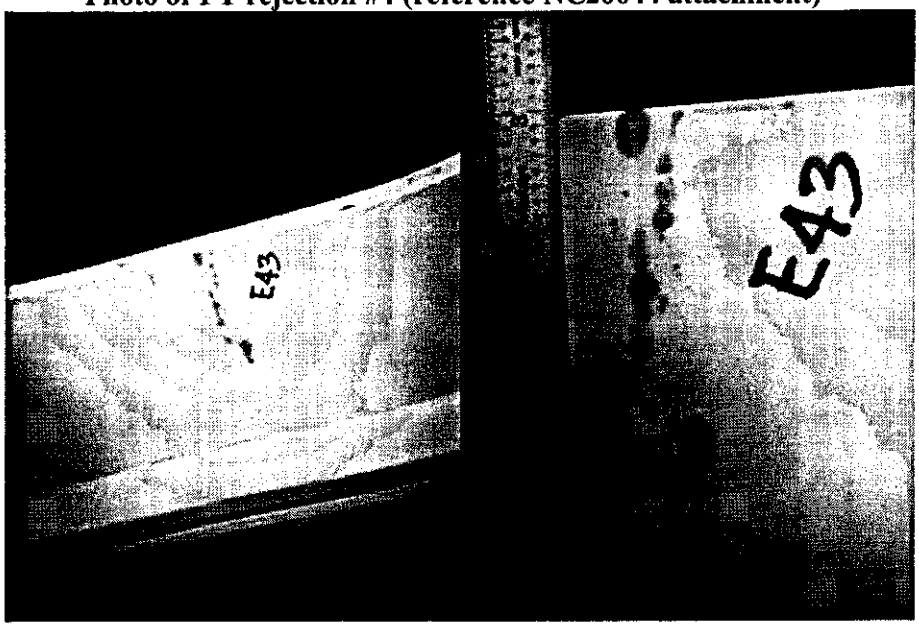


Photo of PT rejection #4 (reference NC20044 attachment)



Quality Assurance Documentation for Part ID: SE141-114 - Item: 16

Workorder: 65709/2-0 Sub:1 Op:136

Part: SE141-114 - MODULAR COIL WINDING FORM TYPE-A - PRODUCTION MODULAR COIL WINDING FORM TYPE-A

Drawing ID: SE141-114 Rev: 6			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
*		DATUM -E- SIDE MAG PERMEABILITY TO BE NO GREATER THAN 1.02μ. CHECK 3 PLACES ADJACENT TO	MASTER GAGE	QA		J-1165	LESS THAN 1.02	667-J.B			A
(10)		EVERY 5TH HOLE IN T SECTION.						06-26-06			
*		DATUM -D- SIDE MAG PERMEABILITY TO BE NO GREATER THAN 1.02μ. CHECK 3 PLACES ADJACENT TO	MASTER GAGE	QA		J-1165	LESS THAN 1.02	667-J.B			A
(20)		EVERY 5TH HOLE IN T SECTION.						06-26-06			

Material Test Report

SOUTH TEXAS BOLT & FITTING, INC
4845 HOMESTEAD RD #500
HOUSTON TEXAS 77028
PH # 713 673 5376
FAX# 713 673 5379

*** MATERIAL TEST REPORT ***
Date 05 17 2006

SOLD TO Major Tool & Machine INc
1458 East 19th Street
Indianapolis IN 46218

Customer P/O # P06 01393

STBF Order # 81140

ITEM	QTY	DESCRIPTION	LOT / HEAT
1	50	1 3 8 6 x 9 1 2 660B Broached Tapend Stud Silver Plated per AMS 2410	XFR / E3930

Chemical Properties

C	Mn	P	S	Si	Ni	Cr	Mo
046	26	015	001	28	25 60	14 10	1 21
Cu	**Co**	**V**	**Al**	**Ti**	**B**		
13	08	22	24	2 18	0054		

Mechanical Properties

Tensile	Yield	Elong	RA	Hardness	Temperature	Macro
163310	11090	23 10	49 90	290hb	1325 f	Pass

