

# **Energy Industries of Ohio**

**Contract # S005242-F**

**Modular Coil Winding Forms**

## **C-3 Documentation Package**

**Part 1 – Metal Tek International  
Casting Data Package**

**3/3/2006**

NOTE - Revised 5-31-06 - Added Metal Tek CA - 1581 - on page 89

Note - Part 2 - Major Tool document package starts on page 94

NOTE - Part 3 - RT films for Metal Tek & Major Tool submitted separately.





### 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

Cert Number S75920-2

Pattern Number MCWF-C3

Pour Date 6/10/2005

CAF Metal Designation CF8MNMnMod

Material Spec CF8MNMnMOD

Weighted average of 3 heats - 29716(40%),29717(21%),29720(39%) Total Weight 32016 lbs.

Revised 10/26/05

Element	Min	Actual	Max
C	0.04	0.04	0.07
MN	2.3	2.5	2.8
SI	0.0	0.4	0.7
CR	18.0	18.2	18.5
NI	13.0	13.3	13.5
MO	2.1	2.3	2.5
P*	0.0	0.023	0.035
S*	0.0	0.013	0.025
N	0.24	0.25	0.28

\*P & S taken from cast on bar, zones 1,2,&3 and analyzed by wet chemistries, ASTM E1019-03 for sulfur and Colormetric for phosphorous.

#### PRODUCT ANALYSIS

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

\*\*\*Not analyzed on spectrograph.

Element	CAF after PM	WC Analysis
C	***	0.06
MN	1.6	1.6
SI	0.6	0.6
CR	18.1	18.3
NI	13.5	13.7
MO	2.4	2.4
P	0.023	0.029
S	0.011	0.009
N	***	0.24

Charles A. Ruud  
Quality Assurance Manager

Superior Quality Engineered Metal Products

[www.MetalTekInt.Com](http://www.MetalTekInt.Com)



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ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2

Pattern Number MCWF-C3

CAF Metal Designation CF8MNMnMod

Material Spec CF8MNMnMOD

Analysis performed by Wisconsin Centrifugal

Cert Number S75920-2

Pour Date 6/10/2005

Revised 11/3/05

Element	Min	Actual	Max
C	0.04	0.06	0.07
MN*	2.3	1.6	2.8
SI	0.0	0.6	0.7
CR	18.0	18.3	18.5
NI*	13.0	13.7	13.5
MO	2.1	2.4	2.5
P	0.0	0.029	0.035
S	0.0	0.009	0.025
N	0.24	0.24	0.28

\* See Corrective Action Number 1323.

Respectfully Submitted,  
Charles A. Ruud  
Quality Assurance Manager



# Carondelet Division

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## 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 9/24/05

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	0.035
S*	0.000	0.010	0.025
SI	0.000	0.700	0.700

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.

Specification limits have been updated to latest specification.

Respectfully Submitted,  
Charles A. Ruud  
Quality Assurance Manager

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.045

ER316 MNN F  
**LINCOLN®  
ELECTRIC**

# PRODUCT CONFORMANCE REPORT

Product	LNM 4455	Size(s) mm	1,2
Class.	EN 12072-99: G 20 16 3 Mn L	Lot/Batch	3018926/78309
		Item No.	692129
Customer	CK SUPPLY Contact Ernie Simpson Eureka (MISSOURI) 63025 UNITED STATES	Quantity	450,0 KG
		Customer ref.	P.O.: SL 057549
		LSW Order No.	SD424496

Chemical analysis (%)										EN10204 3.1B
C	Si	Mn	P	S	Cr	Ni	Mo	Cu	N	
0,02	0,4	7,3	0,019	0,001	20,1	16,3	2,9	0,1	0,200	

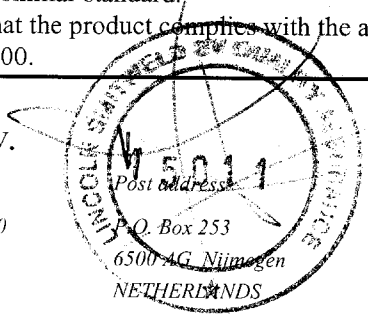
Mechanical tests, all weld metal	EN10204
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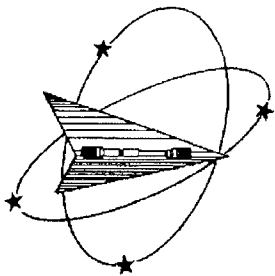
Additional information	EN10204
Other tests	

Remarks

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. van Etteger	QS Manager	10/02/2005	3018926/7830
Registered Office	Telephone:	Fax:		
Nieuwe Dukenburgseweg 20	31 24 3522911	31 24 3522200		
6534 AD NIJMEGEN	6		03/03/06	





**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](http://www.wmtr.com)

WMT&R is a technical leader in the material testing industry.



621-01 & 621-02



June 30, 2005

**CERTIFICATION**

Section 1 of 1

WMT&R Report No. 5-29805

Req. No. 5404

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

Attention: Rick Suria

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

*C-3 Coil CR*

SOAK TIME: 5 Minutes

SPEED OF TESTING: 0.0030 in./in./min., 0.0500 in./min./in.

MATERIAL: Metaltek CF8MNm

DISPOSITION: Report

Sample	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	AIUR
Z1	C07850	-320	161.7	102.2	45	33	27.0	32600	20611	0.5067	0.4145	2.00	2.89	0.20164697	M9	R
Z2	C07851	-320	164.4	94.9	60	63	24.1	33080	19100	0.5062	0.3096	2.00	3.20	0.20124920	M9	R
Z3	C07852	-320	163.3	94.2	62	56	23.7	32870	18970	0.5063	0.3361	2.00	3.23	0.20132872	M9	R

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

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*Matthew J. Woyton*  
Roy E. Stamm Matt Woyton  
Technical Services Manager Tensile Supervisor

*6-30-05*  
June 30, 2005

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Locations in Youngstown, PA U.S.A. ~ Tel. (724) 537-3131 and  
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03/03/06

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**METALTEK INTERNATIONAL**  
 8600 Commercial Blvd.  
 Pevely, MO 63070

June 24, 2005  
 Lab No. 05P-1885  
 P.O. No. 12516  
 Page 1 of 3


**Attention: Chuck Ruud**

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** C3 Coil- Alloy CF8 MNMNMOD, Z1,Z2,Z3  
**SPECIFICATION:** ASTM A 370-03a  
**SPECIMEN TYPE:** "A" Vee Notch  
**SPECIMEN SIZE:** 10 mm x 10 mm  
**TEMPERATURE OF TEST:** 73°F  
**REQUIREMENTS:** 50 ft/ lb

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z1-7	193	0.121	100
Z1-8	165	0.100	100
Z1-9	113	0.079	100
<b>Average</b>	157	0.100	100
SAMPLE ID	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z2-7	144	0.098	100
Z2-8	142	0.070	100
Z2-9	138	0.081	100
<b>Average</b>	141	0.083	100
SAMPLE ID	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z3-7	132	0.089	100
Z3-8	160	0.098	100
Z3-9	230	0.062	100
<b>Average</b>	174	0.083	100

*identification of tested specimen provided by client.*

  
 Karl Schmitz, Director  
 Materials Testing



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

AN OFFICIAL COPY OF TEST REPORT WILL BE PROVIDED BY THIS LABORATORY ON REQUEST.  
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 SEE REVERSE FOR CONDITIONS.



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June 24, 2005  
 Lab No. 05P-1885  
 P.O. No. 12516  
 Page 2 of 3

**Attention: Chuck Ruud**

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** C3 Coil- Alloy CF8 MNMNMOD, 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/ lb

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z1-7	110	0.086	100
Z1-8	68	0.041	100
Z1-9	104	0.068	90
<b>Average</b>	94	0.065	97
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z2-7	92	0.059	90
Z2-8	85	0.052	100
Z2-9	94	0.056	100
<b>Average</b>	90	0.056	97
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
Z3-7	99	0.067	100
Z3-8	148	0.087	100
Z3-9	99	0.076	100
<b>Average</b>	115	0.077	100

*Identification of tested specimen provided by client.*

  
 Karl Schmitz, Director  
 Materials Testing



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June 24, 2005  
 Lab No. 05P-1885  
 P.O. No. 12516  
 Page 3 of 3

**Attention: CHUCK RUUD**

**REPORT OF MECHANICAL TESTS**

**SAMPLE ID:** C3 COIL- ALLOY CF8MNMNMOD, Z1, Z2, Z3

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Modules of Elasticity	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
							in.	%
Z1	0.1963	0.1257	36.0	22.6	37800	83300	0.95	47.5
Z2	0.1963	0.1257	36.0	21.2	42700	83300	0.10	55.0
Z3	0.1924	0.1257	34.7	21.0	34300	81500	0.1	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

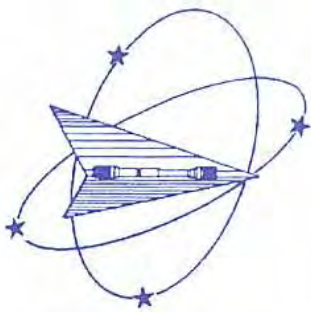


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621-01 & 621-02

August 23, 2005

## CERTIFICATION

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

WMT&R Report No. 5-32228  
Requisition No. 4335

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: IMPACT and TENSILE

### IMPACT RESULTS: ASTM E23-02

No Requirements

MATERIAL: Lincoln LNM4455

SAMPLE TYPE: Charpy V-Notch

DISPOSITION: Report

Reference	Lot No.   Batch No.   Specimen ID	TestLog Number	Sample Size	Temp. °F	Energy ft-lbs	Mils Lat Exp	% Shear Fracture	AUUR
Lincoln LNM4455	3018926   78309   CVN-1	C26832	Standard	-320	33	17	20	Report
Lincoln LNM4455	3018926   78309   CVN-2	C26833	Standard	-320	36	22	25	Report
Lincoln LNM4455	3018926   78309   CVN-3	C26834	Standard	-320	40	18	40	Report
Lincoln LNM4455	3017006   72262   CVN-1	C26835	Standard	-320	55	26	30	Report
Lincoln LNM4455	3017006   72262   CVN-2	C26836	Standard	-320	53	34	30	Report
Lincoln LNM4455	3017006   72262   CVN-3	C26837	Standard	-320	51	34	30	Report

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

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

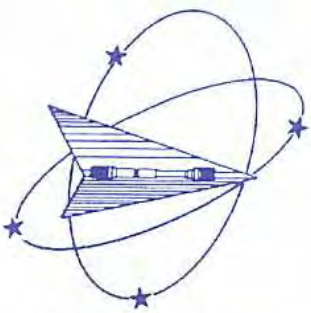
August 23, 2005

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621-01 & 621-02

August 23, 2005

## CERTIFICATION

MetalTek International

WMT&R Report No. 5-32228

### TENSILE RESULTS: ASTM E21-03a

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: 0.0030 in./in./min., 0.0500 in./min./in.

MATERIAL: Metrude B316NF

DISPOSITION: Acceptable

Reference	Lot No.   Batch No.   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	AU/R
Metrude B316NF	W021735   T1	C26831	-320	166.6	102.1	38	31	24.3	16070	9842	0.3504	0.2912	1.40	1.93	0.09643131	M9	A

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

### TENSILE RESULTS: ASTM E21-03a

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: 0.0030 in./in./min., 0.0500 in./min./in.

MATERIAL: Lincoln LNM4455

DISPOSITION: Unacceptable

Reference	Lot No.   Batch No.   Specimen ID	TestLog Number	Temp. °F	UTS ksi	0.2% YS ksi	Elong %	RA %	Modulus Msi	Codes	Ult. Load lbf	0.2% YLD. lbf
Lincoln LNM4455	3018926   78309   T1	C26829	-320	157.5	114.3	16	18	23.3	H	15210	11030

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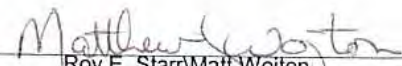
DISPOSITION: Unacceptable

Reference	Lot No.   Batch No.   Specimen ID	TestLog Number	Orig. Dia. (in.)	Final Dia. (in.)	4D Orig GL (in.)	4D Final GL (in.)	Orig. Area (sq. in.)	Machine Number	AU/R
Lincoln LNM4455	3018926   78309   T1	C26829	0.3506	0.3168	1.40	1.63	0.09654142	M9	U

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

Requirements provided by MetalTek International

H - Failed outside gage length.

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

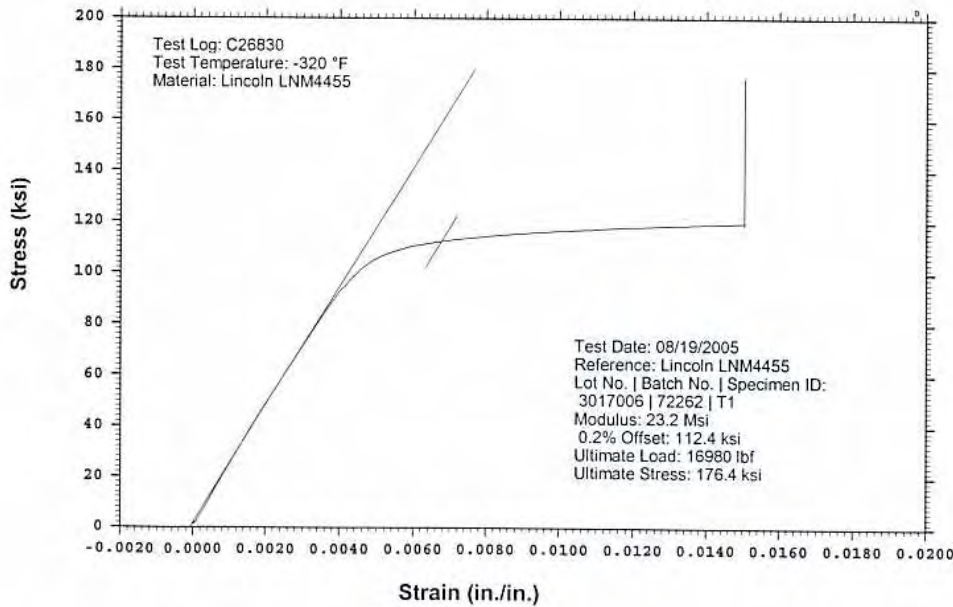
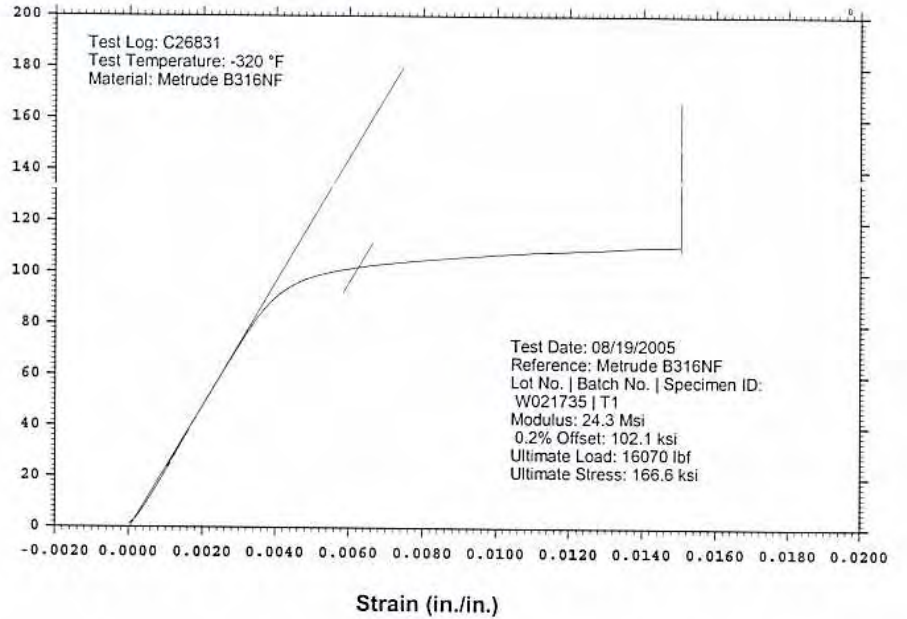
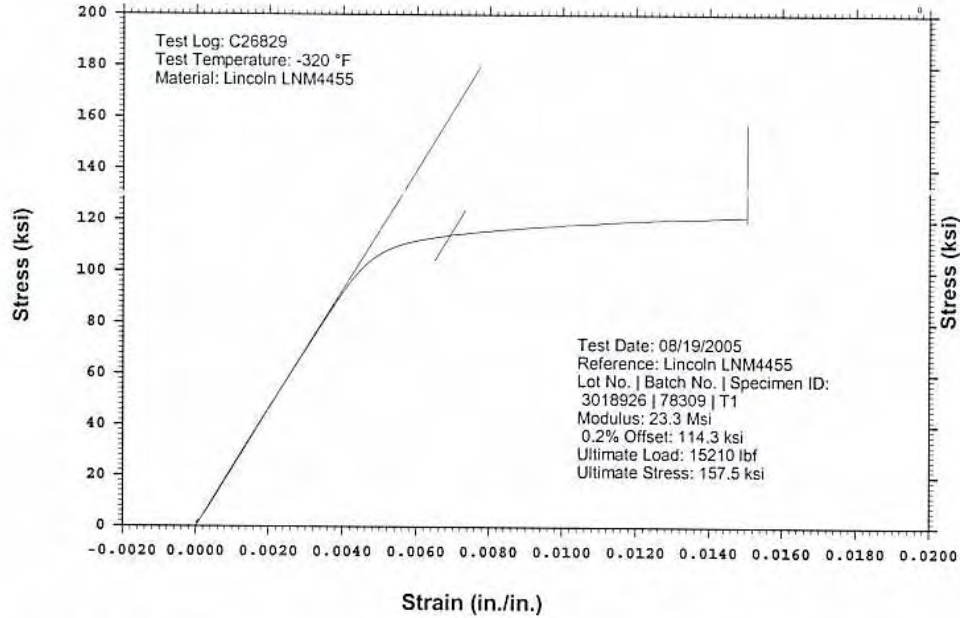
8-23-05  
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Customer: MetalTek International  
WMT&R Report: 5-32228

Requisition No.: 4335



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**METALTEK INTERNATIONAL**  
 8600 Commercial Blvd.  
 Pevely, MO 63070

August 8, 2005  
 Lab No. 05P-2334  
 P.O. No. 21324  
 Page 1 of 3

**Attention: CHUCK RUUD**

**REPORT OF MECHANICAL TESTS**

**SAMPLE ID:**

- 1) STOCK# LNM 4455, LINCOLN LOT 3018926/78309
- 2) STOCK# LNM 4455, LINCOLN LOT 3017006/72262
- 3) STOCK# LNM 4455, LINCOLN LOT 3012668/82743
- 4) STOCK# B316NF METRODE, W021735


Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Modules of Elasticity	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
							in.	%
1	0.1385	0.0897	54.3	24.5 Msi	56900	93900	0.84	42.0
2	0.1886	0.0935	50.4	24.9 Msi	54900	92100	0.85	42.5
3	0.1909	0.0951	50.2	22.6 Msi	57400	93700	0.83	41.5
4	0.1901	0.0962	49.4	23.0 Msi	54800	88200	0.75	37.5

Round, reduced section all weld 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



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

AN OFFICIAL COPY OF TEST REPORT WILL BE PROVIDED BY THIS LABORATORY ON REQUEST.  
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**METALTEK INTERNATIONAL**  
 8600 Commercial Blvd.  
 Pevely, MO 63070

August 8, 2005  
 Lab No. 05P-2334  
 P.O. No. 21324  
 Page 2 of 3

**Attention: Chuck Ruud**

10

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** STOCK# LNM 4455, LINCOLN LOT 3018926/78309  
 STOCK# LNM 4455, LINCOLN LOT 3017006/72262

**SPECIFICATION:** ASTM A 370-03a  
**SPECIMEN TYPE:** "A" Vee Notch  
**SPECIMEN SIZE:** 10 mm x 10 mm (All Weld)  
**TEMPERATURE OF TEST:** 293°K

**REQUIREMENT(S):**

ALL WELD	FOOT LBS.	LATERAL EXPANSION	% SHEAR
78309-7	97	0.074	50
78309-8	96	0.076	50
78309-9	108	0.075	50
<b>Average</b>	100	0.075	50
ALL WELD	FOOT LBS.	LATERAL EXPANSION	% SHEAR
72262-7	126	0.098	50
72262-8	102	0.080	50
72262-9	123	0.087	50
<b>Average</b>	117	0.088	50

*Identification of tested specimen provided by client.*

  
 Karl Schmitz, Director  
 Materials Testing

KS/tlv



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

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**METALTEK INTERNATIONAL**  
 8600 Commercial Blvd.  
 Pevely, MO 63070

August 8, 2005  
 Lab No. 05P-2334  
 P.O. No. 21324  
 Page 3 of 3


**Attention: Chuck Ruud**

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** STOCK# LNM 4455, LINCOLN LOT 3012668/82743  
 STOCK# B316NF METRODE, W021735  
**SPECIFICATION:** ASTM A 370-03a  
**SPECIMEN TYPE:** "A" Vee Notch  
**SPECIMEN SIZE:** 10 mm x 10 mm ( All Weld)  
**TEMPERATURE OF TEST:** 293°K  
**REQUIREMENTS:**

ALL WELD	FOOT LBS.	LATERAL EXPANSION	% SHEAR
82743-7	100	0.082	50
82743-8	99	0.076	50
82743-9	94	0.072	50
<b>Average</b>	98	0.077	50
ALL WELD	FOOT LBS.	LATERAL EXPANSION	% SHEAR
W021735-7	102	0.101	50
W021735-8	88	0.073	50
W021735-9	88	0.080	50
<b>Average</b>	93	0.085	50

*Identification of tested specimen provided by client.*

  
 Karl Schmitz, Director  
 Materials Testing

KS/tlv



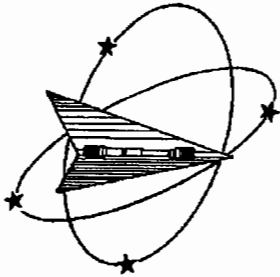
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03/03/06







# 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](http://www.wmtr.com)

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621-01 & 621-02



September 13, 2005

## CERTIFICATION

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

WMT&R Report No. 5-34328  
P.O. No. 19386 Rel No.18  
Requisition No. 4934

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: IMPACT and TENSILE

IMPACT RESULTS: ASTM E23-02

REQUIREMENTS: Energy (Min 35/Max --)

MATERIAL: Lincoln LNM4455

SAMPLE TYPE: Charpy V-Notch

DISPOSITION: Acceptable

Reference	Lot No.   Batch No.   Specimen ID	Test Log Number	Sample Size	Temp. °F	Energy ft-lbs	Mils Lat Exp	% Shear Fracture	AIUR
Lincoln LNM4455	3018926   78309   Cvm-1	C43939	Standard	-320	56	18	40	Acceptable
Lincoln LNM4455	3018926   78309   Cvm-2	C43940	Standard	-320	52	18	40	Acceptable
Lincoln LNM4455	3018926   78309   Cvm-3	C43941	Standard	-320	53	12	40	Acceptable

Requirements supplied by MetalTek International.

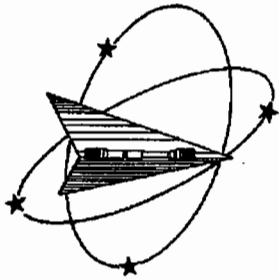
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Roy E. Star (Matt Wagoner)  
Technical Services Manager / Tensile Supervisor

9-13-05  
September 13, 2005

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03/03/06



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821-01 & 821-02



September 13, 2005

**CERTIFICATION**

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

WMT&R Report No. 5-34328  
P.O. No. 19386 Rel No.18  
Requisition No. 4934

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: IMPACT and TENSILE

**TENSILE RESULTS: ASTM E21-03a**

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: 0.0030 in./in./min., 0.0500 in./min./in.

MATERIAL: 316 S/S

DISPOSITION: Acceptable

Reference	Lot No.   Batch No.   Specimen ID	TestLog Number	Temp. °F	UTS ksi	0.2% YS ksi	Elong %	RA %	Modulus Msi	Ult. Load lbf	0.2% YLD. lbf
Lincoln LNM4455	3018926   78309   Tensile	C43938	-320	182.1	128.2	34	24	27.0	17560	12360

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

DISPOSITION: Acceptable

Reference	Lot No.   Batch No.   Specimen ID	TestLog Number	Orig. Dia. (in.)	Final Dia. (in.)	4D Orig GL (in.)	4D Final GL (in.)	Orig. Area (sq. in.)	Machine Number	AUUR
Lincoln LNM4455	3018926   78309   Tensile	C43938	0.3504	0.3048	1.40	1.87	0.09643131	M9	A

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

Requirements supplied by MetalTek International.

  
Roy E. Starr  
Technical Services Manager

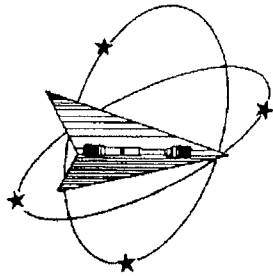
  
Matt Wojton  
Tensile Supervisor

9-13-05  
September 13, 2005

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03/03/06



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621-01 & 621-02



June 20, 2005

## CERTIFICATION

Section 1 of 1

WMT&R Report No. 5-29403

Req. No. 5394

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

Attention: Rick Suria

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

Sample	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	AIUR
29198 (1)	C03696	-320	166.1	96.0	57	62	28.6	33330	19260	0.5054	0.3103	2.00	3.14	0.20061359	M9	R
29198 (2)	C03697	-320	161.4	96.8	38	33	28.8	32390	19430	0.5055	0.4130	2.00	2.75	0.20069299	M9	R
29198 (3)	C03698	-320	165.0	92.6	62	62	27.6	33100	18581	0.5054	0.3109	2.00	3.23	0.20061359	M9	R

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

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Roy E. Starr  
Technical Services Manager

6-20-05

Matt Wojton  
Tensile Supervisor

June 20, 2005

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**METALTEK INTERNATIONAL**  
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 Pevely, MO 63070

June 13, 2005  
 Lab No. 05P-1739  
 P.O. No. 12516  
 Page 1 of 3

Attention: Chuck Ruud

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** HT # 29198  
**SPECIFICATION:** ASTM A 370-03a  
**SPECIMEN TYPE:** "A" Vee Notch  
**SPECIMEN SIZE:** 10 mm x 10 mm  
**TEMPERATURE OF TEST:** 293° K / 68° F  
**REQUIREMENTS:** 50 ft. / lb

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
1-7	132	0.085	100
1-8	176	0.084	100
1-9	152	0.082	100
<b>Average</b>	<b>153</b>	<b>0.084</b>	<b>100</b>
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
2-7	160	0.112	100
2-8	144	0.107	100
2-9	140	0.069	100
<b>Average</b>	<b>148</b>	<b>0.096</b>	<b>100</b>
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
3-7	176	0.110	100
3-8	124	0.087	100
3-9	144	0.107	100
<b>Average</b>	<b>148</b>	<b>0.101</b>	<b>100</b>

Identification of tested specimen provided by client.

*[Signature]*  
 Karl Schmitz, Director  
 Materials Testing



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

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June 13, 2005  
 Lab No. 05p-1739  
 P.O. No. 12516  
 Page 2 of 3

Attention: Chuck Ruud

**REPORT OF CHARPY IMPACT TEST**

**MATERIAL (SAMPLE ID):** HT # 29198  
**SPECIFICATION:** ASTM A 370-03a  
**SPECIMEN TYPE:** "A" Vee Notch  
**SPECIMEN SIZE:** 10 mm x 10 mm  
**TEMPERATURE OF TEST:** 77° K / -321° F  
**REQUIREMENTS:** 35 ft / lb

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
4-7	84	0.055	50
4-8	83	0.035	50
4-9	76	0.058	50
<b>Average</b>	81	0.049	50
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
5-7	82	0.059	50
5-8	82	0.040	50
5-9	98	0.075	80
<b>Average</b>	87	0.058	60
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
6-7	82	0.050	50
6-8	93	0.052	50
6-9	94	0.051	50
<b>Average</b>	90	0.051	50

Identification of tested specimen provided by client.

Karl Schmitz, Director  
 Materials Testing



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June 13, 2005  
Lab No. 05P-1739  
P.O. No. 12516  
Page 3 of 3

Attention: **CHUCK RUUD**

### REPORT OF MECHANICAL TESTS

**SAMPLE ID:** 3 EA., 29198

Sample ID	Original Area Sq. inches	Reduced Area Sq. inches	Reduction in Area %	Modules of Elasticity	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
							in.	%
29298-1	0.1817	0.0855	52.9	21.2 Msi	40600	91900	1.00	50.0
29198-2	0.1825	0.0962	47.3	20.9 Msi	42700	88500	1.00	50.0
29198-3	0.1840	0.1170	36.4	21.1 Msi	39500	88300	0.97	48.5

Round, reduced section room temperature tensiles

Yield taken at .2% offset

Tested in accordance with ASTM A 370-03a

Identification of tested specimens provided by the client.

KS/tiv

Karl Schmitz, Director  
Materials Testing



Certificate No. 0097-01  
Certificate No. 0097-02

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## C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

<b>Defect Number</b>	<b>Drawing View</b>	<b>Length (inches)</b>	<b>Width (inches)</b>	<b>Depth (inches)</b>
1	Right	19	1 1/8	1/2
2	Right	7	4 1/2	1/2
3	Right	15 1/2	3 1/2	3
4	Right	19 1/2	6 1/2	3/4
5	Right	5	2 1/2	1 1/2
6	Front	9	5	1
7	Right	4 1/2	4	1
8	Back	30	12	1
9	Back	6 1/2	5	3/4
10	Front	7 3/4	3	1/4
11	Font	6	4	3/4
12	Front	4 3/4	2 3/4	1 1/2
13	Front	9 1/2	6	Thru
14	Front	26	7	3/4
15	Right	13	4 1/2	3/4
16	Right	13	7	Thru
17	Right	7	4 1/2	3
18	Right	9	5	3/4
19	Right	12	6	2
20	Right	6	3	Thru
21	Right	6 1/2	5 3/4	3/4
22	Right	8	2	3
23	Front	6	2 1/2	1
24	Front	9	2	3/4
25	Front	8	2	3/4
26	Front	12	2	3/4
27	Front	5	4 1/2	1/4
28	Bottom	4	3	1 1/8
29	Bottom	7	2	Thru
30	Bottom	8	2 1/2	3/4
31	Bottom	10 1/2	4	3/4
32	Bottom	6 1/2	3 1/2	2
33	Back	8	2	2
34	Back	4	2 1/2	Thru
35	Back	12	4	Thru

## C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

<b>Defect Number</b>	<b>Drawing View</b>	<b>Length (inches)</b>	<b>Width (inches)</b>	<b>Depth (inches)</b>
36	Back	9	2	¾
37	Back	8	5	¾
38	Back	4	4	¼
39	Back	18	1 ½	¼
40	Back	6	4 ½	¼
41	Back	6	1	Thru
42	Back	13	4 ½	¾
43	Back	7	5	1
44	Back	11 ½	3 ¾	¾
45	Back	13	4	Thru
46	Back	8 ½	8 1/8	Thru
47	Back	6	2 ½	1 ½
48	Back	6	3	¾
49	Top	8 ½	2	¾
50	Top	15	3	Thru
51	Top	7	2	2
52	Top	7	2	1
53	Top	3	2	3
54	Left	4	4	3
55	Left	14	10	3
56	Left	4	4	2 ¾
57	Left	6	1 ¾	1
58	Left	14	2	½
59	Left	2	2	1 ¼
60	Left	6 ½	3 ¾	1
61	Left	29	9	1
62	Left	26	10	1 ½
63	Left	19	6	¾
64	Left	18	11	¾
65	Left	10	6	¾
66	Left	4 ½	2 ½	2 ¾
67	Left	10	4	3 ½
68	Left	12	4 ¼	4
6	Left	3 ¾	2	1 ¼
70	Left	19 ½	8	4
71	Front	5 ¼	4 ¾	Thru
72	Right	2	2	1

## C-3 Coil Weld Map – Metal Tek

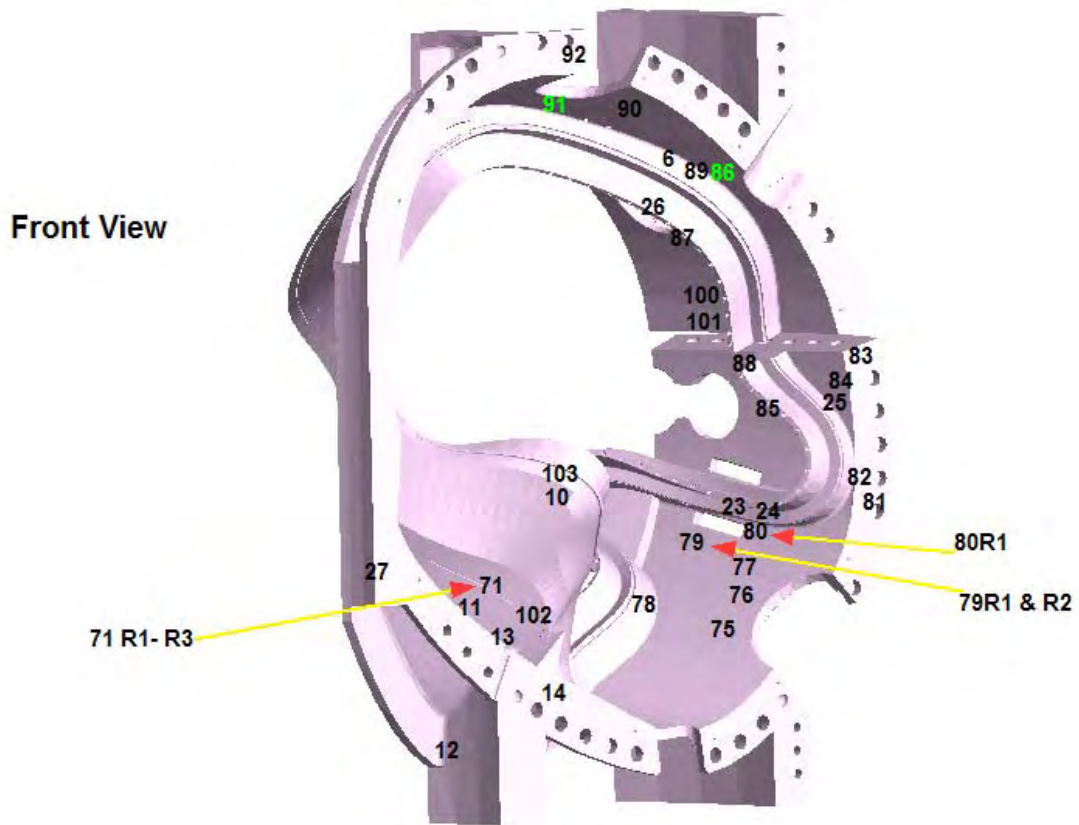
Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

<b>Defect Number</b>	<b>Drawing View</b>	<b>Length (inches)</b>	<b>Width (inches)</b>	<b>Depth (inches)</b>
73	Right	6 ¼	5	4
74	Right	10 ½	2 ½	1 ¼
75	Front	8 ½	3 ¾	Thru
76	Front	9	5	Thru
77	Front	12 ¼	11	Thru
78	Front	5	3 ½	¼
79	Front	5 ¾	2 ½	¾
80	Front	5	5	1 ½
81	Front	3	3	1 ¼
82	Front	8	2 ½	1
83	Front	3	2	1
84	Front	9	2	1
85	Front	10 ¼	3	1
86	Front	6	4	Thru
87	Front	4	2 ½	1
88	Front	10	2 ½	1 ½
89	Front	3	2	1
90	Front	6 ½	5	Thru
91	Front	4	2	1
92	Front	3	3	1 ½
93	Top	8	4	¾
94	Top	3	1 ½	1
95	Right	5	4	¾
96	Right	12	4	¾
97	Bottom	5	3 ¾	¾
98	Bottom	4 ½	4	¾
99	Back	11 ½	4	3 ½
100	Front	8	4	½
101	Front	9	7	2
102	Front	8	4 ½	½
103	Front	11	3 ½	¾
104	Left	3	3	1
105	Back	6	4 ½	1
79R1	Front	6	5	1
71R1	Front	7	6	3
71R2	Front	5	4 ¼	2 ½
79R2	Front	9	5	1



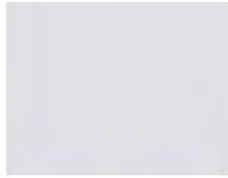
# C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

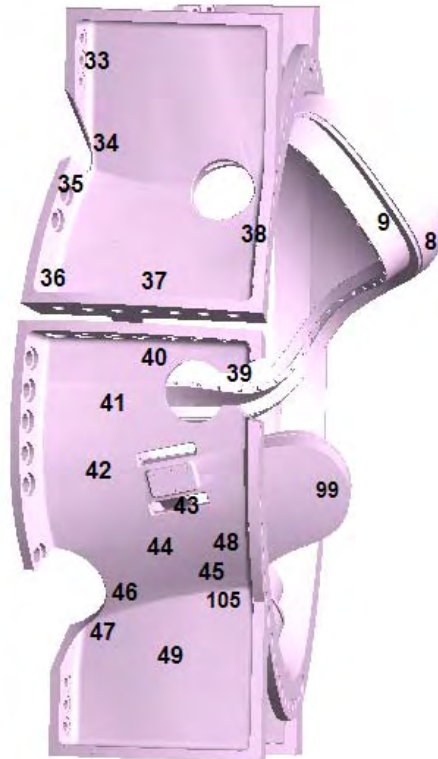


# C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches



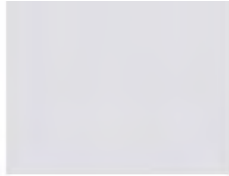
**Back View**



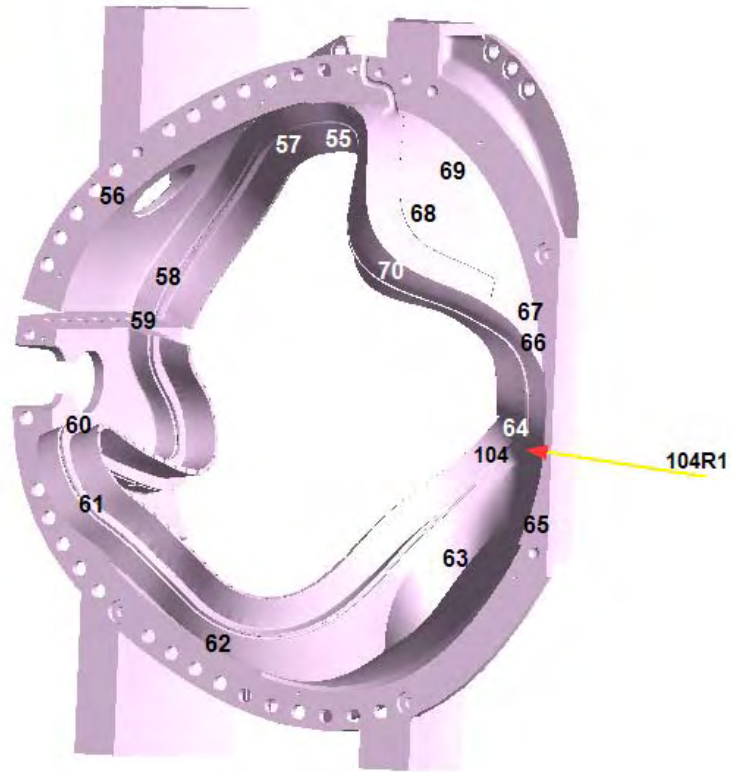


# C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

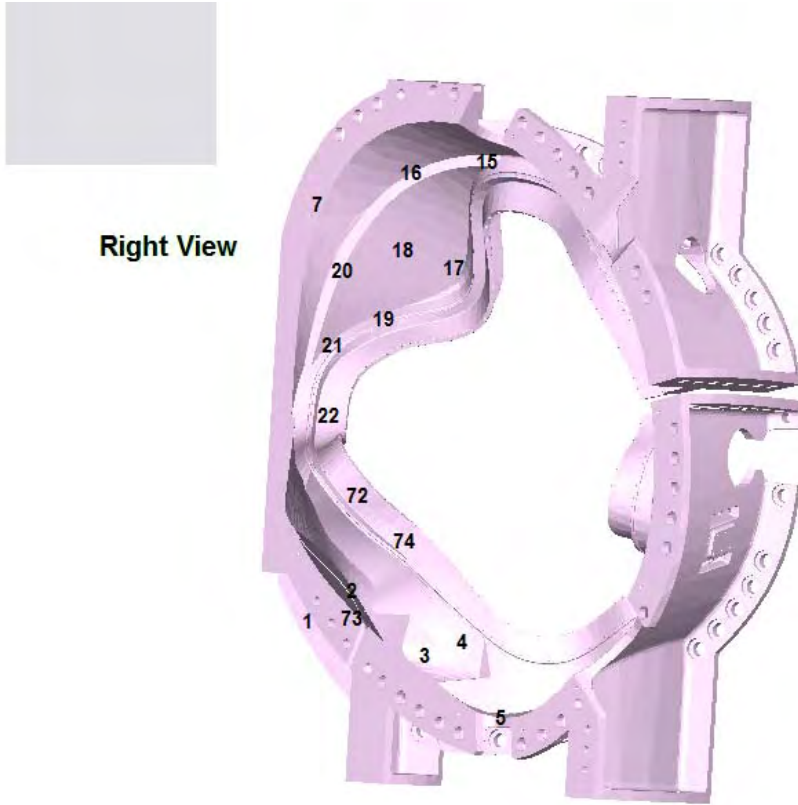


Left View



# C-3 Coil Weld Map – Metal Tek

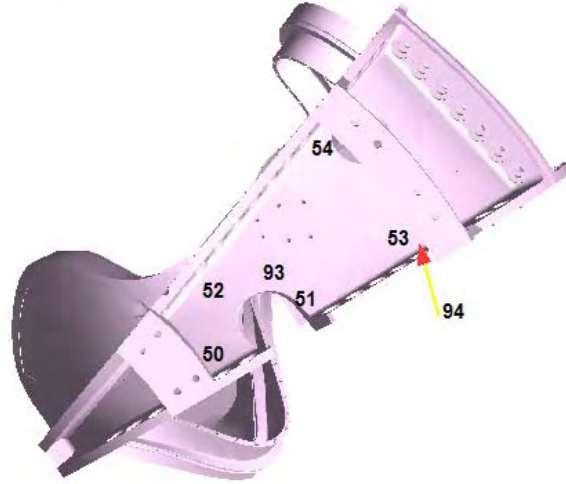
Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches



# C-3 Coil Weld Map – Metal Tek

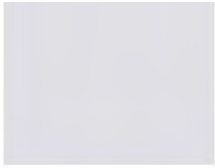
Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches

Top View

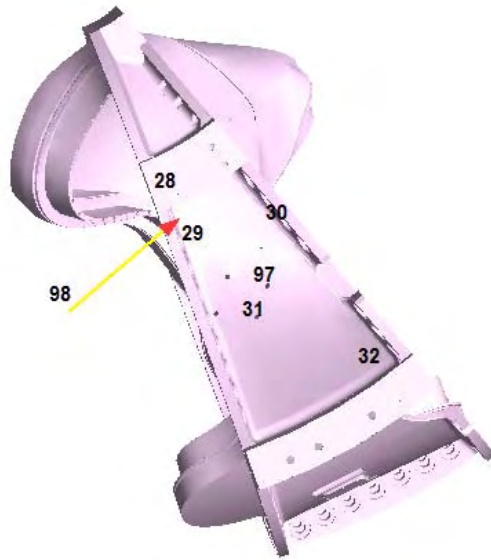


# C-3 Coil Weld Map – Metal Tek

Map of all major welds exceeding 20% of wall, over 1 inch or over 10<sup>2</sup> inches



**Bottom View**



RADIOGRAPHIC STANDARD SHOOTING SKETCH

Customer <b>EIO</b>	Pattern Number <b>MCWF-C3</b>
Material	Traceability Number <b>Repair Views</b>
Film Manufacturer <b>Fuji</b>	Source Number <b>23.2 C060</b>
IQI LEVEL <u>2-2T</u> From CQP 401 <input checked="" type="checkbox"/> Other (Specify, E.G. 2-4T, 2-1T) <u>N/A</u>	

Exposures (views)	42-43	45-46	47-48	48-49	62-63	83-84	92-93	96-97	97-98	116 117	I-J	X-Y
Thickness (IN.)	1 1/2 X 2"					1 1/2 X 3"	1 1/2 X 2"	2 3/4"			3 X 6"	
S/F Distance (IN.)	20"							18"			20"	
Penetrameter	30/40					30/40	30/40	50X2			60X2	
Time (MIN.)	6m30s	7m	6m30s	7m		15m	6m30s	10m			1hr 45min	
Focal Spot (IN.)	11											
Film Size (IN.)	14X17											
Screen Size (Pb)	101											
Front/Back												
S.W.E./D.W.E.	SWF											
S.W.V./D.W.V.	SWV											
Film Type	59/80					29/59 80	59/80	80/100			29/59 80	
Acceptance Standard	E446					E186 E446	E446	E186				
Severity Level	SP 54											

Shooting Sketch (Use Additional Pages as Needed)

See original Technique Drawing

Technique Prepared By: Doug Midgett Level: II  
 Technique Approved By: \_\_\_\_\_ Level: \_\_\_\_\_

Date: 8-31-05  
 Date: \_\_\_\_\_

**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		DATE	WORK ORDER NO.
NAME METAL TEK INTERNATIONAL		07/12/2005	361-02386
ADDRESS 8600 COMMERCIAL BLVD		P.O. NUMBER	XRAY X
CITY PEVELY STATE MO ZIP 63070		21418	GAMMA
PROCEDURE SPECIFICATION ASTM E94-93	ACCEPTANCE CRITERIA MSS-SP-54-1999	SHEET 1 OF 6	

PART NUMBER	Serial No	View	No Apparent Indications		Incomplete Penetration		Shrinkage		Film Artifacts		REMARKS
			Acceptable	Rejected	Dross or Porosity	Lack of Fusion Gas	Cracks	Hot Under Tears	Surface		
MCWF-C-3	3	1-2		R							3-4
		2-3		R							3-4
E.I.O. C040851		3-4	✓								
		4-5		R							4
MS75920		5-6		R							4
		7-8	✓								
		8-9	✓								
		9-10	✓								
		11-12	✓								
		12-13		R							5
		13-14		R							4-5
		15-16	✓								
		16-17	✓								
		18-19		R							
		19-20	✓								
		20-21	✓								
		21-22		R							3-4
		23-24	✓								
		24-25	✓								
		26-27	✓								
		27-28	✓								
		29-30	✓								
		30-31	✓								
		32-33	✓								
		33-34	✓								

NO. ACCEPTED	0	NO. REJECTED	1	MQS TECH. NO.	12970	SHT.	REV.
COMMENTS				CUST. RSS NO.		SHT.	REV.
Large packets of Burned on Sand are causing some views to fall out of Density. This sand can also mask defects.				REVIEWER	<i>John Petroske</i>		
				CERTIFIED NOT 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		DATE	WORK ORDER NO.
NAME <u>METAL TEK INTERNATIONAL</u>		<u>07/12/2005</u>	361-02386
ADDRESS <u>8600 COMMERCIAL BLVD</u>		P.O. NUMBER	XRAY X
CITY <u>PEVELY</u> STATE <u>MO</u> ZIP <u>63070</u>		21418	GAMMA
PROCEDURE SPECIFICATION ASTM E94-93	ACCEPTANCE CRITERIA MSS-SP-54-1999	SHEET <u>2</u> OF <u>6</u>	