Remarks ASTM A453 03

Certificate of Conformance
This is to certify that the material purchased on this order was made in accordance with and to conform to the specifications and descriptions required by the American Society for Testing Materials (ASTM) and the American Society of Mechanical Engineers (ASME)

SOUTH TEXAS BOLT & FITTING

Lance Byrns
Quality Coordinator

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MAY 15 2006
107579 JH

MAY 17 2006

file /C \Documents and Settings\wilkins\Local Settings\Temporary Internet Files\OLKD4 5/17/2006

SOUTH TEXAS BOLT & FITTING, INC.
4845 HOMESTEAD RD, #500
HOUSTON, TEXAS 77028
PH # 713-673-5376
FAX# 713-673-5379

*** MATERIAL TEST REPORT ***
Date: 05-22-2006

SOLD TO: Major Tool & Machine, INc.
1458 East 19th Street
Indianapolis, IN 46218

Customer P/O # P06-01394

STBF Order # 81140-1A

ITEM	QTY	DESCRIPTION	LOT / HEAT
1	40	1 3/8-6 660B 12-Point Hex Nut Silver Plated Per AMS 2410	xfq / 5407813

Chemical Properties

C	Mn	P	S	Si	Ni	Cr	Mo
.034	1.50	.007	.0016	.54	25.00	14.70	1.22
Cu	**Co**	**V**	**Al**	**Ti**	**B**	**Pb**	
.06	.05	.26	.27	2.25	.0074	.0001	

Mechanical Properties

Tensile	Yield	Elong	RA	Hardness	Temperature	Macro
160000	109000	27.60	43.10	319hr	720°C	Pass

Remarks: ASTM A453

Certificate of Conformance
This is to certify that the material purchased on this order was made in accordance with, and to conform to, the specifications and descriptions required by the American Society for Testing Materials (ASTM) and the American Society of Mechanical Engineers (ASME).

SOUTH TEXAS BOLT & FITTING

Lance Byrns
Quality Coordinator

MTM 016

MAY 23 2006

RECEIVED
MAY 23 2006
107736 JH
lines 2-4

Material Test Report

SOUTH TEXAS BOLT & FITTING, INC.
4845 HOMESTEAD RD, #500
HOUSTON, TEXAS 77028
PH # 713-673-5376
FAX# 713-673-5379

*** MATERIAL TEST REPORT ***
Date: 05-17-2006

SOLD TO: Major Tool & Machine, INc.
1458 East 19th Street
Indianapolis, IN 46218

Customer P/O # P06-01394

STBF Order # 81140-1

ITEM	QTY	DESCRIPTION	LOT / HEAT
1	16	1 3/8"-6 660B 12 Point Hex Nut Silver Plated Per AMS 2410	XFQ / 5407813

Chemical Properties

C	Mn	P	S	Si	Ni	Cr	Mo
.034	1.50	.007	.0016	.54	25.00	14.70	1.22
Cu	**Co**	**V**	**Al**	**Ti**	**B**	**Pb**	
.06	.05	.26	.27	2.25	.0074	.0001	

Mechanical Properties

Tensile	Yield	Elong	RA	Hardness	Temperature	Macro
160000	109000	27.60	43.10	319hr	720^C	Pass

Remarks: ASTM A453

Certificate of Conformance
This is to certify that the material purchased on this order was made in accordance with, and to conform to, the specifications and descriptions required by the American Society for Testing Materials (ASTM) and the American Society of Mechanical Engineers (ASME).

SOUTH TEXAS BOLT & FITTING

Lance Byrns
Quality Coordinator

RECEIVED
MAY 16 2006
107621 JH
Lines 1-2

MAY 17 2006

Quality Assurance Documentation for Part ID: SE141-141 - Item: 20

Workorder: 65709/2-0 Sub:14 Op:30

Part: SE141-141 - BEARING PLATE DETAIL TYPE "A" SHORT -

Drawing ID: SE141-141 Rev: 1			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1* (10)	G2	RECORD MAGNETIC PERMEABILITY. RESULTS TO BE NO GREATER THAN 1.02μ.	MASTER GAGE	QA		J-1270	LESS THAN 1.02	503-B.H 06-20-06			A