PART NUMBER	Serial No	View	No Apparent Indications		Incomplete Penetration		Shrinkage		Film Artifacts		REMARKS
			Acceptable	Rejected	Dross or Slag	Porosity	Lack of Fusion	Gas Cracks	Hot Tears	Under cut	
MCWF-C-3	35-36		✓								
	36-37		✓								
E.I.O. C040851	38-39		✓								
	39-40		✓								
MS75920	41-42		✓								
	42-43			R							
	44-45		✓						R		
	45-46			R					R		
	47-48			R				R	R		3-4
	48-49			R				R	R		
	50-51			R				R			3-4
	52-53			R					R		3-4
	53-54		✓					✓			
	54-55			R					R		3-4
	55-56			R	R						4
	56-57		✓								
	57-58			R					R		
	58-59		✓								
	59-60		✓								
	60-61			R							
	62-63			R				R		*Cold shut	
	63-64			R							4
	65-66			R					R		
	67-68			R					R		
	68-69			R					R		

NO. ACCEPTED <u>0</u>	NO. REJECTED <u>1</u>	MQS TECH. NO. 12970	SHT.	REV.
COMMENTS		CUST. RSS NO.	SHT.	REV.
		REVIEWER <u>John Petroske</u>	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		DATE	WORK ORDER NO.
NAME <u>METAL TEK INTERNATIONAL</u>		<u>07/12/2005</u>	361-02386
ADDRESS <u>8600 COMMERCIAL BLVD</u>		P.O. NUMBER	XRAY X
CITY <u>PEVELY</u> STATE <u>MO</u> ZIP <u>63070</u>		21418	GAMMA
PROCEDURE SPECIFICATION	ACCEPTANCE CRITERIA	SHEET <u>3</u> OF <u>6</u>	
ASTM E94-93	MSS-SP-54-1999		

PART NUMBER	Serial No	View	No Apparent Indications		Dross		Incomplete Penetration		Shrinkage			Film Artifacts			Indication Levels REMARKS
			Acceptable	Rejected	Included	or Porosity	Lack of Fusion	Gas	Cracks	Hot Tears	Under cut	Surface			
MCWF-C-3	3	69-70	✓												
		V64		R					R	R			✓		4
E.I.O. C040851		71-72	✓										✓		
		72-73	✓										✓		
MS75920		73-74	✓										✓		
		74-75	✓										✓		
		75-76		R				R							2-3
		76-77	✓					✓							
		78-79	✓												
		79-80	✓												
		80-81	✓												
		81-82		R				R							2-3
		83-84		R						R					5
		85-86	✓										✓		
		86-87	✓										✓		
		87-88	✓					✓					✓		
		88-89		R						R			✓		4-5
		90-91	✓					✓					✓		5
		92-93		R				R							
		V94	✓										✓		
		V95	✓										✓		
		96-97		R						R					5
		97-98		R				R	R	R	R				Q.3-4/5
		98-99		R				R							3-4
		V100-101	✓					✓							

NO. ACCEPTED	0	NO. REJECTED	1	MQS TECH. NO.	12970	SHT.	REV.
COMMENTS				CUST. RSS NO.		SHT.	REV.
				REVIEWER	<i>John Petroske</i>		
				CERTIFIED NDT LEVEL (RT)			
				John Petroske RT II Exp. 01/08			



# TEAM COOPERHEAT-MQS, INC.

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

CUSTOMER		DATE	WORK ORDER NO.
NAME <u>METAL TEK INTERNATIONAL</u>		<u>07/12/2005</u>	361-02386
ADDRESS <u>8600 COMMERCIAL BLVD</u>		P.O. NUMBER 21418	XRAY X
CITY <u>PEVELY</u> STATE <u>MO</u> ZIP <u>63070</u>			GAMMA
PROCEDURE SPECIFICATION ASTM E94-93	ACCEPTANCE CRITERIA MSS-SP-54-1999	SHEET <u>4</u> OF <u>6</u>	

PART NUMBER	Serial No	View	No Apparent Indications		Dross		Incomplete Penetration		Shrinkage			Film Artifacts		Inclusion Levels	REMARKS
			Acceptable	Rejected	Inclusion	or Porosity	Lack of Fusion	Gas Cracks	Hot Tears	Under cut	Surface				
MCWF-C-3	3	101-102		R					R						
		102-103	✓						R						
E.I.O. C040851		103-104		R					R	R				3-4	
		104-105		R					R	R				4	
MS75920		106-107		R						R					
		107-108	✓												
		108-109	✓		✓										
		109-110	✓		✓										
		111-112	✓						✓						
		112-113		R	R			✓						5	
		114-115		R	R					R				Incl. O.K.	
		115-116	✓		✓										
		116-117		R						R					

NO. ACCEPTED	0	NO. REJECTED	1	MQS TECH. NO.	12970	SHT.	REV.
COMMENTS				CUST. RSS NO.		SHT.	REV.
				REVIEWER	<i>John Petroske</i>		
				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		DATE	WORK ORDER NO.
NAME METAL TEK INTERNATIONAL		07/12/2005	361-02386
ADDRESS 8600 COMMERCIAL BLVD		P.O. NUMBER	XRAY X
CITY PEVELY STATE MO ZIP 63070		21418	GAMMA
PROCEDURE SPECIFICATION ASTM E94-93	ACCEPTANCE CRITERIA MSS-SP-54-1999	SHEET 5 OF 6	

PART NUMBER	Serial No	View	No Apparent Indications		Incomplete Penetration		Shrinkage		Film Artifacts	Indication Levels	REMARKS
			Acceptable	Rejected	Dross or Slag	Porosity	Lack of Fusion	Gas Cracks			
MCWF-C-3	3	1-2		R							5
		2-3		R							5
E.I.O. C040851		3-4		R							5
		4-5		R							4
MS75920		5-6		R				R			4/4
		6-7		R				R			4/4
Inside Rail		7-8		R				R			5/5
		8-9		R				R			5/5
		9-10		R				R			5/5
		10-11	✓					R			5/5
		11-12		R				R			
		12-13		R				R			4/4
		13-14		R				R			4/4
		14-15		R				R			4
		15-16	✓					R			
		16-17		R				R			4
		17-18	✓					R			
		18-19		R				R			4
		19-20		R				R			
		20-21	✓					R			
		21-22	✓					R			
		22-23		R				R			4/4
		23-24		R				R			4
		24-25		R				R			5
		25-26		R				R			5

NO. ACCEPTED	NO. REJECTED	MQS TECH. NO. 12970	SHT.	REV.
COMMENTS		CUST. RSS NO.	SHT.	REV.
		REVIEWER <i>John Petroske</i>		
		CERTIFIED NOT LEVEL (RT)		
		John Petroske RT II Exp. 01/08		



# TEAM COOPERHEAT-MQS, INC.

## CERTIFIED RADIOGRAPHIC INSPECTION REPORT

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CUSTOMER		DATE	WORK ORDER NO.
NAME <u>METAL TEK INTERNATIONAL</u>		<u>08/23/2005</u>	361-02386
ADDRESS <u>8600 COMMERCIAL BLVD</u>		P.O. NUMBER	XRAY X
CITY <u>PEVELY</u> STATE <u>MO</u> ZIP <u>63070</u>		21771	GAMMA
PROCEDURE SPECIFICATION	ACCEPTANCE CRITERIA	SHEET ____ OF ____	
ASTM E94-93	MSS-SP-54-1999		

PART NUMBER	Serial No	View	No Apparent Indications		Dross		Incomplete Penetration		Shrinkage		Film Artifacts		REMARKS
			Acceptable	Rejected	Inclusion	or Porosity	Lack of Fusion	Gas Cracks	Hot Tears	Under cut	Surface		
MCWF-C-3	1	1-2	✓						3			✓	
R1		2-3	✓						2-3				
E.I.O. C040851		4-5	✓										
		5-6	✓						1				
MS75920		12-13	✓										
		13-14	✓										
		18-19	✓						1				
		21-22	✓										
		42-43			R					3			
		45-46			R			R					
		47-48			R			R		2			
		48-49			R			R		2			
		50-51	✓			2			1				
		52-53	✓									✓	
		54-55	✓						2-3				
		55-56	✓						1				
		57-58	✓			2							
		60-61	✓									✓	
		62-63			R				3				
		63-64	✓			1						✓	
		65-66	✓			2-3							
		67-68	✓							2			
		68-69	✓							2			
		75-76	✓						2			✓	
		81-82	✓										

NO. ACCEPTED <u>8</u>	NO. REJECTED <u>1</u>	MQS TECH. NO. 12970	SHT.	REV.
COMMENTS <i>View 64 was Not Included. This shot was only taken for A large excavation in that Area on a previous Casting. View 63-64 covers that Area.</i>		CUST. RSS NO.	SHT.	REV.
		REVIEWER <u>John Petroske</u>		
		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**

08/23/2005

**WORK ORDER NO.**

361-02386

**P.O. NUMBER**

21771

XRAY X

GAMMA

PROCEDURE SPECIFICATION  
 ASTM E94-93

ACCEPTANCE CRITERIA  
 MSS-SP-54-1999

SHEET \_\_\_\_\_ OF \_\_\_\_\_

PART NUMBER	Serial No	View	No Apparent Indications		Dross		Incomplete Penetration		Shrinkage		Film Artifacts		REMARKS
			Acceptable	Rejected	Inclusion	Porosity	Lack of Fusion	Gas Cracks	Hot Tears	Under cut	Surface		
MCWF-C-3	1	83-84		R				R					
R1		88-89	✓						2			✓	
E.I.O. C040851		92-93		R				R					
		96-97		R				R					
MS75920		97-98		R							R		
		98-99	✓										
		101-102	✓						2				
		103-104	✓										
		104-105	✓										
		106-107	✓										
		112-113	✓					1					
		114-115	✓						1-2				
		116-117		R				R					

NO. ACCEPTED

0

NO. REJECTED

1

MQS TECH. NO.

12970

SHT.

REV.

COMMENTS

CUST. RSS NO.

SHT.

REV.

REVIEWER

*John Petroske*

CERTIFIED MDT 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		DATE	WORK ORDER NO.
NAME METAL TEK INTERNATIONAL		08/23/2005	361-02386
ADDRESS 8600 COMMERCIAL BLVD		P.O. NUMBER	XRAY X
CITY PEVELY STATE MO ZIP 63070		21771	GAMMA
PROCEDURE SPECIFICATION	ACCEPTANCE CRITERIA	SHEET ____ OF ____	
ASTM E94-93	MSS-SP-54-1999		

PART NUMBER	Serial No	View	No Apparent Indications		Dross		Incomplete Penetration		Shrinkage		Film Artifacts		REMARKS
			Acceptable	Rejected	Inclusion	Porosity	Lack of Fusion	Gas Cracks	Hot Tears	Under cut	Surface		
MCWF-C-3	1	A-B	✓										
RI		B-C	✓										
E.I.O. C040851		C-D	✓		1				1				
		D-E	✓						1				
MS75920		E-F	✓						1				
		F-G	✓						2	2			
		G-H	✓						3				
		H-I	✓		1				1				
		I-J		R	1-2			R					
		K-L	✓										
		L-M	✓						1-2				
		M-N	✓										
		N-O	✓										
		P-Q	✓										
		R-S	✓										
		S-T	✓						1				
		U-W	✓										
		W-X	✓										
		X-Y		R				R	1				
		Y-Z	✓		3				2				
		Z-AA	✓						3				
		BB	✓										
		CC-DD	✓		1				1				
		DD-AA	✓		1				1				

NO. ACCEPTED	NO. REJECTED	MQS TECH. NO.	SHT.	REV.
0	1	12970		
COMMENTS		CUST. RSS NO.	SHT.	REV.
		REVIEWER		
		CERTIFIED NOT LEVEL (RT)		
		John Petroske RT II Exp. 01/08		

# MetalTek

## INTERNATIONAL

### RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <b>ETO</b>		PURCHASE ORDER NUMBER <b>PPPL-FP-LTS-2</b>			DATE <b>6-31-05</b>		CONTROL NO. <b>40851</b>		PAGE <b>1 of 1</b>														
PART NO. <b>MCWF-C3 coil</b>		SPECIFICATION <b>E446/E186</b>		CLASS <b>See spec</b>		TOTAL PIECES <b>1</b>		PIECES ACCEPTED <b>1</b>															
RADIOGRAPHED BY: <b>Midgett/Kelley</b>				INTERPRETED BY: <b>Midgett/Kelley</b>				ASNT LEVEL <b>II</b>															
FILM TYPE <b>29/59/80</b>		MATERIAL <b>CF8 MNMn mod</b>		ISOTOPE <b>IRIDIUM 192 COBALT 60 Y</b>				CODE <b>ASTM E94 ✓ ASME MIL-STD-453</b>															
<b>Repair Views</b>		V I E W		P E N E		A C C E P T		R E J E C T		S H R I N K		I N C L U S I O N		P O R O S I T Y		L I N E A R		S U R F A C E		L O F / L O P		COMMENTS	
<b>m575920-2</b>																							
<b>R2</b>		<b>42-43</b>		<b>30/40</b>		/				<b>2</b>													
		<b>45-46</b>				/						<b>2</b>											
		<b>47-48</b>						<b>X</b>								<b>X</b>							
		<b>48-49</b>						<b>X</b>								<b>X</b>							
		<b>62-63</b>		<b>↓</b>		/				<b>1 1 2</b>													
		<b>83-84</b>		<b>30/40</b>		/		<b>X</b>								<b>X</b>							
		<b>92-93</b>		<b>30/40</b>		/		<b>X</b>								<b>X</b>							
		<b>96-97</b>		<b>50</b>		/				<b>1 1</b>													
		<b>97-98</b>						<b>X</b>								<b>X</b>							
		<b>116-117</b>		<b>↓</b>		/				<b>1 1</b>		/											
		<b>I-J</b>		<b>60/120</b>		/		<b>X</b>								<b>X</b>							
		<b>X-Y</b>		<b>↓</b>		/		<b>X</b>								<b>X</b>							





# MetalTek

## INTERNATIONAL

### RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <b>EIO</b>		PURCHASE ORDER NUMBER <b>PPPL - FP - LTS - 2</b>			DATE <b>9-9-05</b>		CONTROL NO. <b>40851</b>		PAGE <b>1 of 1</b>														
PART NO. <b>m CWF-C3 coil</b>		SPECIFICATION <b>E446/E186</b>		CLASS <b>see spec</b>		TOTAL PIECES <b>1</b>		PIECES ACCEPTED <b>1</b>															
RADIOGRAPHED BY: <b>Midgett</b>				INTERPRETED BY: <b>Midgett</b>			ASNT LEVEL <b>II</b>																
FILM TYPE <b>29/9/8-U</b>		MATERIAL <b>CF8mmnmmod</b>		ISOTOPE <b>IRIDIUM 192    COBALT 60    V</b>				CODE <b>ASTM E94    V    ASME    MIL-STD-453</b>															
<b>R4</b>		<b>V I E W</b>		<b>P E N E T</b>		<b>A C C E P T</b>		<b>R E J E C T</b>		<b>S H R I N K</b>		<b>I N C L U S I O N</b>		<b>P O R O S I T Y</b>		<b>L I N E A R</b>		<b>S U R F A C E</b>		<b>L O F / L O P</b>		COMMENTS	
<b>m575920-2</b>		<b>48-49</b>		<b>J</b>		<b>X</b>		<b>4</b>		<b>X</b>		<b>X</b>		<b>X</b>		<b>X</b>		<b>X</b>		<b>X</b>			
		<b>I-J</b>		<b>60/120</b>		<b>X</b>		<b>3</b>															
		<b>X-Y</b>		<b>Y</b>		<b>X</b>																	

# MetalTek

## INTERNATIONAL

### RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <b>EIO</b>	PURCHASE ORDER NUMBER <b>PPPL-FP-LTS-2</b>	DATE <b>9-14-05</b>	CONTROL NO. <b>40851</b>	PAGE <b>1 of 1</b>
PART NO. <b>mcwfc3 coil</b>	SPECIFICATION <b>E186/E446</b>	CLASS <b>see spec</b>	TOTAL PIECES <b>1</b>	PIECES ACCEPTED <b>1</b>
RADIOGRAPHED BY: <b>Middlet</b>		INTERPRETED BY: <b>Middlet</b>	ASNT LEVEL <b>II</b>	

FILM TYPE	MATERIAL			ISOTOPE						CODE			COMMENTS
				IRIDIUM 192			COBALT 60			ASTM E94	ASME	MIL-STD-453	
	V	P	A	R	S	I	P	L	S	L			
	I	E	C	E	H	N	P	I	U	O			
	W	N	E	J	R	C	R	N	R	F			
		E	P	E	I	L	O	E	A	L			
			T	C	N	U	S	A	C	O			
				T	K	S	I	R	E	F			
						I	T	E	C	L			
						O	Y		E	O			
						N				P			
<b>2959/80</b>	<b>CF8MNMmod</b>												
<b>Repair Views</b>													
<b>MS75920-2</b>													
<b>R5</b>	<b>47-48</b>	<b>30/40</b>		<b>X</b>			<b>4</b>						
	<b>48-49</b>	<b>6</b>		<b>X</b>			<b>4</b>						
	<b>I-5</b>	<b>60/120</b>	<b>/</b>			<b>1</b>	<b>3</b>						
	<b>X-4</b>	<b>6</b>	<b>/</b>		<b>1</b>	<b>1</b>	<b>1</b>						





# Metaltek INTERNATIONAL

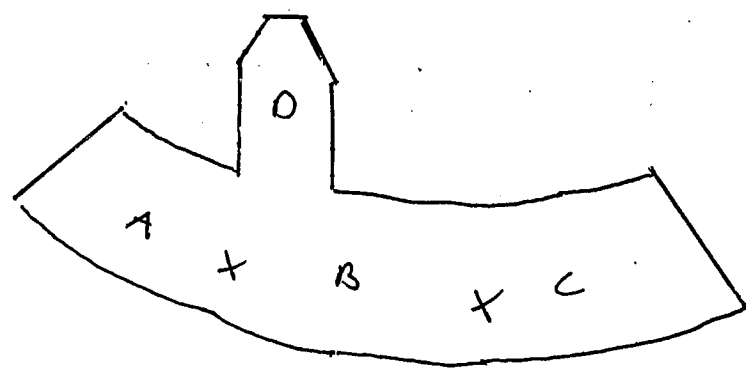
## RADIOGRAPHIC STANDARD SHOOTING SKETCH

Customer	Energy Industries of Ohio	Pattern Number	SE-141-073 c sh/m
Material	CF8MNMN-MOD	Traceability Number	
Film Manufacturer	Fuji	Source Number	C060 24.7 ci
IQI LEVEL <u>2-2T</u> From CQP 401 <input checked="" type="checkbox"/> Other (Specify, E.G. 2-4T, 2-1T) <u>N/A</u>			

Exposures (views)	A	B	C	D													
Thickness (IN.)	3 7/8"	→															
S/F Distance (IN.)	24"	→															
Penetrameter	50	→															
Time (MIN.)	22 min	→															
Focal Spot (IN.)	.1	→															
Film Size (IN.)	14X17	→															
Screen Size (Pb)	.01	→															
Front/Back	.01	→															
S.W.E./D.W.E.	SWE	→															
S.W.V./D.W.V.	SWV	→															
Film Type	80	→															
Acceptance Standard	E186	→															
Severity Level	III	→															

Shooting Sketch (Use Additional Pages as Needed)

use spec. MSS-SP-54



TYP. Source Placement



TYP. Film Placement



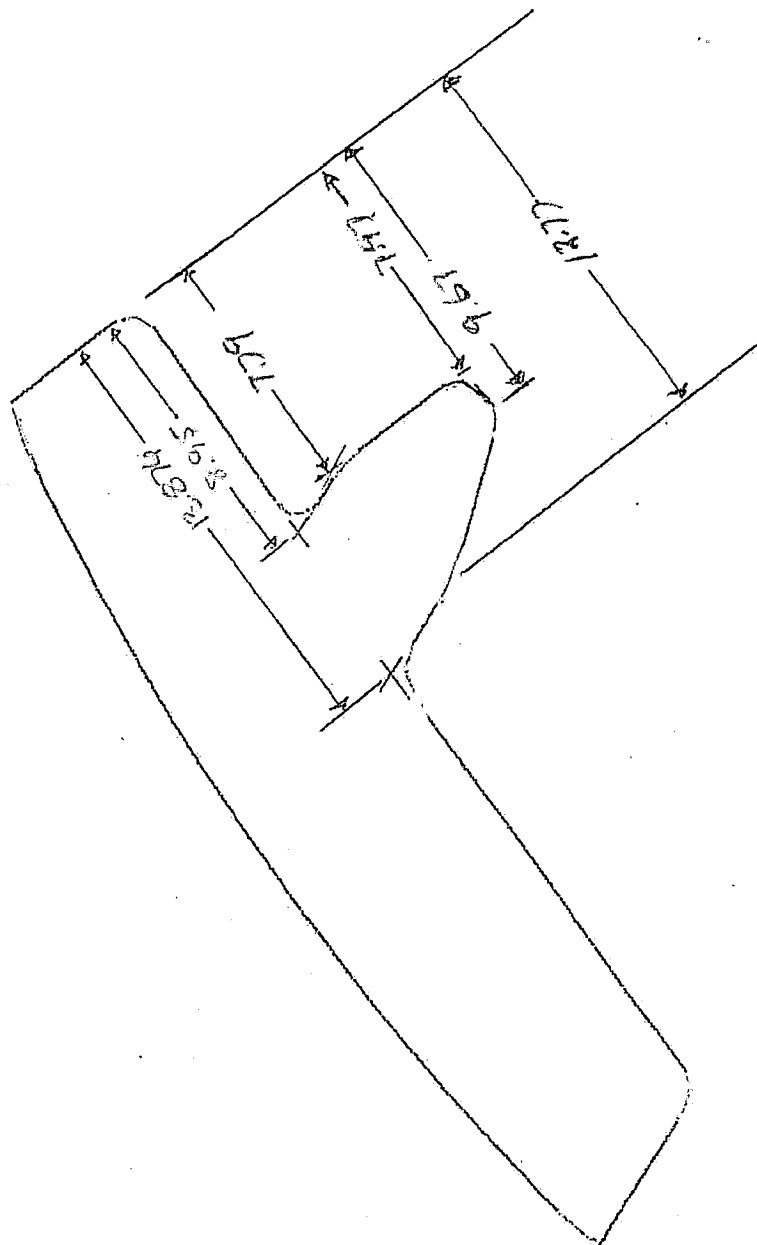
Technique Prepared By: RON Kelley  
 Technique Approved By: RS

Level: II  
 Level: III

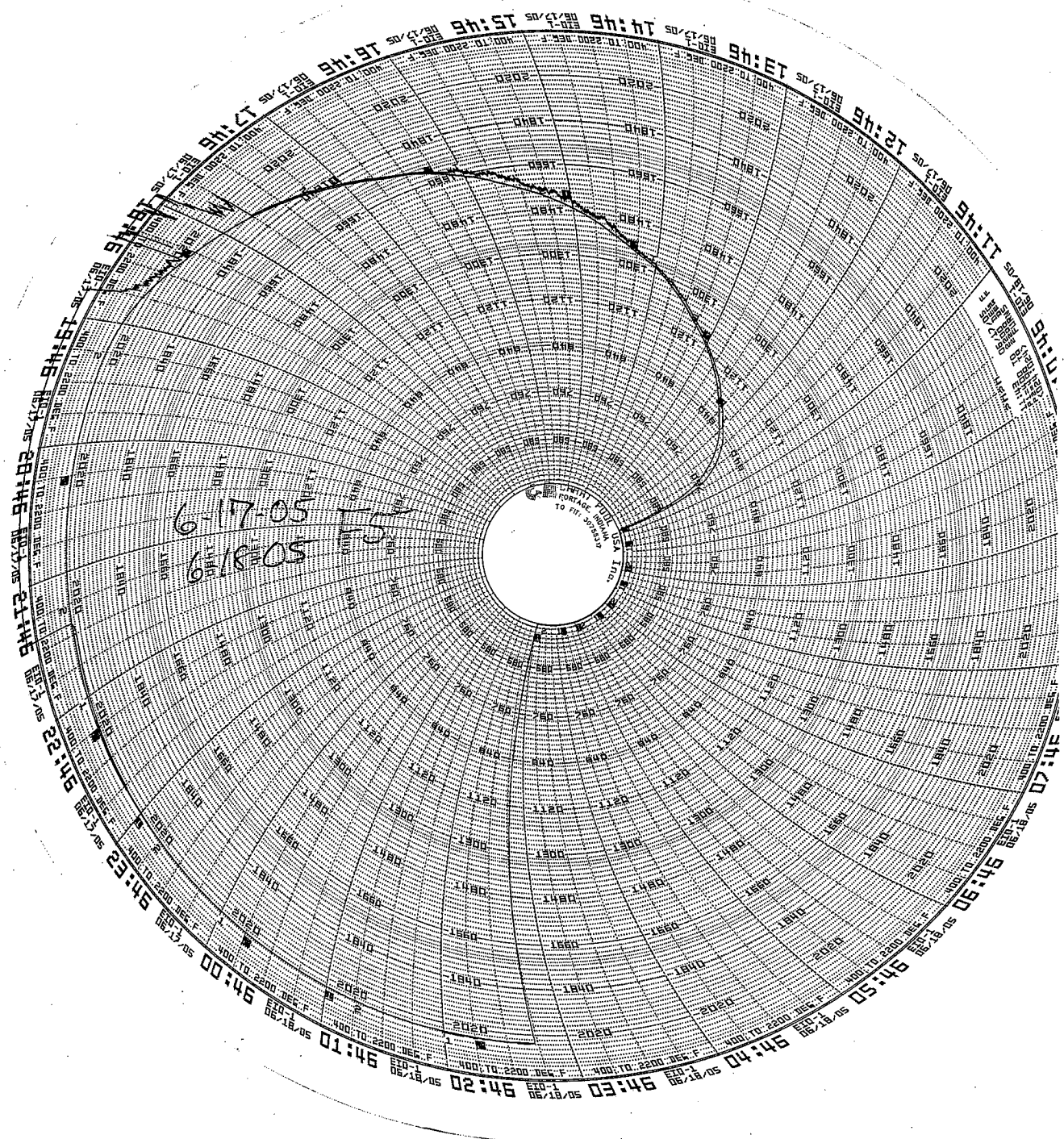
Date: 9-9-05  
 Date: 9/10/05

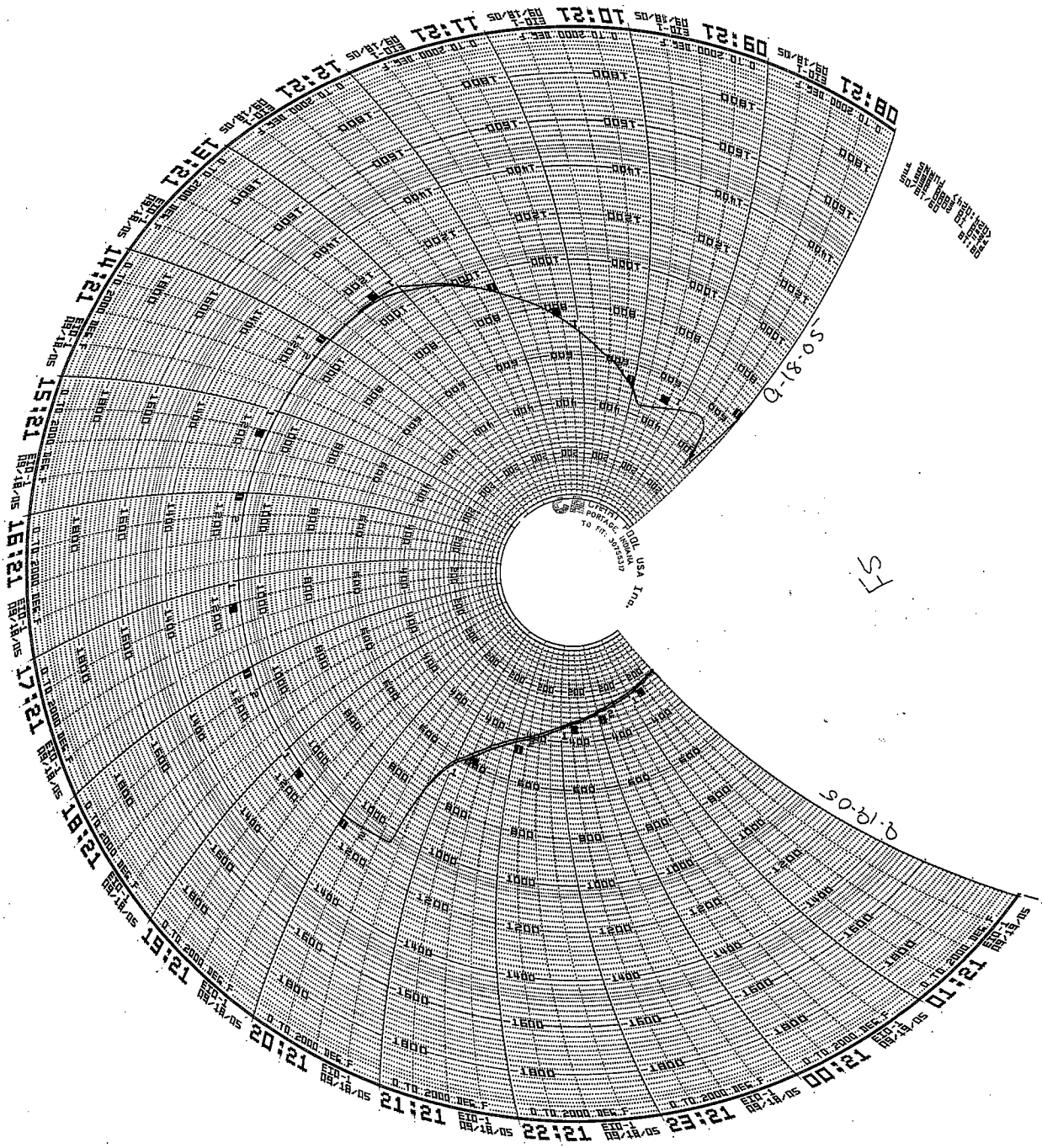




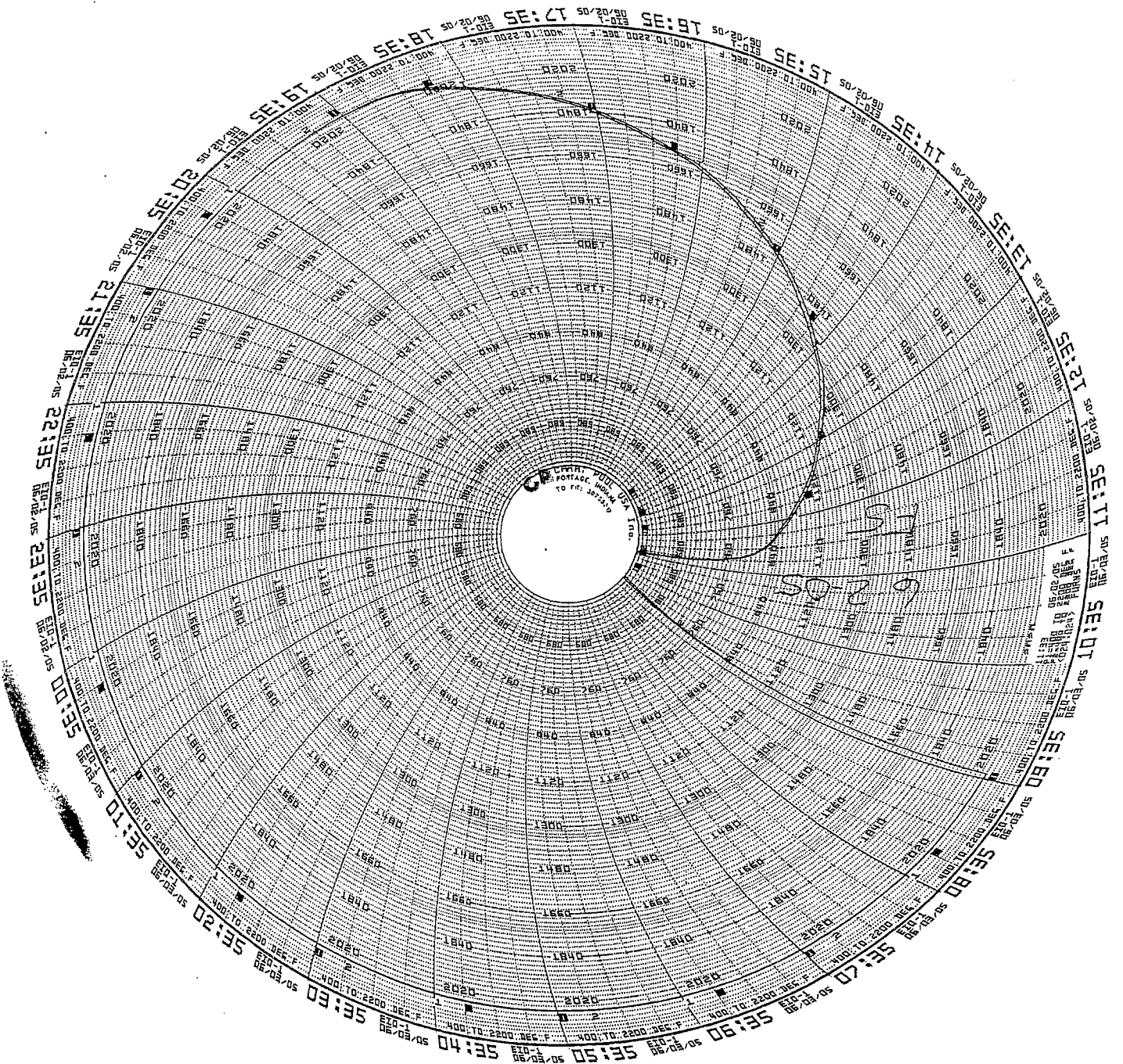


PAGE 2 OF 2 (4)  
 SHIM SE 141-073 J. An J.  
 SKETCH 9/12/05





A+C Shims CTR



Energy Industries of Ohio  
Manufacturing and Test Sequence (MTS) Serial Number C-3

1 OF 10 CO# 40851 Dated 3-9-05 Revision: Rev 7 Dated Issued: 6-14-05

OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON <u>6/14/05</u> FROM <u>Pete</u> SIGNED QUALITY MANAGER	<u>CAE</u>	<u>6/14/05</u>
15	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, AND FOUNDRY MARK, TO THE PATTERN. CAST ON BARS REQUIRED. Place numbers on the bars as to their location.	<u>Bue</u>	<u>6-10-05</u>
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.	<u>Bue</u>	<u>6-7-05</u>
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.	<u>Bue</u>	<u>6-7-05</u>
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: <u>2730</u> CASTING POURED AT: <u>2:00 AM</u> DATE: <u>6-10-05</u> HEAT #'s: <u>29716, 29717, 29718, 29719, 29720</u> ELAPSED POUR TIME _____ KEEL BLOCKS POURED: <u>6</u> Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: <u>J.W. / R.</u> Analyzed: <u>G. Hurt</u> Date: <u>6-10-05</u>	<u>JWG</u>	<u>6-10-05</u>
50	MELT SOP 0800R2	SHAKEOUT	<u>CAE</u>	<u>6-10-05</u>

Energy Industries of ~~China~~

Manufacturing and Test Sequence (MTS) Serial Number C-3

2 OF 10 CO# 40851 Dated 3-9-05 Revision: Rev 7 Dated Issued: 6-14-05

60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.	BWA BWA	6-14-05 6-22-05
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: 4HR + 1/2 HR/IN, Quench Type: Air Cool		FS-1 DCSC 6/17/05
75	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 510.	WT	6/18
NOTE		<b>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.</b>		
80	GRIND GWA SOP 0100R3	SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED.	TJ	6-23-05
85	GRIND GCHI SOP 0100R2	CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED FOR CONTOUR.	CA	6/29
90	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	MWW	6-29 -
NOTICE	WITNESS NOTIFICATION <del>HOLD FOR EIO APPROVAL</del>	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LAYOUT. EIO NOTIFIED ON <u>6/28</u> DCMA NOTIFIED ON <u>6/28</u> APPROVAL RECEIVED ON _____	Q ENG OR QA MGR	to be performed later Ctn
100	LAYOUT SOP LAYOUT 0100	INSPECT CASTING TO VERIFY DIMENSIONS. THIS STEP MAY BE DELAYED. DIMENSIONED _____ DATE _____ RELEASED _____ (ENGINEER ONLY) 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.		
110	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 120.	VT - LEVEL II	

later  
Ctn  
to RT  
↓

**Energy Industries of Ohio  
Manufacturing and Test Sequence (MTS) Serial Number C-3**

3 OF 10 CO# 40851 Dated 3-9-05 Revision: Rev 7 Dated Issued: 6-14-05

*later*

NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LP STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR
115	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 _____ IF REJECTED CHECK HERE <input checked="" type="checkbox"/> MARK AND REPAIR AT STEP 120.	LP - LEVEL II <i>Perfand later can</i>
120	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION.	
125	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION AS REQUIRED.	
130	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 125.	LP - LEVEL II
165	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	
170	<b>HOLD POINT WELD MAP</b>	MAP ALL 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 SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10 % _____ SIGN BY QA ENG. <b>MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED.</b>	
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF X-RAY AND DIMENSIONAL STEPS. EIO NOTIFIED ON <u>4/20</u> DCMA NOTIFIED ON <u>6/20</u>	Q ENG OR QA MGR <i>LS</i>
190	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 <i>RS</i>

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**Energy Industries of Ohio  
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4 OF 10 CO# 40851 Dated 3-9-05 Revision: Rev 7 Dated Issued: 6-14-05

210	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 <input type="checkbox"/> AND SEND TO STEP 340. REJECTED CHECK HERE <input checked="" type="checkbox"/> MARK UP DEFECTS AND SEND THE CASTING TO STEP 220.	RT - LEVEL II RK	7/15/05
220	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	CA	7/16
225	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION AS REQUIRED.	DB	7/28
230	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 <input checked="" type="checkbox"/> IF REJECTED SEND BACK TO STEP 225.	LP - LEVEL II TC	7/30
240	<b>HOLD POINT</b> WELD MAP	MAP ALL 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. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES <input checked="" type="checkbox"/> , REPORT SENT BY <u>CAH</u> DATE <u>8/11/05</u> DEFECTS < 10 % <input type="checkbox"/> SIGN BY QA ENG. <b>MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED.</b> MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER PRIOR TO REPAIR. ONCE THE REPORT IS SENT, WELDING MAY START.		
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON <u>7/7</u> DCMA NOTIFIED ON <u>7/7</u>	Q ENG OR QA MGR	CAH
260	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED: <u>30189 26/78309</u> QUALITY ENG. Name: <u>CAH</u> Date: <u>8/12</u> <del>3012000</del>		
270	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 <b>ADD WPS FOR VERTICAL WELDS.</b>		
280	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.		

Start Rev 8

**Energy Industries of Ohio  
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4 OF 11 CO# 40851 Dated 3-9-05 Revision: Rev 8 Dated Issued 7-29-05

220	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.							
225	GRIND GCHI SOP 0100R2	CHIP AND HAND GRIND EXCAVATION AS REQUIRED.							
230	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 225.							
240	WELD MAP	MAP ALL 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".							
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
260	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED: <u>3018926/78309</u> QUALITY ENG. Name: <u>CAH</u> Date: <u>8/2 30/2/05</u>							
270	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							TL5 TO WPP IC 8-13-05 8-16-05 8-15-05 8-15-05
280	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.							LG 8-17-05
290	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 300. IF REJECTED CHECK HERE _____							LP LEVEL II
	REPEAT	REPEAT STEPS <u>220 TO 290</u> AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON STEPS S220 TO S290. IF OK CHECK HERE _____ AND PROCEED TO STEP 295.							
	REPEAT STEPS	SUPPLEMENTAL REPAIR STEPS							1 <sup>ST</sup> 2 <sup>ND</sup> 3 <sup>RD</sup> 4 <sup>TH</sup> 5 <sup>TH</sup>
S220	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.							

*Start  
Rev 8*



*Repair  
documented  
in S321  
to S327  
CAH*

**Energy Industries of Ohio  
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5 OF 11    **CO# 40851 Dated 3-9-05 Revision: Rev 8 Dated Issued: 7-29-05**

S230	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				
S240	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".					
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				
S260	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL /LOT USED : _____ QUALITY ENG. Name: _____ Date: _____					
S270	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					
S280	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.					
S290	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 300. IF REJECTED CHECK HERE _____ AND RETURN TO STEP S220.	LP - LEVEL II	OK REJ	OK REJ	OK REJ	OK REJ
	REPEAT	REPEAT STEPS S220 TO S290 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION.	QA ENG.				
295	TEST MAG PERM SOP MAG PERM 100, REV 1	TEST MAG PERMEABILITY REPAIR AREAS TEST AT LEAST 5 POINTS PER WELD. ACCEPTANCE 1.02. IF OK CHECK HERE <input checked="" type="checkbox"/> AND GO TO STEP 300. IF REJECTED CHECK HERE _____.					CA
296	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 295. REPEAT UNTIL COMPLIANCE IS ACHIEVED.					
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 <input checked="" type="checkbox"/> . RADIOGRAPH AT CAF CHECK HERE _____	QA ENGINE ER				

**Energy Industries of Ohio**  
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6 OF 11 CO# 40851 Dated 3-9-05 Revision: Rev 8 Dated Issued: 7-29-05

310 A	MQS X-RAY DEFECTS REPAIRED BY WELDING	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	LEVEL II  mas	8-17-05
310 B	CAF X-RAY DEFECTS REPAIRED BY WELDING CQP 401 REV 5	X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET.	RT - LEVEL II  DA	
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 <input checked="" type="checkbox"/> MARK UP DEFECTS AND SEND THE CASTING TO STEP 220.	RT - LEVEL II  Dunn	9-1-05
	REPEAT STEPS	SUPPLEMENTAL REPAIR STEPS		
			1 <sup>ST</sup> R 9-7-05 Dunn	2 <sup>ND</sup> R 9-11-05 Dunn
S321	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	JC 9/8	JC 9/13
			3 <sup>RD</sup> R 9-16-05 RBD	4 <sup>TH</sup> A 9-16-05 RBD
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 CC 9/8	JC 9/13
			CC 9/15	CC 9/15
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 APPROXIMATELY 3.3"X3.3".	JB 9/8	JB 9/13
			JB 9/15	N/A
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON 9/1 DCMA NOTIFIED ON 9/1	Q ENG OR QA MGR	
S324	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL /LOT USED: 3018926/28309 QUALITY ENG. Name: LS Date: 9/8		
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-	JC	JC
			JC	RBD

OK  
on RT

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		CF8MNMN MOD REV 0 (Vertical) FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2					
S326	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.	DP 9/8	DP 9/14	DB 9/15		
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 300. IF REJECTED CHECK HERE <input checked="" type="checkbox"/> AND RETURN TO STEP S321.	LP - LEVEL II TC	OK TC (REJ)	(OK) TC REJ	OK REJ	OK REJ
	REPEAT	REPEAT STEPS S321 TO S327 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION.	QA ENG.		KLA		
340	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.				RJB	9-16-05
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON <u>9/9</u> DCMA NOTIFIED ON <u>9/9</u>				Q ENG OR QA MGR	RS 9/9
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 _____ IF REJECTED CHECK HERE <input checked="" type="checkbox"/> . MARK AND REPAIR AT STEP 385. MUST BE PERFORMED BY LEVEL II in VT.				VT - LEVEL II KLA	9/16
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 455. IF REJECTED CHECK HERE <input checked="" type="checkbox"/>				LP - LEVEL II T.R.C.	9-16-05
380	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION.				JC	9/16
385	GRIND GCHI SOP 0100R2	CHIP AND HAD GRIND EXCAVATION AS REQUIRED.				DP DB	9/16
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 <input checked="" type="checkbox"/> IF REJECTED SEND BACK TO STEP 385.				LP - LEVEL II	JOB 9/16

NOTE: Layout step #100 performed 9/20/05 JRB  
From page 2 of MCT. ctn

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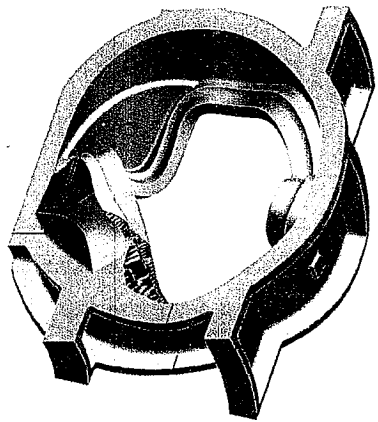
400	WELD MAP	MAP ALL MAJOR WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. MUST INDICATE ON MAP ALL MAJOR WELDS, DEFINED AS GREATER THAN 20% OF THE WALL OR 1 INCH WHICHEVER IS LESS OR 10 SQUARE INCHES APPROXIMATLY 3.3"X3.3".	MA	
420	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED: <u>3018926/78309</u> QUALITY ENG. Name: <u>RS</u> Date: <u>9/14</u>		
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	JC/WP	9/16
440	GRIND GCHI SOP 0100 REV 2	HAND GRIND WELDS.	DP/DB	9/17
450	L.P. WELDS CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. IF OK CHECK HERE <input checked="" type="checkbox"/> WASH AND SEND TO STEP 460. IF REJECTED CHECK HERE _____ AND RETURN TO STEP 440.	LP - LEVEL II	OK 9/18
	REPEAT	REPEAT STEPS <u>350 TO 450</u> AS REQUIRED TILL WELDS CLEAR FINAL LIQUID PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG.	MA
451	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 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.	MA	
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.	PLS	9/18
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR	

*error*  
*NEEDS*  
*corrected*  
*ctz*

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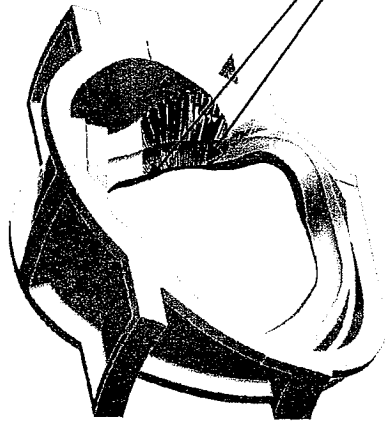
460	FINAL VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 ALL CONDITIONS. IF OK CHECK HERE <input checked="" type="checkbox"/> IF REJECTED CHECK HERE _____ . MARK AND REPAIR AT STEP 390. MUST BE PERFORMED BY LEVEL II in VT.	VT - LEVEL II <i>HAA</i>	<i>9-20</i>
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. IF OK CHECK HERE <input checked="" type="checkbox"/> WASH AND SEND TO STEP 455. IF REJECTED CHECK HERE _____ . DOCUMENT REPAIRS USING S321 THROUGH S327.	LP - LEVEL II <i>HAA</i>	<i>9-20</i>
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEPS. EIO NOTIFIED ON <i>9/12</i> DCMA NOTIFIED ON <i>9/20</i>	Q ENG OR QA MGR	<i>ck</i>
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 <input checked="" type="checkbox"/> AND GO TO STEP 530. <i>RJG</i> IF REJECTED CHECK HERE <input checked="" type="checkbox"/>	<i>RJG</i>	<i>9-20-05</i>
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.	<i>ckm</i>	<i>9-20-05</i>
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 <input checked="" type="checkbox"/> . IF REJECTED CHECK HERE _____ RETURN TO STEP 510.	<i>RJG</i>	<i>9-20-05</i>
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)	<i>ckm</i>	<i>9/21/05</i>
NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON <i>9/21</i> BY <i>ckm</i> . RECEIVED RELEASE FROM EIO ON <i>9/21</i> .	Q ENG OR QA MGR	<i>ckm</i>
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.	CARUUD	