Quality Assurance Documentation for Part ID: SE141-142 - Item: 21

Workorder: 65709/2-0 Sub:15 Op:30

Part: SE141-142 - BEARING PLATE DETAIL TYPE "A" LONG -

Drawing ID: SE141-142 Rev: 1			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1*	G2		MASTER GAGE	QA		J-1270	LESS THAN 1.02	503-B.H			A
		RECORD MAGNETIC PERMEABILITY. RESULTS TO BE NO GREATER THAN 1.02μ.									
(10)								06-20-06			

Employees: 242-M.Griffith / 339-E.Root / 503-B.Houk / 533-B.Clevenger / 667-J.Bannister / 825-B.Jarrett / 840-G.Masood

PRINCETON UNIVERSITY

PLASMA PHYSIC LABORATORY -- PPPL

PRODUCT CERTIFICATION AND SHIPPING RELEASE

PROJECT	ITEM DESCRIPTION			SHIPMENT NUMBER	
PPPL - NCSX Modular Coil Winding Form	A-1 Modular Coil Winding Form			7	
PPPL SUBCONTRACT/ ORDER NO.	REV.	ITEM NO.	SUPPLIER REFERENCE NO.	REV.	QUANTITY SHIPPED
S005242-F	Amend #14	A-2	PPPL -FP-LTS-3 with Major Tool & Machine	Amend # 9	1

SUPPLIER'S CERTIFICATION

This is to certify that the products and services identified herein have been produced under a controlled quality assurance program and are in conformance with the procurement requirements including applicable codes, standards and specifications as identified in the above-referenced documents unless noted below. Any supporting documentation will be retained in accordance with the procurement requirements.

Per agreement with PPPL, authorization to proceed with shipment is granted prior to completion of documentation package and with outstanding items as set forth below.

SIGNED: Roy Sheppard Digitally signed by Roy Sheppard DN: CN = Roy Sheppard, C = US, O = EIO Reason: Signed for Nancy Horton per request Date: 2006.06.28 12:06:24 -04'00' DATE: 6/28/06

TITLE: EIO Program Manager for NCSX COMPANY: Energy Industries of Ohio

PPPL (AUTHORIZED REPRESENTATIVE) SHIPPING RELEASE

This is to certify that evidence supporting the above Supplier's Certification statement has been audited and no product/service nonconformances from procurement requirements have been found unless noted below. This product/service is hereby released for shipment.

This section serves as the Quality Assurance release for the above described product for shipment. It does not constitute an acceptance thereof and does not relieve the Vendor, Manufacturer or Contractor of any and all responsibility or obligation imposed by the purchase contract. It does not waive any rights the Purchaser may have under the purchase contract, including the Purchaser's right to reject the above described material upon discovery of any deviations from requirements of the purchase contract, drawings and specifications.

NONCONFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS:

As documented on approved Metal Tek Corrective Action Reports, including CA 1308, CA1323, CA1347 plus the approved NC 20044 from Major Tool as well as the following open Nonconformance from Major Tool:

- *NC 20080 for Dimensional Deviations & Visual Inspection, which is in the approval/signature process at PPPL*

REMARKS/PRODUCT SERIAL NUMBERS:

Release with open NC action as documented above.

BY PPPL QA REPRESENTATVIE (OR Designee) F. Malinowski Digitally signed by F. Malinowski DN: cn=F. Malinowski, c=US, o=PPPL, ou=QA Date: 2006.06.28 12:13:00 -04'00' DATE:

Part 4 - Appendix

10/11/06

Carondelet Division
8600 Commercial Blvd. • Pevely, MO 63070 USA
Phone: 636-475-2199 • Fax: 636-479-3399
E-Mail: Charles.Ruud@MetalTek.com

Corrective Action 1347
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 8/1/2005 Revised 1-31-06
CA Originator C. Ruud
Applies to: A-1Coil

Description of Defect / Non-Conformance
Wall thickness below model minimum. Localized areas were measured below the 1.375" minimum wall thickness during metrology. MetalTek independently verified wall thickness and confirmed condition.