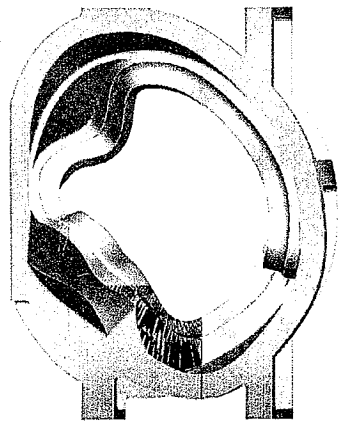
GENERAL ISOMETRIC  
VIEW FROM TOP SIDE

TABS DESIGNATE  
CRITICAL AREA

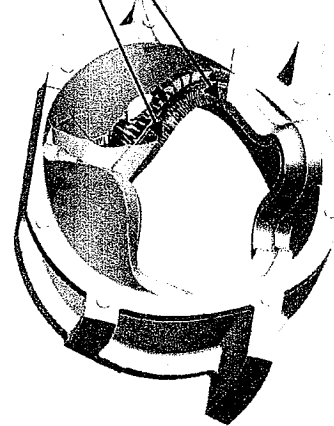
RED AREA INDICATES HIGH STRESSED AREA



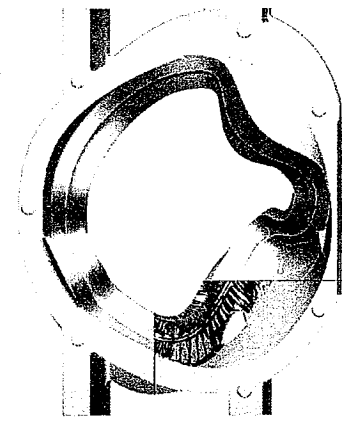
TOP SIDE ISOMETRIC



TOP SIDE VIEW



BOTTOM SIDE ISOMETRIC



BOTTOM SIDE VIEW



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## Energy Industries of Ohio

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FIVE PARTS KEEP TOGETHER

CO# 40851, Pattern SE 141-073 -4 MS73220-2 Dated December 14, 2004 Revision:Original

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OPER. #	STATION	DESCRIPTION OF PROCESS Keep all parts together. Sign and date each step when all 5 parts have been completed.	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON <u>Pete</u> FROM <u>12/15/04</u> SIGNED QUALITY MANAGER	<u>Chr</u>	<u>4/21/05</u>
20	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, FOUNDRY MARK, TO THE PATTERN.	<u>TB</u>	<u>4/22/05</u>
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.	<u>CR</u>	<u>4/22/05</u>
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: <u>2825</u> CASTING POURED AT: <u>1225 Am</u> DATE: <u>4/28</u> HEAT #'s: <u>29198</u> ELAPSED POUR TIME <u>N/A</u> KEEL BLOCKS POURED: <u>yes</u> Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: <u>SR</u> Analyzed: <u>G Hurt</u> Date: <u>4/28/05</u>  <b>Note: Make 15 additional test bars for mechanical testing.</b>	<u>JG</u>	<u>4/28</u>
50	MELT SOP 0800R2	SHAKEOUT	<u>CA</u>	<u>4/29/05</u>
60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.	<u>BW H</u>	<u>4/14/05</u>
70	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. With C-1 Coil.	<u>DLS</u>	<u>6/2/05</u>

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80	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 480.	WHT	6/2/05
90	GRIND GSA SOP 0100R3 GCHI SOP 0100R2	SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED. CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED.	X CEG 6-16-05	
100	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	CA 6/16	
110	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 130.	VT - LEVEL II later	
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LP STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR	}
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 _____ IF REJECTED CHECK HERE _____ MARK AND REPAIR AT STEP 120.	LP - LEVEL II	
130	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION.		
140	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	
150	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.		
160	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 WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10% _____ SIGN BY QA ENG.		
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF XRAY AND LAYOUT STEPS. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR	

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170	CAF X-RAY CQP 401 REV 5	X-RAY PER TECHNIQUE: To be determined. 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 KAR	9-9-05
180	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 <input checked="" type="checkbox"/> AND SEND TO STEP 310. REJECTED CHECK HERE <input type="checkbox"/> MARK UP DEFECTS AND SEND THE CASTING TO STEP 200.	RT - LEVEL II KAR	9-9-05
190	LAYOUT	INSPECT CASTING TO VERIFY DIMENSIONS. THIS MAY BE PERFORMED BEFORE OR AFTER STEP 180. DIMENSIONED <u>Sony J</u> DATE <u>9-12-05</u> RELEASED _____ (ENGINEER ONLY)	JS	9-12-05
200	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	MA	
210	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	3
220	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.. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10% _____ SIGN BY QA ENG.		
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	
230	QA APPROVAL HOLD POINT	QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL USED: _____ QUALITY ENG. Name: _____ Date: _____		
240	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		
250	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.		

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260	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 <i>MP</i>	
	REPEAT	REPEAT STEPS 220 TO 260 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG.	
270	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 290. IF REJECTED CHECK HERE _____.		
280	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 270. REPEAT UNTILL COMPLIANCE IS ACHIEVED.		
290	CAF X-RAY DEFECTS REPAIRED BY WELDING CQP 401 REV 5	X-RAY PER TECHNIQUE: To be determined. 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	
300	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 310. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP 200.	RT - LEVEL II	
	REPEAT	REPEAT STEPS 200 TO 300 AS REQUIRED TILL WELDS CLEAR X-RAY. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG.	
310	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	<i>BB</i>	<i>9/19</i>
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON <u>9/7</u> DCMA NOTIFIED ON <u>9/7</u>	Q ENG OR QA MGR	<i>C/n</i>
320	FINAL VISUAL INSPECTION CQP-500 REV 4	VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 2 ALL CONDITIONS. IF OK CHECK HERE <input checked="" type="checkbox"/> . IF REJECTED CHECK HERE _____ . MARK AND REPAIR AT STEP 340.	VT - LEVEL II <i>KCA</i>	<i>9/19</i>

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		MUST BE PERFORMED BY LEVEL II in VT.		
330	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 <input checked="" type="checkbox"/> WASH AND SEND TO STEP 410. IF REJECTED CHECK HERE <input type="checkbox"/>	LP - LEVEL II	JOR/9/11A
340	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION.		
350	L.P. EXCAVATION CQP-300 REV 10	L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903.	LP - LEVEL II	
370	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. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS.>10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10 % _____ SIGN BY QA ENG.		
380	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		
390	GRIND GCHI SOP 0100 REV 2	HAND GRIND WELDS.		
400	L.P. WELDS CQP 0300 REV 10	L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. IF OK CHECK HERE _____ WASH AND SEND TO STEP 460. IF REJECTED CHECK HERE _____ AND RETURN TO STEP 390.	LP - LEVEL II	
	REPEAT	REPEAT STEPS 390 TO 410 AS REQUIRED TILL WELDS CLEAR FINAL LIQUID PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG.	
410	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 430.	NA	↓

Energy Industries of Ohio

FIVE PARTS KEEP TOGETHER

Manufacturing and Test Sequence (MTS) Coill C Shim

CO# 40851, Pattern SE 141-073 -4 MS73220-2 Dated December 14, 2004 Revision:Original

Page 6 of 6

Dated Issued:4-27-05

420	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 420. REPEAT UNTILL COMPLIANCE IS ACHIEVED.	NA	NA
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEP. EIO NOTIFIED ON <u>9/7</u> DCMA NOTIFIED ON <u>9/7</u>	Q ENG OR QA MGR	Ctn
430	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 <input checked="" type="checkbox"/> AND GO TO STEP 470. IF REJECTED CHECK HERE _____	Ctn	7/20
440	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	
450	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 450		
460	PHOTOGRAPH	TAKE DIGITAL PICTURES.		
470	AUDIT REVIEW	PROCESS DOCUMENT TO PROGRAM MANAGER FOR COMPLIANCE AUDIT.	9/24	Ctn
480	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)	9/24	Ctn
NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON <u>9/20</u> BY <u>Ctn</u> RECEIVED RELEASE FROM EIO ON _____	Q ENG OR QA MGR	Ctn
490	PACK AND SHIP	PACKAGE AND SHIP TO MAJOR TOOL.		
1000	REVISION HISTORY	ORIGINAL 12-14-04.	CARUUD	



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.

A handwritten signature in black ink, appearing to read "C. Ruud".

Signed: C. Ruud

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



**Nonconformance Report:** MetalTek CA 1308

**Project Disposition:** Use as is.

**Approvals**

Procurement Technical Representative \_\_\_\_\_  
Wayne Reiersen for Phil Heitzenroeder

Responsible Line Manager \_\_\_\_\_  
Mike Cole for Brad Nelson

**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 agree 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 to  
CA 1323*



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





Corrective Action 1379  
Carondelet Division - CA / PA / RGA Database  
Corrective Action Type NCR  
Date 8/31/2005  
CA Originator C. Ruud  
Applies to: Weld Material Lincoln 3018926-78309

**Description of Defect / Non-Conformance**

Material failed elongation and one of three Charpy impact tests at -320 F. The average of the specimens exceeds the minimum. See S8 of ASTM A 703/A 703M.

**Root Cause**

The sample of the weld contained defects not detected.

**Corrective Action**

Retest material already at Lab.  
If needed, make a new weld plate after reviewing process with welder and weld another sample.

**Verification of Corrective Action**

Retest results. If new plates are needed, the new plate will be x-rayed prior to testing.

**Estimated Completion Date**

9-2-05

**Actual Completion Date TBD**

Signed: C. Ruud

A handwritten signature in black ink, appearing to be "C. Ruud".

CC: R. Suria, Barry Craig, Joe Edwards, E.J. Kubick

**Nonconformance Report: CA1379**

**Project Disposition:**

Since the re-test meets requirements, this NCR can now be considered closed.


**Approvals:**

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: 2005.11.07 10:09:53 -0500

---

Procurement Technical Representative

 11/7/05

---

Responsible Line Manager:





Corrective Action 1403  
Carondelet Division - CA / PA / RGA Database  
Corrective Action Type NCR  
Date 9-30-05  
CA Originator C. Ruud  
Applies to: C-3 Coil

**Description of Defect / Non-Conformance**

Lack of fusion and porosity in weld repairs were observed during radiography of the R-2 through R-7 x-ray confirmation shots.

**Root Cause**

Porosity and lack of fusion was caused by leaks in the lines feeding gas to the welding booths and leaks from the leads on one welding machine. Some repair loops resulted from the original defects not fully being removed during excavation.

**Corrective Action**

Took all welders off the main lines and supplied with bottled gas. Inspect all lines from the bulk tanks to the weld booth. Replaced defective lead. Reviewed proper excavation techniques with the welders. The start up procedure for welders has been revised to include a flow check. If flow is not adequate, welding will not be performed until repairs are complete and re test indicate proper flow.

**Verification of Corrective Action**

Re x-ray the defective welds.

**Estimated Completion Date**

9/16/05 for repairs, other actions 10/21/05.

**Actual Completion Date**

9/16/05 for bottle gas, repairs and RT. 10/4/05 for leads.

Signed: C. Ruud

A handwritten signature in black ink, appearing to read "C. Ruud". The signature is written in a cursive style and is positioned below the text "Signed: C. Ruud".

CC: R Suria, B. Craig, J. Edwards, E.J. Kubick



17

### Carondelet Division

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

### Final Inspection Report

Customer Name: ENERGY INDUSTRIES OF OHIO

Pattern: MCWF-C 3 COIL

Order Number: PPPL-FP-LTS-2

ASTM Metal CF8MNMN MOD

Date 9/20/2005

Type Description	Cert Number	Procedure	Acceptance Criteria	Actual
Liquid Penetrant	S75920-2	CQP - 300 Rev 9	SEE NOTE	Acceptable
<b>Notes</b> Acceptance per ASTM A903. Acceptance criteria - level 1 for high stressed areas, level 2 for all other areas.				
Mag Perm	S75920-2	SOP Mag Perm 100 Rev 1	<1.02	Acceptable
Radiographic	S75920-2	Technique # 12726	MSS SP 54	Acceptable
Visual	S75920-2	CQP - 500 REV 4	ASTM A802 LEVEL 2	Acceptable

Liquid Penetrant  
Visual

Technician: Kevin Anderson  
ASNT Level II

Respectfully Submitted,  
Charles A. Ruud  
Quality Assurance Manager



2

### Carondelet Division

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

### Final Inspection Report

Customer ENERGY INDUSTRIES OF OHIO  
Pattern: SE-141-033 COIL C SHIM S/N 4

Order PPPL-FP-LTS-2

ASTM Metal CF8MNMN MOD

Date 9/13/2005

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

#### Visual

Technician: Kevin Anderson  
ASNT Level II

#### Liquid Penetrant

Technician: Jason Rees  
ASNT Level II

Respectfully Submitted,  
Charles A. Ruud  
Quality Assurance Manager

**Superior Quality Engineered Metal Products**

www.MetalTekInt.Com



### 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 C SHIM	S/N 4
ASTM	CF8MNMN MOD	Date 9/13/2005
Cert Number	S76220-1	

C shim for C-3 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.

Respectfully Submitted,  
Charles A. Ruud  
Quality Assurance Manager

**Superior Quality Engineered Metal Products**

www.MetalTekInt.Com

03/03/06

**EIO**  
**Energy Industries of Ohio**  
**SUPPLIER QUALITY RELEASE**

	Date: 9-21-05
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I. General Information:		
Project Name:	Modular Coil Winding Form C3	
PO No:	NCSX-SOW-141-02-01	Rev.:
Supplier:	MetalTek	
Procurement Agent:	EIO	
Shipment:	<input checked="" type="checkbox"/> Partial <input type="checkbox"/> Final	

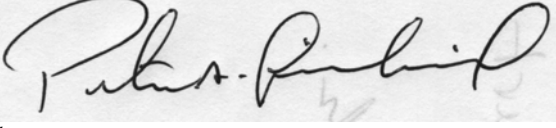
II. Material Description
Casting C3 Coil

III. Release Checklist	
Plan Requirements Complete?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A (If identified "No" provide explanation in comments section below)
Variances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A (If identified "No" provide explanation in comments section below)
Princeton Notified of Shipment?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A (If identified "No" provide explanation in comments section below)
DCMA Notified of Shipment?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A (If identified "No" provide explanation in comments section below)
<input checked="" type="checkbox"/> Conditional <input checked="" type="checkbox"/> Unconditional	Explain conditional releases in comments section.

IV. Comments
Variances – See attached package for CA's and deviations Dimensional report evaluated, adequate machine stock exists

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	
Supplier Quality Representative (SQR) Print/Type Name		Supplier Quality Representative (SQR) Signature
		Date 9-21-05

VI. Supplier Approval For Shipment		
Procurement Agent Notified of Shipment	Date: 9-21-05	
Required Vendor Data Ready for Shipment	Date: 9-21-05	
Peter A Djordjevich	X	 9-21-05

**EIO**  
**Energy Industries of Ohio**  
**SUPPLIER QUALITY RELEASE**

		Date: 9-21-05
--	--	---------------

I. General Information:		
Project Name:	Modular Coil Winding Form C3	
PO No:	NCSX-SOW-141-02-01	Rev.:
Supplier:	MetalTek	
Procurement Agent:	EIO	
Shipment:	<input checked="" type="checkbox"/> Partial <input type="checkbox"/> 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.



## 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 1581  
Carondelet Division - CA / PA / RGA Database  
Corrective Action Type NCR  
Date 2-16-06 Revised 2-22-06  
CA Originator C. Ruud  
Applies to: C-3 Coil

### Description of Defect / Non-Conformance

During LP inspection at Major Tool, defects were found on the C-3 coil. See areas 9b and 16 below.

### Root Cause

The defects were not observed at MT during final LP inspection. Potential causes are that process parameters were incorrect, poor lighting and part not cleaned prior to inspection.

### Corrective Action

Verify procedure at MT. This to include the penetrant, light readings, water pressure and developer.

### Verification of Corrective Action

Witness LP of next coil.

### Preventive Action

Review all applicable procedures with Level 2 inspectors and supervisors. To be completed before LP of next coil, by 2/28/06.

### Actual Completion Date

2/13/06 through 2/21/06 Training documents are copied below.

Signed: C. Ruud

A handwritten signature in black ink, appearing to be "C. Ruud".

CC: Bob Carlton, Barry Craig, Joe Edwards, E.J. Kubick, J. Markham

**Area #9a**

Linear indications (size of discontinuity not bleed-out)  
.300" to .450"



**Map of Indications**



**Area #16**

Linear indications (size of discontinuity not bleed-out)  
.100" to .250"



**map of indications**





**METALTEK INTERNATIONAL  
THE CARONDELET DIVISION  
TRAINING RECORD FORM**

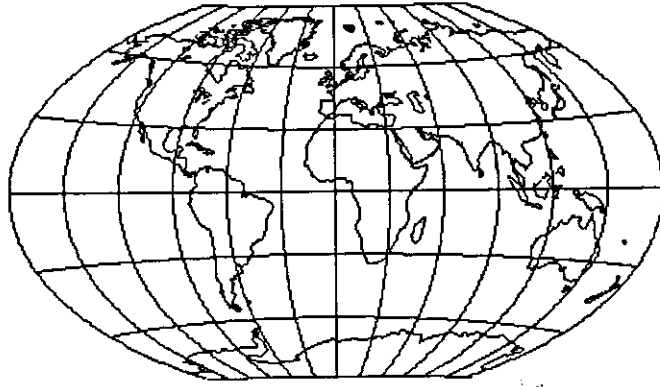
<u>TRAINEE PRINT NAME</u>	<u>TRAINEE SIGN NAME</u>	<u>DATE</u>	<u>DURATION</u>	<u>INSTRUCTOR</u>	<u>SUBJECT MATTER</u>
CITRIS ADAMS	<i>C. Adams</i>	2/20/06	5 MIN	BOB CARLTON	How to find A903 Spec. On the S:Drive under Specifications folder
JASON REES	<i>J. Rees</i>	"	"	"	
RIC GATEWOOD	<i>Ric Gatewood</i>	"	"	"	
MIKE PLYMATE	<i>Michael Plymate</i>	"	"	"	FOLDER ON DESK TOP CALLED "SPECIFICATIONS"
KEVIN ANDERSON	<i>Kevin Anderson</i>	"	"	"	
DAVE SODAM	<i>Dave Sodam</i>	"	"	KEVIN ANDERSON	
JOHN WATT	<i>John Watt</i>	"	"		
KEN MORIS	<i>Ken Morris</i>	"	"		

**METALTEK INTERNATIONAL  
THE CARONDELET DIVISION  
TRAINING RECORD FORM**

<u>TRAINEE PRINT NAME</u>	<u>TRAINEE SIGNATURE</u>	<u>DATE</u>	<u>DURATION</u>	<u>INSTRUCTOR</u>	<u>SUBJECT MATTER</u>
Tom Chapman	<i>Thomas Chapman</i>	2/20/06	5 min	<i>Bob Carter</i>	How to find A903 Spec.
SHARON BADER	<i>Sharon Bader</i>	2-20-06	5 min	<i>Bob Carter</i>	Ask supervisor or Leadman
Jim Shanahan	<i>Jim Shanahan</i>	2-21-06	↓	KEVIN ANDERSON	Upstairs in Quality Office
Clifton Copeland	<i>Clifton Copeland</i>	2/21/06			
JOSEPH BERT	<i>Joseph Bert</i>	2/21/06			
M. Courtney	<i>M. Courtney</i>	2/21/06			
Dwain Franklin	<i>Dwain Franklin</i>	2/21/06			
Kevin Wayne	<i>Kevin Wayne</i>	2-21-06			FOLDER ON DESKTOP CALLED "SPECIFICATIONS"

**METALTEK INTERNATIONAL  
THE CARONDELET DIVISION  
TRAINING RECORD FORM**

<u>TRAINEE PRINT NAME</u>	<u>TRAINEE SIGN NAME</u>	<u>DATE</u>	<u>DURATION</u>	<u>INSTRUCTOR</u>	<u>SUBJECT MATTER</u>
CHRIS ADAMS Clinton Copeland	<i>[Signature]</i>	2/13/06	15min	Bob Carthor	Penetrant Material Inspection Checklist
KEN MORRIS	<i>[Signature]</i> Ken Morris	↓	↓	"	How to fill out form Properly
KEVIN ANDERSON Jim Starnahan	Kevin Anderson <i>[Signature]</i>			"	See attached step by step process
RIC GATEWOOD	<i>[Signature]</i>			"	"
SHARON BAIDER	<i>[Signature]</i> Sharon Baider			"	"
Tom Chapman	<i>[Signature]</i> Tom Chapman			"	"
JASON REES	<i>[Signature]</i>			"	"



# ENERGY INDUSTRIES OF OHIO

Purchase Order Number:

S005242-F

Part Number:

SE141-116

Part Name:

MCWF C-3

MTM Work Order Number:

65707/3.0



*Major*

**Tool & Machine, Inc.**

**Customer: 8909 - ENERGY INDUSTRIES OF OHIO**  
**Customer P.O.: S005242-F**  
**Customer Part ID: SE141-116 - MCWF C-3**

Item#	Document Description / Material Description / File Name / Heat Lot
1	CERTIFICATE OF CONFORMANCE
2	Completed Shop Travelers: - 65707-3 completed shop travelers.xls
3	NC18607 Dispositioned: - NC18607_S5242_2_C3 weld repair.pdf
4	NC18654 Dispositioned: - NC18654_S5242_C3Gouges.pdf
5	NC18776 Dispositioned: - NC18776_C3INdications_MTM.pdf
6	NC18889 Dispositioned: - NC18889 dispositioned.pdf
7	NC19215 Dispositioned: - NC19215_Signed_.pdf
8	NC19269 Dispositioned: - NC19269_C3 indications_030306.pdf
9	NC19290 Dispositioned: - NC19290_disposition_022306.pdf
10	NC19291 Dispositioned: - NC19291_C3 indications_022306.pdf
11	NC19298 Dispositioned: - NC19298_signed_off_2-21-06.pdf

**DS141-036 - STUD**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
12	4	10	30	Material Certification: TEST REPORTS / DS141-036 - STUD - mc108260.tif / 8969595

**DS141-060 - NUT**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
13	4	10	50	Material Certification: / DS141-060 - NUT - mc108258.tif / 8977349

**SE141-078 - POLOIDAL BREAK SHIM ASSEMBLY**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
14	2	30	20	Certificate of Conformance: / LOCTITE 411 - LOCKING COMPOUND - mc106229.tif / CERTIFIED

**SE141-078-03 - INSULATING SLEEVE**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
15	3	10	10	Certificate of Conformance: / G11CR_1 - ROUND, BAR, 1.75 DIA - mc108545.tif / CERTIFIED

**SE141-103 - MCWF ASSEMBLY TYPE-C**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
16	1	140		Inspection Data Checklist: 2 steps

**SE141-103-1 - MOD COIL WINDING FORM ASSEMBLY TYPE-C**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
17	0	10	10	Material Certification: Trace ID: 116254 / ER316MNNF_093_GTAW - WELD WIRE,GTAW .093 DIA - mc106579.tif / W020132 / WO20132
18	0	10	10	Material Certification: Trace ID: 113686 / ER316MNNF_093_GTAW - WELD WIRE,GTAW .093 DIA - mc106164.pdf / W020132 / WO20132

**SE141-103-4 - INSULATING SHEET**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
19	7	10	10	Certificate of Conformance: G11CR / G11CR_3 - SHEET, FLAT - mc107081.tif / CERTIFIED



Customer: 8909 - ENERGY INDUSTRIES OF OHIO  
Customer P.O.: S005242-F  
Customer Part ID: SE141-116 - MCWF C-3

**SE141-103-5 - INSULATING SLEEVE**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
20	5	10	10	Certificate of Conformance: / G11CR_1 - ROUND, BAR, 1.75 DIA - Same as Item #15 / CERTIFIED

**SE141-116 - MODULAR COIL WINDING FORM TYPE-C**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
21	1	100		Nondestructive Liquid Penetrant Test Certification #15679
22	1	130		Inspection Data Checklist: 2 steps
23	1	134		Inspection Data Checklist: 114 steps
24	1	160		MTM NDT Cert: RADIOGRAPHIC INSPECTION - 65707-3 SUB 1 OP 160.PDF
25	1	160		Non-Conformance: 19290 Customer document: - car05581.pdf
26	1	170		MTM NDT Cert: XRAY PER DISP. OF NC18776 - 657073-3 SUB 1 OP170.PDF
27	1	170		Non-Conformance: 19291 Customer document: - car05582.pdf
28	1	190		Inspection Data Checklist: 3 steps
29	12	20		Nondestructive Liquid Penetrant Test Certification #15062

**SE141-137 - BEARING PLATE DETAIL**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
30	13	10	10	Material Certification: / 316_17 - BAR, FLAT, 1"X3", 316 SST - mc115096.tif / M11443
31	13	40		Inspection Data Checklist: 1 steps

**SE141-138 - BEARING PLATE DETAIL**

Item#	Sub	Op	Pc	Document Description / Material Description / File Name / Heat Lot
32	14	10	10	Material Certification: / 316_17 - BAR, FLAT, 1"X3", 316 SST - Same as Item #30 / M11443
33	14	40		Inspection Data Checklist: 1 steps





*Major*

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Activity	Visual Mfg Ref.	Op Status	Close Date	Emp ID
<p>***SPECIAL INSTRUCTIONS***--Insert cap plugs into the 35 counterbores in the T section that were written up in NC19215. Customer has asked that these holes be identified.----Prepare part for source inspection.----Review and complete QA data package per QAP and the requirements of the product specification NCSX-CSPEC-141-03-05 September 23- 2004.--Contact CFT to review data package prior to notifying source inspection.</p> <p>Package and Ship----Build a box/crate suitable for protecting the part from the environment.----Weigh the finished part and metal stamp the value in pounds on the casting in the area marked on the customer drawing.----Part must be protected and wrapped in plastic prior to inserting into the crate. Refer to PS583.----Part is to be shipped to PPPL in Princeton- NJ per QAP shipping address.----Crate must be marked/stenciled per the MTM drawing.</p> <p>Receive customer supplied material. -----Part Number: SE141-116 Rev: 6--Part Description: PRODUCTION WINDING FORM TYPE-C</p>	65707/3.0 -Sub:0 Op#:20	Closed	2/22/2006	854-R.Upchurch
<p>Setup the machining fixture on the rotary table. Load casting into the machining fixture with the initial pickup pads facing up. Indicate the pickup pads and orient the casting for machining. ----Rough machine the top flange face and the outer periphery leaving .25- +.060/-.000-. The outside surfaces of the flange will serve as qualifiers for the next operation. Record the qualifier dimensions on the IDC.----Install the lifting holes per the MTM drawing.----Rough machine the top side of the T- section leaving .25- +.060/-.000-.----Remove the casting from the machining fixture and flip over with the bottom flange facing up. Re-load into the machining fixture. Pickup the qualifiers and orient the casting for machining.----Rough machine the bottom flange face leaving .25- +.060/-.000-. ----Rough machine the poloidal break leaving a minimum of .25- of stock per side.----Install temporary shim filling in the poloidal break and hold together with temporary c-clamps. Tack weld in place.----Rough machine the bottom side of the -T- section leaving .25- +.060/-.000-.----Finish machine both sides of the entire casting with the exception</p>	65707/3.0 -Sub:1 Op#:10	Closed	10/3/2005	437-J.Hiatt
<p>DEBURR THE UPPER AND LOWER FLANGES AND FLANGE HOLES COMPLETE.</p>	65707/3.0 -Sub:1 Op#:20	Closed	12/22/2005	465-J.Bever
	65707/3.0 -Sub:1 Op#:30	Closed	12/23/2005	219-T.Laird





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<p>Perform an in-process inspection of the magnetic permeability of the material using the Severn Permeability Indicator Gage. Inspect a minimum of (8) points on the rough machined flange face and an additional (8) points on the rough machined -T- section. Record the upper and lower range values on the IDC's. Values that exceed 1.02 must be documented with a non-conformance record and dispositioned prior to continuing.</p>	<p>65707/3.0 -Sub:1 Op#:40</p>	<p>Closed</p>	<p>12/23/2005</p>	<p>503-B.Houk</p>
<p>Finish machine the -T- section and wings. Run a probe pass to inspect the surface for stock.----Remove the casting from the machining fixture and flip over with the bottom flange facing up. Re-load the casting into the machining fixture. Pickup the qualifiers and orient the casting for machining.----Finish machine the -T- section and wings. Run a probe pass to inspect the surface for stock.----Obtain sketches SE141-116 FLATNESS D and SE141-116 FLATNESS E from the team leader. Use this sketch as a map and record indicator readings at each tooling ball location and near each point. Record information on the IDC prior to moving the part to the next workcenter.</p>	<p>65707/3.0 -Sub:1 Op#:70</p>	<p>Closed</p>	<p>2/4/2006</p>	<p>445-J.Purkhiser</p>
<p>Setup the machining fixture with the casting installed. Machine the inspection fiducials per the MTM drawing. Finish machine the poloidal break to drawing requirements. Remove the casting from the machining fixture.----Install temporary shims in the poloidal break. Use the temporary shim 1.75 thick with additional shims as necessary and C-clamp before moving the part.</p>	<p>65707/3.0 -Sub:1 Op#:80</p>	<p>Closed</p>	<p>2/10/2006</p>	<p>591-C.Pritchett</p>



*Major*

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<p>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.----- FINISH HAND TAPPING OF 3/8-16 HOLES USING TAP GUIDE (IF REQUIRED)--- START BLENDING T-SECTION--- HAND GRIND 1/16 CHAMFER ON ALL SPLIT LINE EDGES OF POLOIDAL BREAK AND ON ALL THRU HOLES AT POLOIDAL BREAK.--- HAND GRIND VPI GROOVE WHERE REQUIRED.--- DEBURR WING AREAS TO REMOVE ANY SHARPNESS FROM MACHINING (SCALLOPS DO NOT NEED TO BE REMOVED).--- CHECK ALL ACCESSIBLE T CLEARANCES USING MTMFx-3473 CHECKING FIXTURE--- HAND GRIND 1/16 TO 3/32 CHAMFER ON OUTER EDGE OF T IN ALL ACCESSIBLE AREAS.--- FINISH ALL OTHER REQUIRED DEBURRING ON DATUM -D- SIDE PRIOR TO MOVING PART TO PLANT 2 FOR FLIPPING.--Part Number: SE141-116 Rev: 8--Part Description: PRODUCTION WINDING FORM TYPE-C</p>	65707/3.0 -Sub:1 Op#:85	Closed	2/15/2006	164-L.Freeland
<p>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.----- FLIP PART AND SET UP ON DATUM -D.--- START BLENDING T SECTION--- DEBURR WING AREAS TO REMOVE ANY SHARPNESS FROM MACHINING (SCALLOPS DO NOT NEED TO BE REMOVED).--- CHECK ALL ACCESSIBLE T CLEARANCES USING MTMFx-3473 CHECKING FIXTURE--- HAND GRIND 1/16 TO 3/32 CHAMFER ON OUTER EDGE OF T IN ALL ACCESSIBLE AREAS.--- USING 1/4-NUMBERS- STAMP NUMBERS ON FACE OF T PER DRAWING. USE DRAWING SE141-116-2MTM REV 6A FOR STAMPING NUMBERS.-- HAND GRIND VPI GROOVE AND AREAS OF CAST STOCK THAT WERE NOT REMOVED BY MACHINING. SEE ROB BACKEK FOR DETAILS.</p>	65707/3.0 -Sub:1 Op#:88	Closed	2/15/2006	219-T.Laird
	65707/3.0 -Sub:1 Op#:89	Closed	2/10/2006	890-M.Vislav



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<p>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-MINERALIZED WATER- AND IF NECESSARY- A MILD NON-CHLORINATED CLEANING SOLUTION (E.G. SIMPLE GREEN®- OR AUTHORIZED EQUIVALENT)- USING MTM'S HIGH PRESSURE WASHER. THE SPRAY PRESSURE AT THE NOZZLE WILL BE APPROXIMATELY 1-000 TO 1-500 PSI AND THE CLEANING SOLUTION TEMPERATURE WILL BE APPROXIMATELY 150°F.-- HAVE INSPECTION VERIFY THE CLEANLINESS OF THE CASTING PRIOR TO REMOVING FROM THE WASH BOOTH.--</p>	<p>65707/3.0 -Sub:1 Op#:90</p>	<p>Closed</p>	<p>2/15/2006</p>	<p>219-T.Laird</p>
<p>PT 100% OF THE AS-CAST SURFACES AS WELL AS FINISHED MACHINE SURFACES. SEE PS582 FOR PROCESSING INSTRUCTIONS. ----SPECIFICATION: ASTM A903/A903M---- METHOD: ASTM E165----ACCEPTANCE CRITERIA: ASTM A903/A903M LEVEL II FOR AS CAST SURFACES----ACCEPTANCE CRITERIA: ASTM A903/A903M LEVEL I FOR MACHINED SURFACES INCLUDING THE ENTIRE -T- SECTION (HIGH STRESS AREAS)---- CERTIFICATION: MTM CERTIFICATION TO INCLUDE THE INFORMATION PER SUPPLEMENTARY REQUIREMENTS S1 OF ASTM A903/A903M----MTM NDT Cert: LPI CERTIFICATION</p>	<p>65707/3.0 -Sub:1 Op#:100</p>	<p>Closed</p>	<p>2/16/2006</p>	<p>581-D.Edwards</p>
<p>GOVERNMENT SOURCE INSPECTOR TO WITNESS PT RESULTS.</p> <p>- SET PART ON RISERS WITH EITHER DATUM -D- OR -E- FLANGE DOWN. STRADDLE THE POLOIDAL BREAK WITH ONE OF THE RISERS TO ENABLE CLAMPING TO ENSURE THAT THE DATUMS ARE COPLANER. --- DISASSEMBLE CLAMPS FROM POLOIDAL BREAK. THE OUTER PERMIMETER OF EACH POLOIDAL</p>	<p>65707/3.0 -Sub:1 Op#:105</p>	<p>Closed</p>	<p>2/15/2006</p>	<p>219-T.Laird</p>
	<p>65707/3.0 -Sub:1 Op#:130</p>	<p>Closed</p>	<p>2/15/2006</p>	<p>825-B.Jarrett</p>



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<p>CMM INSPECT AND COMPLETE IDC. OUTPUT INSPECTION RESULTS FOR VERIFICATION USING VERISURF SOFTWARE.--Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-</p>	<p>65707/3.0 -Sub:1 Op#:134</p>	<p>Closed</p>	<p>2/24/2006</p>	<p>339-E.Root</p>
<p>SOURCE FOR DIMENSIONAL</p>	<p>65707/3.0 -Sub:1 Op#:138</p>	<p>Closed</p>	<p>2/20/2006</p>	<p>840-G.Masood</p>
<p>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 SHOULD BE IN THEIR NORMAL STATE (I.E.- ELECTRICALLY -FLOATING-). THE MID-PLANE SHIM SHALL BE CONNECTED TO ONE SIDE OF THE MEGGER- AND THE CASTING SHALL BE CONNECTED TO THE OTHER. RECORD RESULTS IN IDC.----TEST 2:--ALL OF THE BOLTS SHALL BE ELECTRICALLY CONNECTED (JUMPERED) TOGETHER IN ONE GROUP. THE MID-PLANE CASTING (SHIM) AND THE WINDING FORM SHALL BE ELECTRICALLY CONNECTED TOGETHER IN A SECOND GROUP. THE INSULATION RESISTANCE BETWEEN THE JUMPERED BOLTS (GROUP 1) AND THE JUMPERED WINDING FORM AND MID-PLANE (GROUP 2) SHALL BE MEASURED FOR COMPLIANCE. RECORD RESULTS IN IDC.----</p>	<p>65707/3.0 -Sub:1 Op#:140</p>	<p>Closed</p>	<p>2/17/2006</p>	<p>503-B.Houk</p>
<p>Part Number: SE141-103--Part Description: MCWF ASSEMBLY TYPE-</p>	<p>65707/3.0 -Sub:1 Op#:150</p>	<p>Closed</p>	<p>2/20/2006</p>	<p>840-G.Masood</p>
<p>SOURCE FOR ELECTRICAL TEST</p>				



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<p>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 SHEET (1) OF THE CUSTOMER DRAWING SE141-116 TO MAINTAIN SHOT AND FILM TRACEABILITY.---ALL FILM IS TO BE DOUBLED UP IN ORDER TO SUPPLY THE CUSTOMER WITH A COMPLETE SET OF FILM.--- SPECIFICATIONS: ASTM A703/A703M SUPPLEMENTARY REQUIREMENT S5---PROCEDURE/METHOD: ASTM E94 AND ASTM E142 (USE OF A WIRE PENETRATER MAY BE NECESSARY INSTEAD OF THE HOLE TYPE TO ENSURE OBJECTIVE 2% OF THICKNESS RESOLUTION/SENSITIVITY)---ACCEPTANCE CRITERIA: NO DEFECT LARGER THAN .080- MAJOR DIMENSION IS ALLOWED.---SCAN RT CERTIFICATION- AND HAND SKETCHED MAP AND LINK IN QAP TO THIS OPERATION.---Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-C--Material Type: 316 SST--Material Thickness: VARIES--MTM NDT Cert: RADIOGRAPHIC INSPECTION</p>	<p>65707/3.0 -Sub:1 Op#:160</p>	<p>Closed</p>	<p>2/18/2006</p>	<p>010-M.Contractor</p>
<p>XRAY THE AREA OF THE DATUM -D- FLANGE INDICATED ON THE ATTACHED XRAY MAP.---USE X-RAY MAP TO NUMBER THE SHOTS. THE CERTIFICATION AND X-RAY MAP ARE TO BE SCANNED AND LINKED TO THE QAP REQUIREMENTS OF THIS OPERATION.---ALL FILM IS TO BE DOUBLED UP IN ORDER TO SUPPLY THE CUSTOMER WITH A COMPLETE SET OF FILM.--- SPECIFICATIONS: ASTM A703/A703M SUPPLEMENTARY REQUIREMENT S5---PROCEDURE/METHOD: ASTM E94 AND ASTM E142 (USE OF A WIRE PENETRATER MAY BE NECESSARY INSTEAD OF THE HOLE TYPE TO ENSURE OBJECTIVE 2% OF THICKNESS RESOLUTION/SENSITIVITY)---ACCEPTANCE CRITERIA: NO DEFECT LARGER THAN .080- MAJOR DIMENSION IS ALLOWED.-----Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-C--Material Type: 316 SST--Material Thickness: VARIES--MTM NDT Cert: XRAY PER DISP. OF NC18776</p>	<p>65707/3.0 -Sub:1 Op#:170</p>	<p>Closed</p>	<p>2/18/2006</p>	<p>010-M.Contractor</p>
<p>GOVERNMENT SOURCE INSPECTOR TO WITNESS RT RESULTS.</p>	<p>65707/3.0 -Sub:1 Op#:180</p>	<p>Closed</p>	<p>2/21/2006</p>	<p>840-G.Masood</p>



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<p>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 STARTING WITH HOLE 5 AND ENDING WITH HOLE 95. INSPECT ONE POINT ON THE T SECTION- ANOTHER BELOW THE VPI GROOVE AND THE LAST POINT ON THE FLANGE. REPEAT THIS PROCESS ON BOTH SIDES OF THE PART. THERE WILL BE A TOTAL OF 57 POINTS INSPECTED PER SIDE. ----COMPLETE THE IDC INDICATING THE PERMEABILITY RANGE.--Part Number: SE141-116 Rev: 8--Part Description: PRODUCTION WINDING FORM TYPE-C SOURCE FOR MAG PERMEABILITY</p>	<p>65707/3.0 -Sub:1 Op#:190 65707/3.0 -Sub:1 Op#:200 65707/3.0 -Sub:8 Op#:10</p>	<p>Closed Closed Closed</p>	<p>2/20/2006 2/21/2006 2/10/2006</p>	<p>503-B.Houk 840-G.Masood 578-S.Martinez</p>
<p>PRIOR TO WELDING- PERFORM A LOCAL DYE CHECK TO ENSURE COMPLETE REMOVAL OF DEFECT.----WELD REPAIR THE EXCAVATED REGION TO ENSURE A SMOOTH THE TRANSITION INTO THE SURROUNDING MATERIAL.----AFTER WELDING- BLEND TO MATCH SURROUNDING MACHINED SURFACES. PENETRANT INSPECT WELD REPAIR.--Specification: ASTM A903/A903M LEVEL 1</p>	<p>65707/3.0 -Sub:10 Op#:10 65707/3.0 -Sub:10 Op#:20</p>	<p>Closed Closed</p>	<p>11/30/2005 2/21/2006</p>	<p>465-J.Bever 840-G.Masood</p>
<p>PLACE INDICATORS ON BOTH SIDES OF THE T SECTION TO MONITOR PART MOVEMENT WHILE PERFORMING THE WELD REPAIR. ALTERNATE WELDING FROM SIDE TO SIDE AS REQUIRED TO MINIMIZE THE AMOUNT OF MOVEMENT. GRIND ANY EXCESS WELD BACK FLUSH TO THE SURROUNDING FINISH MACHINED SURFACES (ALL MACHINED SURFACES SHOULD HAVE A MINIMUM OF .030- STOCK). PENETRANT INSPECT WELD REPAIR.--Specification: ASTM A903/A903M LEVEL 1--MTM NDT Cert: REPAIR OF DEFECT NC18889</p>	<p>65707/3.0 -Sub:12 Op#:10 65707/3.0 -Sub:12 Op#:20</p>	<p>Closed Closed</p>	<p>2/16/2006 1/14/2006</p>	<p>170-D.Rothenberger 854-R.Upchurch</p>



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<p>PERFORM A RELATIVE MAGNETIC PERMEABILITY CHECK OF THE REPAIRED AREA. VERIFY PERMEABILITY IS LESS THAN 1.02. PERMEABILITY TO BE CHECKED AT A MINIMUM OF 1 POINT EVERY 2 SQ. INCHES IN THE REPAIRED REGION.--Test Certification: PERMEABILITY CHECK - NC18889 Rev: --Specification: ASTM A703/A703M</p>				
<p>RECEIVE CUSTOMER SUPPLIED CASTING</p>	65707/3.0 -Sub:12 Op#:30	Closed	1/14/2006	854-R.Upchurch
<p>MACHINE THE SHIM COMPLETE PER THE DRAWING AND CNC PROGRAMS.</p>	65707/3.0 -Sub:2 Op#:10	Closed	1/14/2006	854-R.Upchurch
<p>GRIND A .060- CHAMFER ON ALL EDGES OF SHIM AND BOTH ENDS OF HOLES.</p>	65707/3.0 -Sub:2 Op#:20	Closed	1/31/2006	234-E.Booher
<p>ASSEMBLE (5) OF THE INSULATING SLEEVES INTO THE SHIM AND BOND USING LOCTITE 411. DO NOT INSTALL THE BUSHINGS IN THE OUTSIDE HOLES. THEY WILL BE INSTALLED LATER.</p>	65707/3.0 -Sub:2 Op#:30	Closed	2/15/2006	219-T.Laird
<p>SAW OFF 16- AND MOVE TO NEXT WORK CENTER.</p>	65707/3.0 -Sub:3 Op#:10	Closed	6/1/2005	227-D.Bockover
<p>MACHINE PER THE DRAWING FOR A SLIP FIT WITH MATING DETAIL. OBTAIN FINISHED MACHINED CASTING SHIM BEFORE FINAL SIZING THE O.D. OF THE SLEEVE.</p>	65707/3.0 -Sub:3 Op#:20	Closed	2/8/2006	357-B.Donnelly
<p>RECEIVE MATERIAL--NOTIFY CFT AND FORWARD MATERIAL STORES.</p>	65707/3.0 -Sub:4 Op#:10	Closed	5/19/2005	825-B.Jarrett
<p>SAW OFF 30- LENGTH AND MOVE TO NEXT WORK CENTER.</p>	65707/3.0 -Sub:5 Op#:10	Closed	6/1/2005	227-D.Bockover
<p>MACHINE PER THE DRAWING FOR A SLIP FIT WITH MATING DETAIL. CHECK FINISHED MACHINED CASTING BEFORE FINAL SIZING THE O.D. OF THE SLEEVE.</p>	65707/3.0 -Sub:5 Op#:20	Closed	2/13/2006	236-M.Jennings
<p>SAW 13- LENGTH AND MOVE TO NEXT WORK CENTER.</p>	65707/3.0 -Sub:6 Op#:10	Closed	6/1/2005	227-D.Bockover
<p>MACHINE THE PROFILE LEAVING STOCK PER PROGRAM.----ALSO MACHINE OUT FLAT STOCK PIECES FOR SHIMS BEHIND THE OUTSIDE OF POLOIDAL BREAK FLANGE PER CNC PROGRAM.</p>	65707/3.0 -Sub:7 Op#:20	Closed	9/14/2005	129-E.Taina
<p>SAW TO A LENGTH OF 6.75-</p>	65707/3.0 -Sub:13 Op#:10	Closed	1/10/2006	227-D.Bockover



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<p>MACHINE BEARING PLATES COMPLETE FROM MATERIAL SUPPLIED BY MAJOR TOOL.--VENDOR TO SUPPLY DIMENSIONAL INSPECTION REPORT.--MTM TO DO ALL NDT TESTING PER NOTE 5.--Part Number: SE141-137--Part Description: BEARING PLATE--Dimensional Report: VENDOR SUPPLIED</p>	<p>65707/3.0 -Sub:13 Op#:30</p>	<p>Closed</p>	<p>1/20/2006</p>	<p>subcontact</p>
<p>PER DRAWING NOTE 5.--PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02μ.--AUDIT VENDOR-SUPPLIED INSPECTION FORM.--Part Number: SE141-137--Part Description: BEARING PLATE DETAIL SAW TO A LENGTH OF 10.5.</p>	<p>65707/3.0 -Sub:13 Op#:40 65707/3.0 -Sub:14 Op#:10</p>	<p>Closed Closed</p>	<p>1/20/2006 1/10/2006</p>	<p>503-B.Houk 227-D.Bockover</p>
<p>MACHINE BEARING PLATES COMPLETE FROM MATERIAL SUPPLIED BY MAJOR TOOL.--VENDOR TO SUPPLY DIMENSIONAL INSPECTION REPORT.--MTM TO DO ALL NDT TESTING PER NOTE 5.--Part Number: SE141-138--Part Description: BEARING PLATE--Dimensional Report: VENDOR SUPPLIED</p>	<p>65707/3.0 -Sub:14 Op#:30</p>	<p>Closed</p>	<p>1/20/2006</p>	<p>subcontact</p>
<p>PER DRAWING NOTE 5.--PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02μ.--AUDIT VENDOR-SUPPLIED INSPECTION FORM.--Part Number: SE141-138--Part Description: BEARING PLATE DETAIL</p>	<p>65707/3.0 -Sub:14 Op#:40</p>	<p>Closed</p>	<p>1/20/2006</p>	<p>503-B.Houk</p>



**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: /**  
Drawing ID: SE141-116

Revision: 6

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty:

Reported By: KEVIN BOWLING  
E-Mail: kBowling@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

**Problem:** Casting defect uncovered during machining (see attached pictures).

The defect was detected visually during machining and confirmed using Liquid Penetrant Inspection. The size of the indication is about 1.5" long by approximately .5" wide from the base of the T in both directions (defect is on the corner). It appears that it will be in the area where we will be cutting the VPI groove. Reference sheet 4 of SE141-116 for specific location on the casting. The indication is directly below the hole located at 20.52 and 86.10 (zone F5).