Root Cause
The tooling produces a casting with a wall thickness less than required by the model. Measurements taken on A-3, A-4 and A-5 are consistent and lower than predicted by the model. Material losses during normal processing and heat treat with A-1 and A-2 are also a factor.

Corrective Action
Request "Use As Is" disposition on wall thickness related dimensions on A-1 coil.

Verification of Corrective Action
Not required. PPPL independently verified in conjunction with ORNL the design performance at a wall thickness of 1.05". Results were deemed adequate. Minimum measured dimension is 1.18" (to be verified). **Scans of A-2 and 3 coils shows that the walls are above the 1.18" minimum dimension in all but a few isolated locations. The areas were identified and repaired by approved welding procedures.**

Preventive Action
Several steps need to be taken to resolve and propose:
1. Validation of 3D Scanco data. MetalTek proposes to use Romer Arm with Laser scanner as validation technique. This instrument will be used to validate subsequent parts and minimizes measurement technique error.
   - Completed - The data provided by 3D Scanco has been validated on A1.

2. Report to PPPL/ORNL. Understanding the concern that the wall not be thinner than measured and the limitations of the process, e.g. setting a large core into a mold with overhead crane, MetalTek will submit layout results to EIO wand set teleconference to review remediations to tool.
   - It was determined to produce A2 with no tooling changes.

3. Upon verification of 3D Scanco data, MetalTek will confirm results to EIO team to begin root cause determination. Additional layout may be required to assure compliance of tooling, depending on results of layout.
   - Transfer caliper dimensions were taken on A-2 and A-3 at pre-clean step and shown to exceed required minimum wall thickness. **However scans performed using Romer Arm on A-2 and A-3 indicated dimensions consistent with A-1.**

4. Modification to tooling. Limited tooling modifications may be performed without severely impacting schedule or negating previous engineering (solidification modeling, etc.). These will be evaluated and proposed, where appropriate.
   - No tooling changes have been made.

5. Permanent deviation. Based on results of above, a permanent deviation may be required to dimensional tolerances in limited areas of the component. These will be known in greater detail later.

Actual Completion Date
All items complete, except a deviation.

Signed: C. Ruud 

CC: Roger Broman, Barry Craig, Joe Edwards, E.J. Kubick, J. Markham

NCSX Disposition to CA 1347

Analyses were performed to determine the effect of the thin section on deflections and stresses and are summarized below.

- Thin shell areas like that of A1 **has an extremely minor affect on the stresses and displacements in ANY of the coils or shells** with the thickness being either 1.18" as for A1 or even with the thickness being 1.05" which MTK projects is the minimum if the shell is not changed. Reasons:
  a) The shape of the tee is not changed by this, and the tee provides most of the bending stiffness
  b) Some EM forces are transferred to the shell B from the wing.
  c) The thin wall region is not the location for the peak stress and much of the area will be machined away.

		Shell Type A		Coil Type A		All Coils	
Run #	Configuration	Max. Displacement - mm	Max. Stress - Mpa	Max. Displacement - mm	Max. Stress - Mpa	Max. Displacement - mm	Max. Stress - Mpa
1	Baseline	0.98	168	1.246	239	2.711	239
5	Updated E	1.17	160	1.513	248	2.934	248
6	Updated E; thin sect. =1.18"	1.169	161	1.516	249	2.984	249
4	Updated E; thin sect. =1.05"	1.168	161	1.517	248	2.971	248

Since the effect has been shown to be extremely minor, the disposition for the A1 winding form is **Accept As Is.**

However, since the root cause determination is still underway, this NCR should be kept open. It is requested that EIO re-issue an amended CA with the root cause determination and preventive action; PPPL will disposition that portion of the NCR at that time.

Approved:

Phil Heitzenroeder
2005.08.19 14:10:46 -04'00'

P. Heitzenroeder, Tech. Rep.

Brad Nelson

Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL, ou=FED, email=nelsonbe@ornl.gov
Date: 2005.08.19 16:56:28 -04'00'

B. Nelson, RLM