After complete excavation of the defect the affected area is now approximately 1.600" long by .500" across the face of the base section and .200" in depth along the edge. (see pictures). Confirmation of defect removal was accomplished using Liquid Penetrant Inspection.

Recommend weld repair of defective area and LPI after repair rather than LPI and radiographic inspection.

**Proposed Disposition:**

Number of additional pages: 3

**Customer Disposition:**     Use As Is     Rework     Repair     Scrap     Replace

Agree with recommended disposition to weld repair and LPI after repair in lieu of LPI and RPI since this is not a high stress region.

**Technical Contact Approval:** Phil  
Heitzenroeder

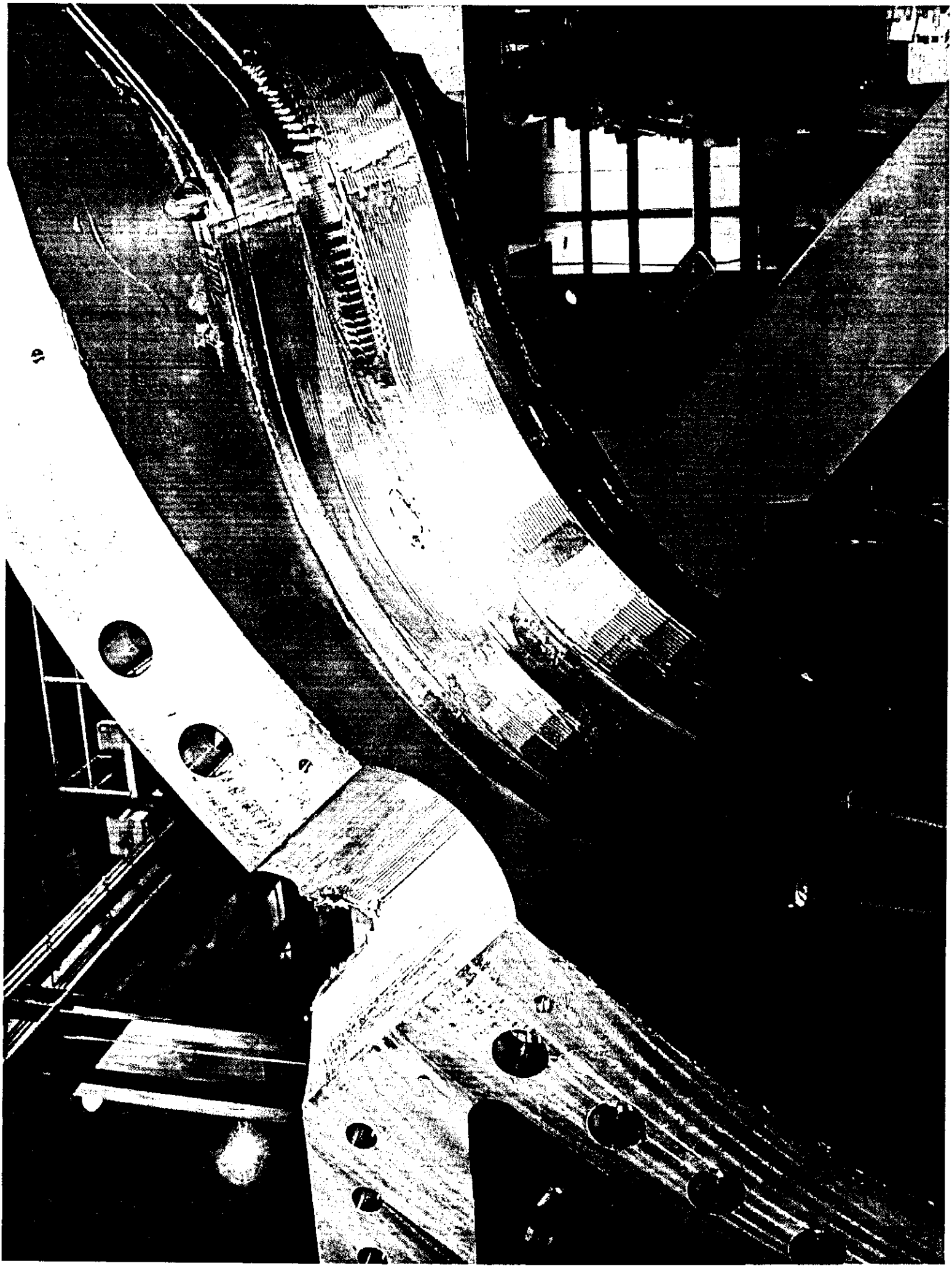
Digitally signed by Phil Heitzenroeder  
DN: CN = Phil Heitzenroeder, C = US,  
O = PPPL, OU = Mech. Eng. Division  
Reason: I am approving this document  
Date: 2005.11.18 09:01:27 -05'00'

**Eng. Mgr. Approval:** Brad  
Nelson

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2005.11.18 11:14:05 -05'00'

**Major Tool Implemented By:** Mike  
Griffith

Digitally signed by Mike Griffith  
DN: CN = Mike Griffith, C = US, O  
= Major Tool and Machine, OU =  
CFT White Team  
Reason: I agree to the terms  
defined by the placement of my  
signature on this document  
Date: 2006.03.29 13:34:02 -05'00'









# Nondestructive Test Certification for Liquid Penetrant Examination

1458 E. 19th Street, Indianapolis, In 4621  
TEL:(317)636-6433 FAX:(317)634-9420

**Date of Inspection:**02/16/2006      **Type of Material:**CAST STAINLESS      **NDT#:**15679

<b>Stage of Inspection:</b> <input type="checkbox"/> Incoming Inspection <input type="checkbox"/> In-Process Inspection <input type="checkbox"/> After Repair <input checked="" type="checkbox"/> Final Inspection	<b>Manufacturing Process:</b> <input type="checkbox"/> Weldment <input checked="" type="checkbox"/> Casting <input type="checkbox"/> Bar Stock <input type="checkbox"/> Plate <input type="checkbox"/> Forging <input type="checkbox"/> Other	<b>Surface Condition:</b> <input checked="" type="checkbox"/> Machined <input type="checkbox"/> Rough <input checked="" type="checkbox"/> Other FINAL MACHINED & AS CAST	<b>Test Being Run to:</b> <input checked="" type="checkbox"/> Router Instructions <input checked="" type="checkbox"/> Drawing <input type="checkbox"/> Test Plan <input type="checkbox"/> Technique Card SEE NOTES	<b>Heat Treated:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	--	--	---	--

<b>Part Information:</b> MTM Job Number: 65707/3.0 -Sub:1 -Op:100 Resource ID: 810-LIQUID PENETRANT INSPECTI Part ID: SE141-116 Part Name: MODULAR COIL WINDING FORM Serial Number: Customer P.O.: S005242-F Customer Unit/Plant:	<b>Test Results:</b> Quantity Inspected: 1 Quantity Accepted: 0 Quantity Rejected: 1  Run Hours:	<b>Inspection Results:</b> Customer N/C #: <input type="checkbox"/> Accepted <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> N/C-Report <input type="checkbox"/> Rework MTM N/C #: 19269
--	---	--

<b>Customer Inspection PI</b> SEE NOTES Test Step: Revision: Material Test Number:	<b>Inspection Criteria:</b> Customer Specification: ASTM A903/A903M MTM Spec Number: PS582 (REF NDT-WI-09) Acceptance Standard: ASTM A903 (SEE NOTES)
---	--

<b>Inspection Materials Used:</b> Manufacturer: SHERWIN Type of Penetrant: DP-51 Batch Number: 41-E47 Developer: D-100 Batch Number: 520-H6	<b>Penetrant Examination Processes:</b> Type: II (Visible) / Dwell Time: 15 Minutes Method: A (Water Wash) Method of Drying: Forced Air Fan Form: e (nonaqueous for Type II visible dye) / Dwell Time: 15 Min
--	---

**Inspection Requirements:**

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

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

ACCEPTANCE CRITERIA: ASTM A903/A903M LEVEL II FOR AS CAST SURFACES

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

PART HAS REJECTABLE INDICATIONS PER CUSTOMER REQUIREMENTS ON MACHINED AND AS CAST SURFACES. SEE NCR-19269 AND PHOTOS FOR MORE DETAILED INFO.

THIS PENETRANT INSPECTION ALSO INCLUDES THE REINSPECTION OF DISCONTINUITES THAT WERE WELD-REPAIRED THAT WERE DISCOVERED DURING MACHINING OPERATION, AS NOTED IN NC 18607.

THE THE LPI EXAMINATION OF THE WELD REPAIR AREA(S) WAS FOUND TO BE ACCEPTABLE.

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

**Inspector:** 581-D.EDWARDS
**Date:** 02/16/2006
*Douglas D. Edwards Level II*

INSPECTION DATA CHECKLIST



Workorder: 65707/3-0 Sub:1 Op:190  
Revision: 02/20/06 7:37

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

SHEET	ZONE	DRAWING ID: SE141-116 Rev: 8	INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY							
			GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT					
*		D A T U M - E - S I D E MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ. CHECK 3 PLACES ADJACENT TO EVERY 5TH HOLE IN T SECTION.	MASTER GAGE	QA		J-1165		503-B.HC							A
(10)															*
*		D A T U M - D - S I D E MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ. CHECK 3 PLACES ADJACENT TO EVERY 5TH HOLE IN T SECTION.	MASTER GAGE	QA		J-1165		503-B.HC							A
(20)															*
*		INSPECT PERMEABILITY OF WELD REPAIR PER NC18607. MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ.	MASTER GAGE	QA		J-1165		503-B.HC							A
(30)															*

Employees: 503-B.Houk

NOTE: the recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal statutes including federal law, title 18, chapter 47.  
\* To Far Right Indicates Data Package Requirement  
QA003 (n:\ntmapps\unitsinspct.qpp) Major Tool and Machine, Inc. 1458 East 19th Street, Indianapolis, IN 46218 (317)636-6433 Fax (317)634-9420

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: /**

Drawing ID: SE141-116

Revision: 6

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: There are two tool gouges in the edge of T section as shown in the attached picture.

The size of the first gouge is approximately 1" long x .500" wide across the face of the T and approximately .200" in depth along the edge of the T. There is .030" stock left on the top and side of the T and therefore this gouge will not clean up completely during final machining.

The second gouge is insignificant in the fact that it will clean up during final machining.

Recommend hand blending area around the gouge after final machining.

**Proposed Disposition:**

Number of additional pages: \_\_\_\_\_

Customer Disposition:     Use As Is     Rework     Repair     Scrap     Replace

Agree with recommended disposition to blend the area around the gouge after final machining to eliminate any sharp edges and stress concentrations.

Technical Contact Approval: **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: 2005.11.18 09:09:51 -0500

Eng. Mgr. Approval: **Brad Nelson**

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US, o=ORNL,  
ou=FED, email=nelsonbe@ornl.gov  
Date: 2005.11.18 11:15:31 -0500

Major Tool Implemented By: **Mike Griffith**

Digitally signed by Mike Griffith  
DN: cn=Mike Griffith, c=US, o=Major  
Tool and Machine, ou=QCI, email=Mike.Griffith@mtm.com  
Reason: I agree to the terms defined by the  
placement of my signature on this document  
Date: 2005.11.25 17:22:50 -0500

Title: \_\_\_\_\_ Date: \_\_\_\_\_

NC 18654  
65707/3 (C3)



The photo above shows the tooling gouge as reported on the NC and the photo below shows the gouge with the edges blended after final machining.

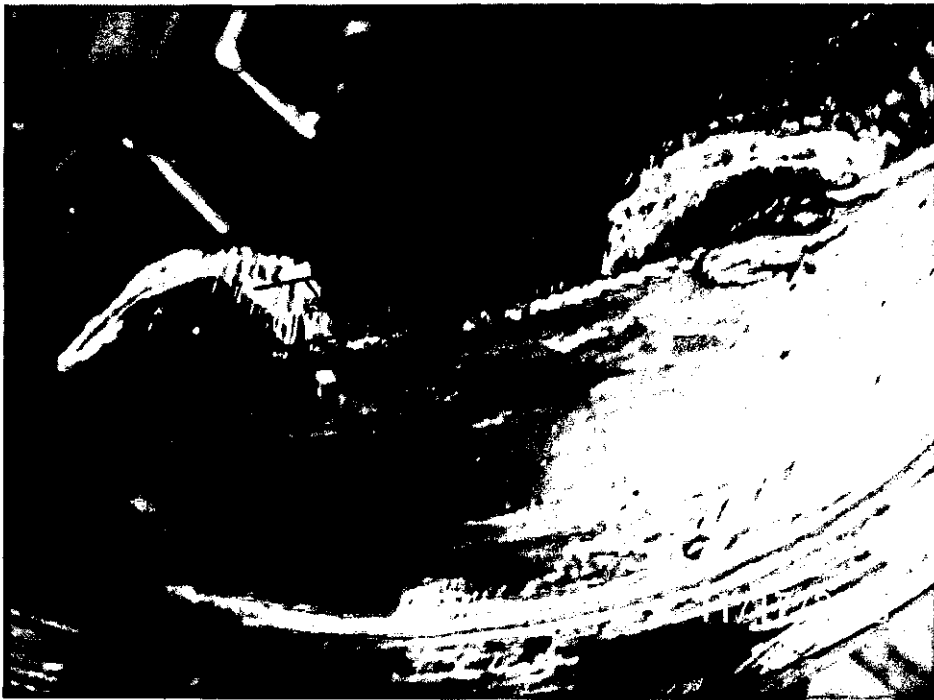
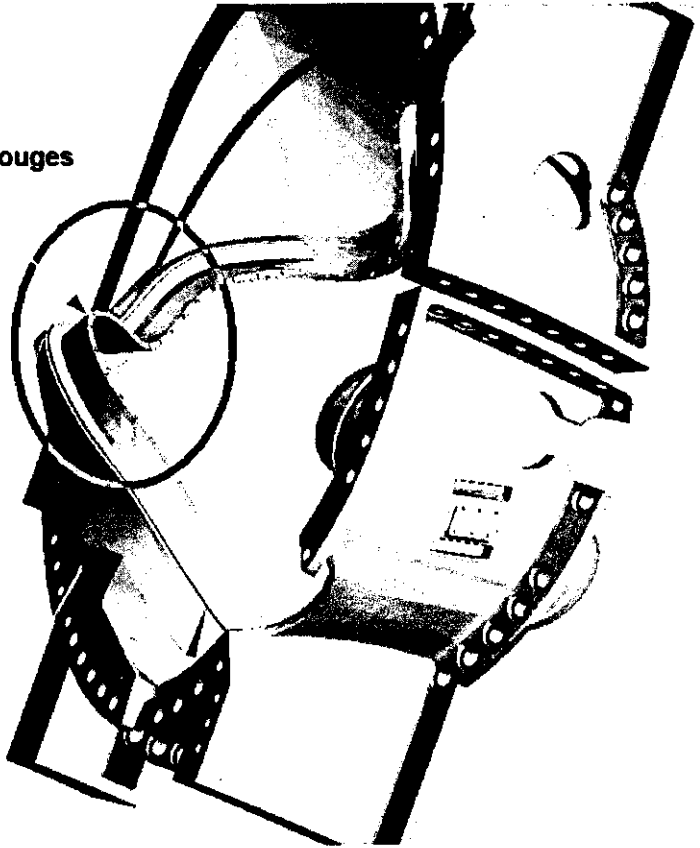


Mike Griffith

Page 1 of 1



**Tooling Gouges**



**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

Part: /  
Drawing ID: SE141-116

Revision: 6

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty:

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: THERE ARE NUMEROUS INDICATIONS ON THE MACHINED SURFACE OF THE DATUM -D- FLANGE THAT EXCEED THE ALLOWABLE INDICATION SIZE PER ASTM A 903/A 903M LEVEL 1. SEE ATTACHED MAP FOR SIZE AND LOCATION OF INDICATIONS.

**Proposed Disposition:**

INDICATIONS WILL BE SUBMITTED TO CUSTOMER FOR REVIEW. CONTINUE MACHINING OF CASTING.

Number of additional pages: 3

Customer Disposition:  Use As Is     Rework     Repair     Scrap     Replace

**THIS REFERS TO THE C3 CASTING.** Since these indications are in a low stress area, they can be accepted in this case. However, EIO is requested to radiograph ~18" of the adjacent flange region to assure that those regions do not have unacceptable indications also.. EIO is also requested to investigate why these defects were not identified during NDT testing at the foundry.



Technical Rep. Approval: **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: 2005.12.08 13:36:48 -05'00'

RLM Approval: **Brad Nelson**

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2005.12.09 09:14:40 -05'00'

Major Tool Implemented By: \_\_\_\_\_

**Mike Griffith**

Digitally signed by Mike Griffith  
DN: CN = Mike Griffith, C = US, O =  
Major Tool and Machine, OU =  
CFI White Team  
Reason: I agree to the terms  
defined by the placement of my  
signature on this document  
Date: 2006.03.29 13:50:09 -05'00'

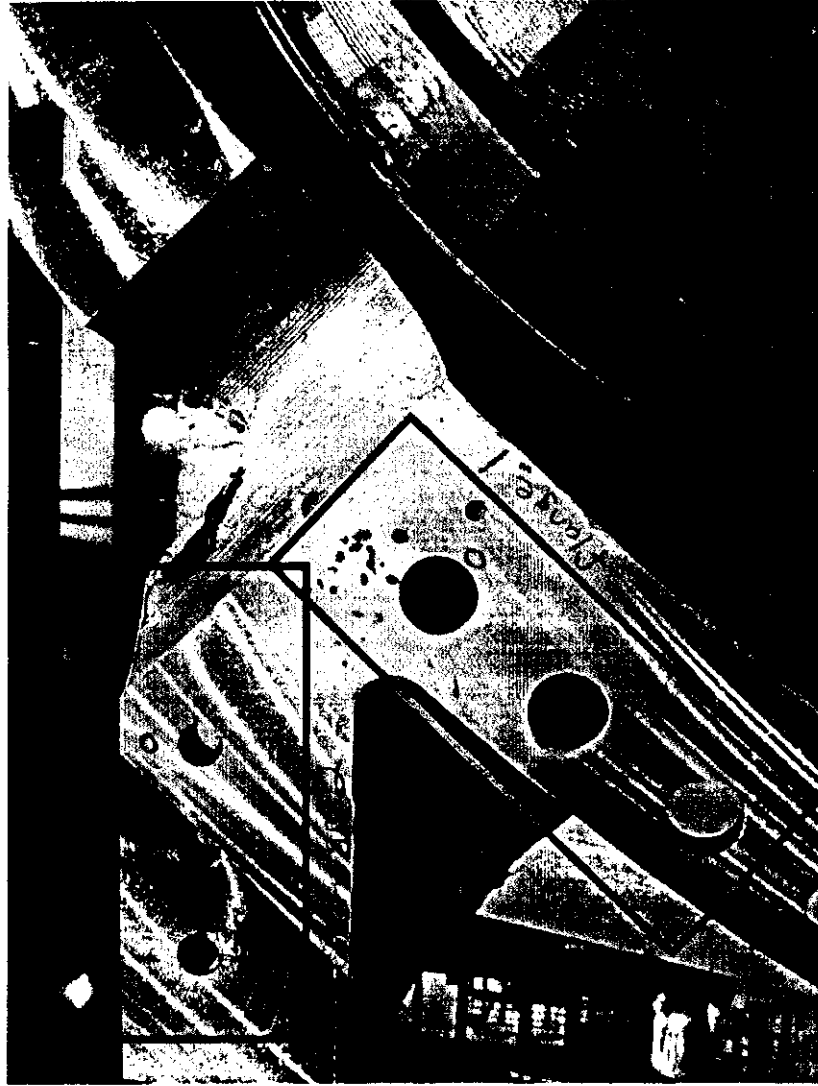
Title: \_\_\_\_\_

Date: \_\_\_\_\_



XRay Map for Customer Disposition of NC18776.

Workorder: 65707/3  
Datum -D- Flange



65707/3.0/1/170/88  
SE141-116 rev.8  
2/18/04  
Page 2 of 2

Mike Griffith  
Rev. --

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

Part: /  
Drawing ID: SE141-116

Revision: 7

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty:

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: Reference sheet 6, section P-P. There is a tooling gouge on the top of the T approximately 10" in length. The gouge tapers from in tolerance to a depth of approximately .400" over the 10" span. See attached pictures for location.

**Proposed Disposition:**

RECOMMEND TO WELD REPAIR DAMAGED AREA AND REMACHINE.

Number of additional pages: 3

Customer Disposition:     Use As Is     Rework     Repair     Scrap     Replace

This refers to C3. We agree with the recommended disposition to weld repair and re-machine the gouged area.

Phil  
Heitzenroeder

Tech. Rep. Approval:

Digitally signed by Phil  
Heitzenroeder  
DN: CN = Phil Heitzenroeder, C =  
US, O = PPPL, OU = Mech. Eng.  
Division  
Reason: I agree to 'specified'  
portions of this document  
Date: 2005.12.19 15:53:01 -05'00'

Brad  
Nelson

RLM Approval:

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2005.12.19 16:06:47  
-05'00'

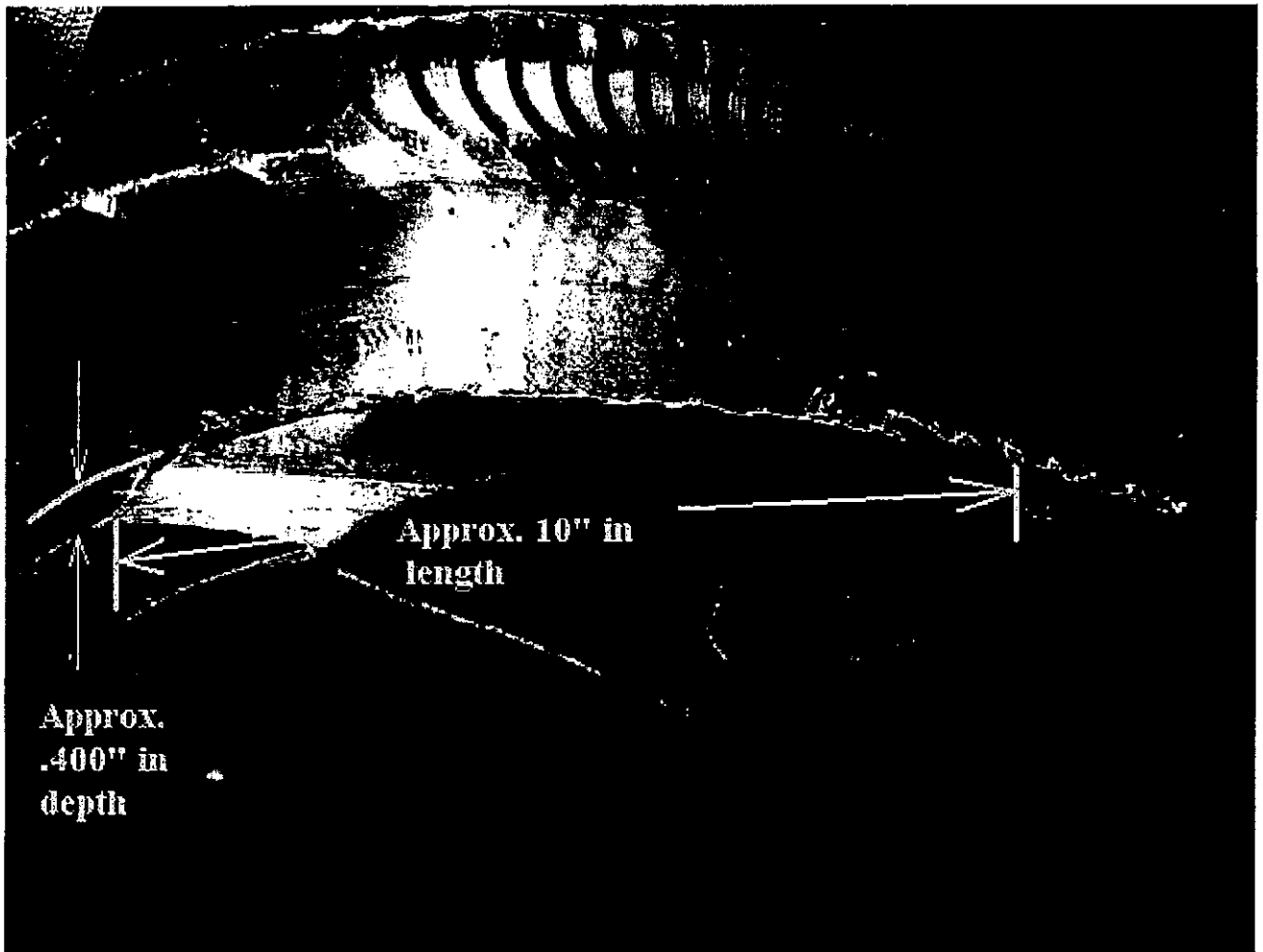
Mike  
Griffith

Digitally signed by Mike Griffith  
DN: CN = Mike Griffith, C = US, O =  
Major Tool and Machine, OU = CFT  
White Team  
Reason: I agree to the terms  
defined by the placement of my  
signature on this document  
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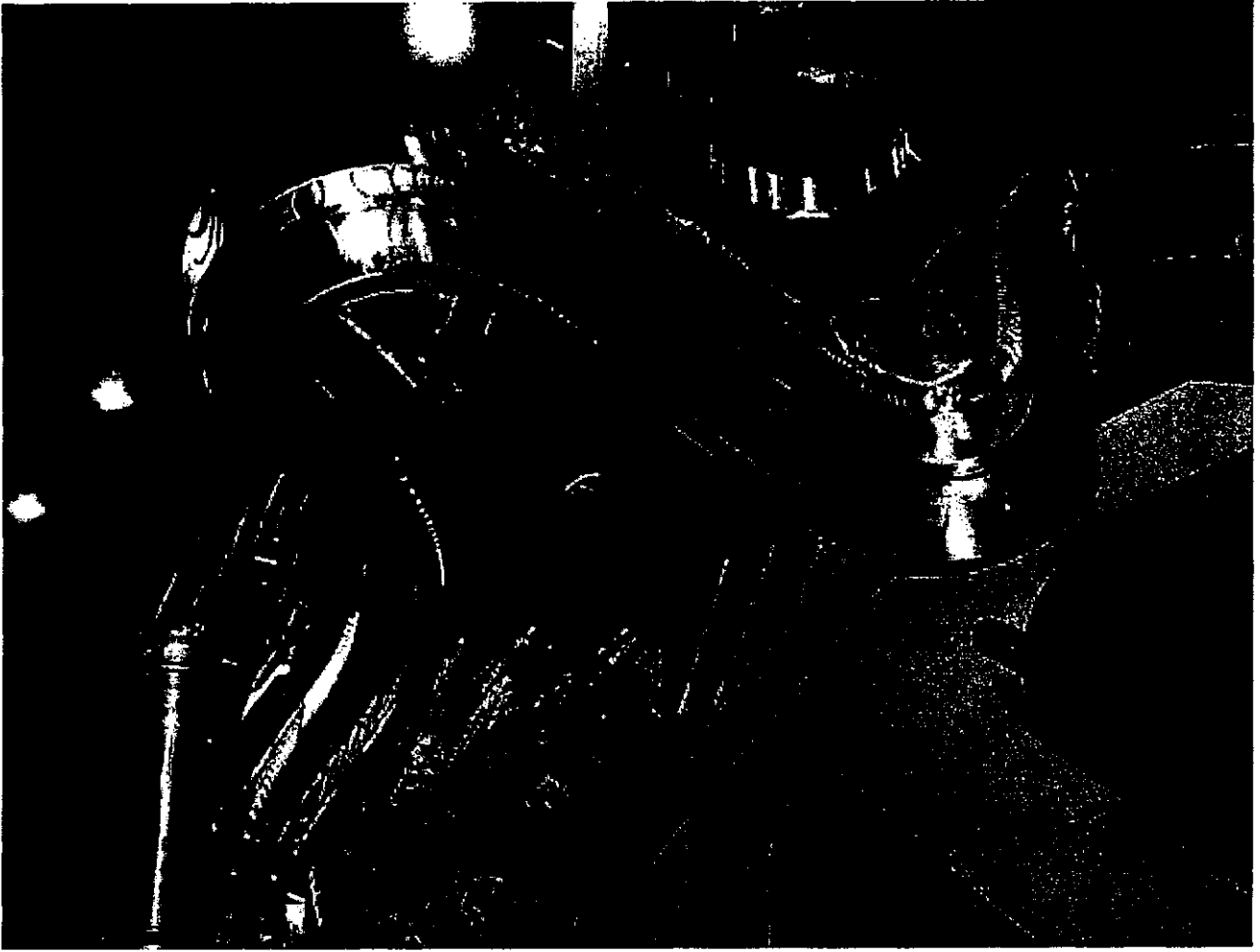
Major Tool Implemented By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_











**Major**

Tool & Machine, Inc.

# Nondestructive Test Certification for Liquid Penetrant Examination

1458 E. 19th Street, Indianapolis, In 4621  
TEL:(317)636-6433 FAX:(317)634-9420

**Date of Inspection:** 12/23/2005      **Type of Material:** CAST STAINLESS      **NDT#:** 15062

<b>Stage of Inspection:</b> <input type="checkbox"/> Incoming Inspection <input type="checkbox"/> In-Process Inspection <input checked="" type="checkbox"/> After Repair <input type="checkbox"/> Final Inspection	<b>Manufacturing Process:</b> <input checked="" type="checkbox"/> Weldment <input type="checkbox"/> Casting <input type="checkbox"/> Bar Stock <input type="checkbox"/> Plate <input type="checkbox"/> Forging <input type="checkbox"/> Other WELD REPAIR OF CASTING	<b>Surface Condition:</b> <input checked="" type="checkbox"/> Machined <input checked="" type="checkbox"/> Rough <input type="checkbox"/> Other HAND BLENDED FLUSH	<b>Test Being Run to:</b> <input checked="" type="checkbox"/> Router Instructions <input checked="" type="checkbox"/> Drawing <input type="checkbox"/> Test Plan <input type="checkbox"/> Technique Card	<b>Heat Treated:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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<b>Part Information:</b> MTM Job Number: 65707/3.0 -Sub:12 -Op:20 Resource ID: 810-LIQUID PENETRANT INSPECTI Part ID: SE141-116 Part Name: MODULAR COIL WINDING FORM Serial Number: Customer P.O.: S005242-F Customer Unit/Plant:	<b>Test Results:</b> Quantity Inspected: 1 Quantity Accepted: 1 Quantity Rejected: 0  Run Hours:
--	---

<b>Customer Inspection PI</b> Test Step: Revision: Material Test Number:	<b>Inspection Criteria:</b> Customer Specification: ASTM A903/A903M MTM Spec Number: PS582 (REF NDT-WI-09) Acceptance Standard: ASTM A903 (SEE NOTES)
---	--

<b>Inspection Materials Used:</b> Manufacturer: SHERWIN Type of Penetrant: DP-51 Batch Number: 41-E47 Developer: D-100 Batch Number: 520-H6	<b>Penetrant Examination Processes:</b> Type: II (Visible) / Dwell Time: 15 Minutes Method: C (Solvent Wipe) Method of Drying: Normal Evaporation Form: e (nonaqueous for Type II visible dye) / Dwell Time: 12 Min
--	---

**Inspection Requirements:**

% of all accessible surfaces     Joint Preps     Root Pass     Back Gouge     Cover Pass     Other  
SEE NOTES

**Notes:**  
Perform localized PT inspection on casting repair areas prior to final machining (4 locations).  
Reference MTM NC 18889 for additional information.  
Acceptance Criteria: ASTM A903/A903M Level I for machined surfaces including the entire "T" section (high stress areas)  
Repair areas are free of rejectable indications at time of inspection.

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

**Inspector:** 581-D.EDWARDS      **Date:** 12/23/2005      *Douglas D. Edwards* Level II

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

MTM N/C: 19215

Page: 1  
Date: 02/09/06  
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: SE141-116 /WINDING FORM TYPE -C  
Drawing ID: SE141-116 Revision: 7  
Links: I-Type:W: 65707/3.0 Sub: 1 Op: 70

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: SHEET 2. DETAIL C; 35 OF THE 98.625 X .188 C-BORES IN THE FACE OF THE T-SECTION MEASURE  
.317-.325 DEEP. (UP TO .127" OUT OF TOLERANCE).

**Proposed Disposition:**

RECOMMEND TO USE AS IS.

Number of additional pages: 0

Customer Disposition:  Use As Is  Rework  Repair  Scrap  Replace

Requested that Major Tool mark the non-conforming holes so PPPL can find them easier.

Technical Contact Approval:

Phil  
Heitzenroeder

Digitally signed by Phil Heitzenroeder  
DN: cn=Phil Heitzenroeder, c=US,  
o=PPPL, ou=Tech, Email=PhilHeitzenroeder@pppl.com  
Reason: I agree to 'specified' portions  
of this document  
Date: 2006.02.10 17:39:45 -05'00'

Title: \_\_\_\_\_

Date: \_\_\_\_\_

RLM:

Brad  
Nelson

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.10 17:53:07  
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Title: \_\_\_\_\_

Date: \_\_\_\_\_

Mike  
Griffith

Digitally signed by Mike Griffith  
DN: CN = Mike Griffith, C =  
US, O = Major Tool and  
Machine, OU = CFT White  
Team  
Reason: I agree to the terms  
defined by the placement of my  
signature on this document  
Date: 2006.03.29 14:10:43 -  
05'00'

Major Tool Implemented By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

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**Root Cause 1: 809-PROCESS INSTRUCTION**

Resource: CAD/CAM – MEDIUM MILLING Equipment:  
Description: THE COUNTERBORE TOOL IS PROGRAMMED FROM THE TIP OF THE PILOT DRILL. THE TOOL SHEET FOR THE COUNTERBORE TOOL DID NOT DEFINE A TOLERANCE FROM THE TIP OF THE PILOT TO THE COUNTERBORE CUTTING EDGE. WHEN THE TOOL WAS CHANGED OUT DURING THE MACHINING PROCESS IT WAS REPLACED BY A TOOL WITH A SHORTER PILOT. THIS RESULTED IN SEVERAL COUNTERBORES BEING MACHINED TOO DEEP.

**Corrective Action 1:**

Action: 02/09/06 By: 242-M.GRIFFITH

Description: THE TOOL SHEET WILL BE MODIFIED TO CLEARLY DEFINE A TOLERANCE FOR THE RELATIONSHIP BETWEEN THE TOOL TIP AND THE COUNTERBORE CUTTING EDGE. THE TOLERANCE WILL BE LESS THAN THE  $\pm .010$ " REQUIRED BY THE DRAWING.

**Disposition of NCR 19269 March 3, 2006**

All of the indications were reviewed during a conference call on February 27 with EIO, PPPL, and ORNL. This review accepted all "as is" with the exception of a few areas for which we requested radiographic examination (reference NCR 19290 and 19291). Following the radiography these also were accepted "as is". Consequently, this NCR can now be considered closed.

**Approved by:**

**Phil  
Heitzenroeder**

Digitally signed by Phil Heitzenroeder  
DN: CN = Phil Heitzenroeder, C = US,  
O = PPPL, OU = Mech. Eng. Division  
Reason: I am the author of this  
document  
Date: 2006.03.03 17:19:35 -05'00'

**Technical representative**

**Brad  
Nelson**

Digitally signed by Brad  
Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.03.07 10:46:31  
-05'00'

**Responsible line manager**

---

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: SE141-116 / MODULAR COIL WINDING FORM TYPE**  
Drawing ID: SE141-116                      Revision: 8

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: 15 areas of cluster indications (shrink, cold shuts, non-metallic inclusions) on finished machined surfaces. linear indications range from .062" to 1.200" in length (actual discontinuity size), many rounded "indications" exceeding the spec. requirements for level 1 surfaces. In addition, approx. 60 random single indications on level I & II surfaces. See field notes and photos for more details.

---

**Proposed Disposition:**  
SUBMIT TO CUSTOMER CONTINUE PROCESSING.

---

Number of additional pages: \_\_\_\_\_

---

**Customer Disposition:**     Use As Is     Rework     Repair     Scrap     Replace

**Technical Contact Approval:** \_\_\_\_\_ **Title:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Buyer Approval:** \_\_\_\_\_ **Title:** \_\_\_\_\_ **Date:** \_\_\_\_\_

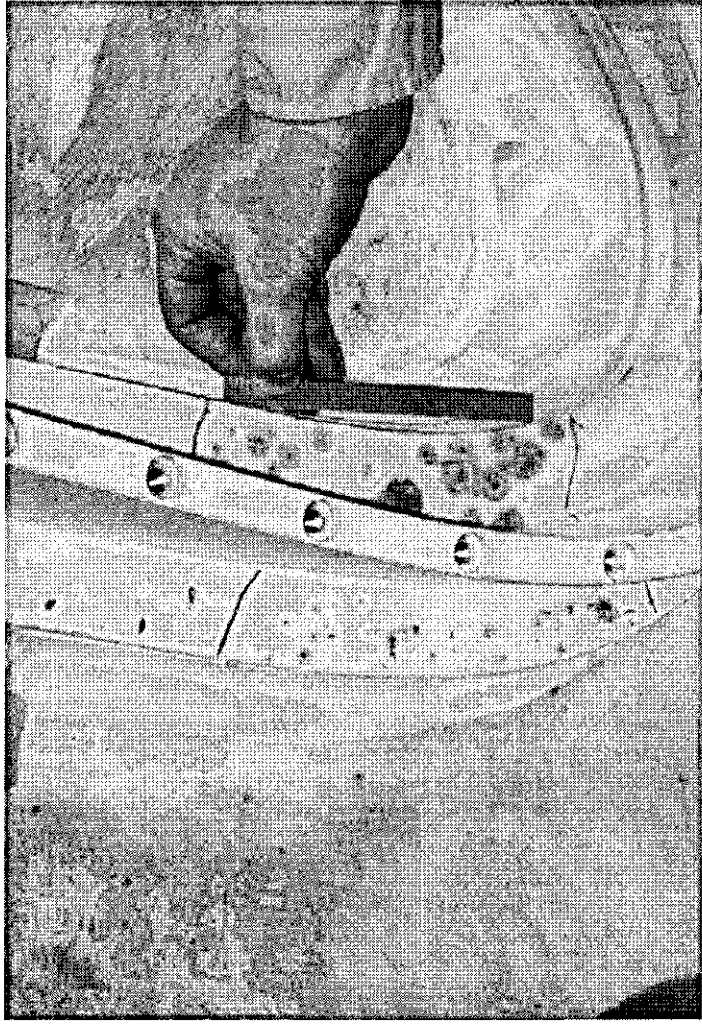
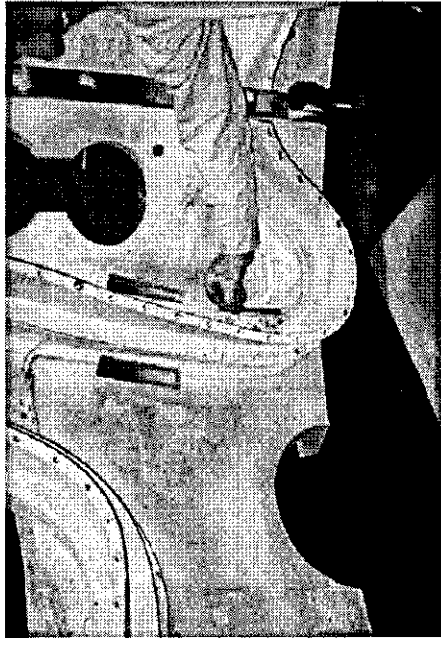
**Major Tool Implemented By:** \_\_\_\_\_ **Title:** \_\_\_\_\_ **Date:** \_\_\_\_\_

# C3 Liquid Penetrant Inspection Map of Indications

## Area #1

Linear indications (size of discontinuity not bleed-out)  
.080" to .500"

14 random rounded indications (size of bleed-out 30min dwell time)  
>.125" inspected with pin gage  
estimated 50% of rounds would not be rejected based on the size of the discontinuity

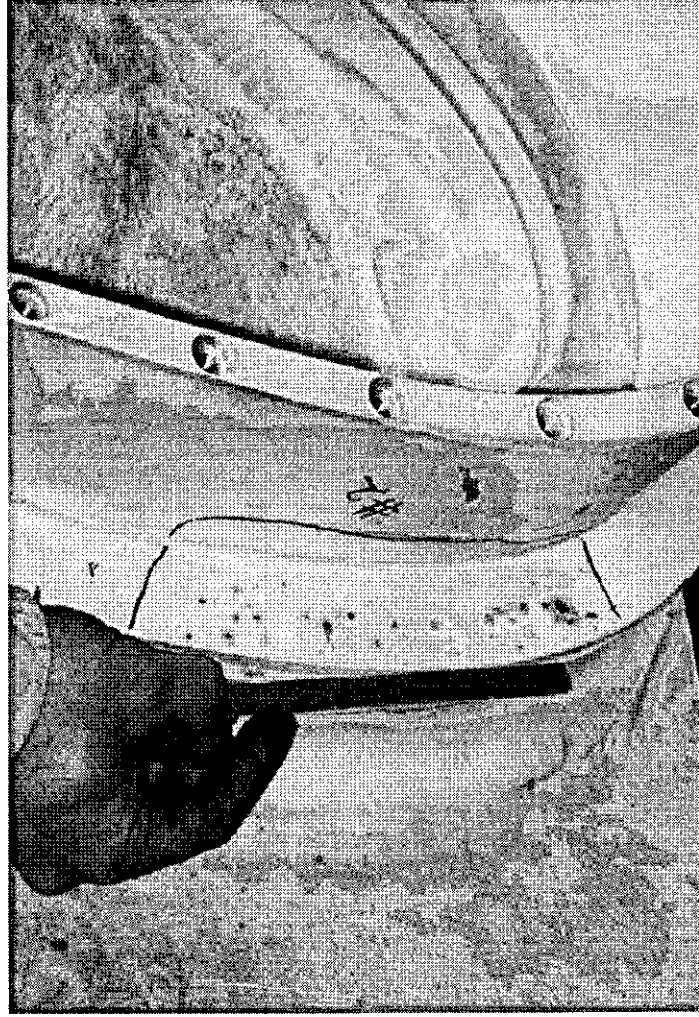


## C3 Liquid Penetrant Inspection Map of Indications

### Area #2

Linear indications (size of discontinuity not bleed-out)  
.085" to .200"

15 random rounded indications (size of bleed-out 30 min dwell time)  
>.125" inspected with pin gage  
estimated 50% of rounds would not be rejected based on the size of the discontinuity



## C3 Liquid Penetrant Inspection Map of Indications

### Area #3

Linear indications (size of discontinuity not bleed-out)  
.200" to .600"

17 random rounded indications (size of bleed-out 30min dwell time)  
>.125" inspected with pin gage  
estimated 50% of rounds would not be rejected based on the size of the discontinuity





## C3 Liquid Penetrant Inspection Map of Indications

### Area #4

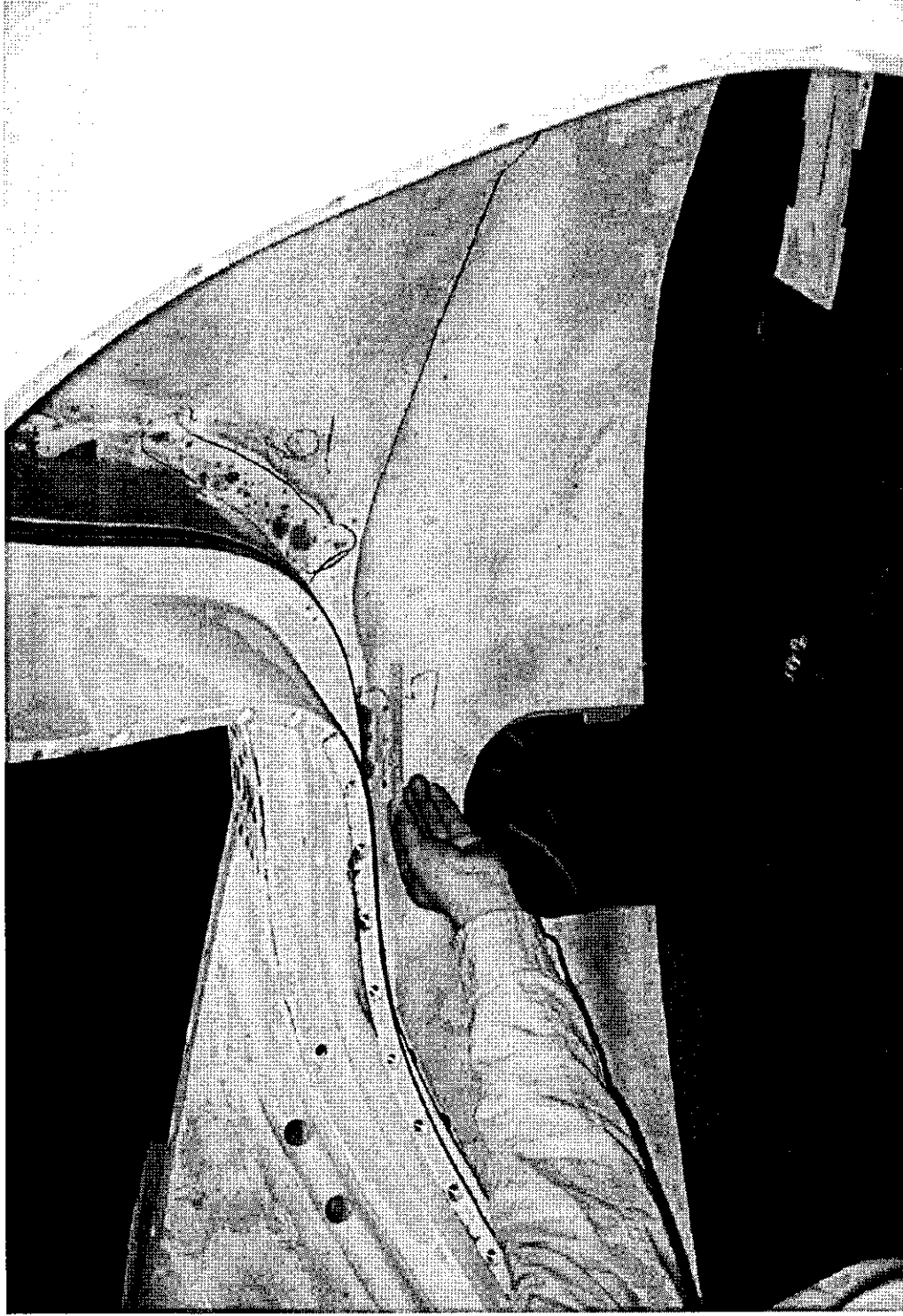
Linear indications (size of discontinuity not bleed-out)  
.100" to .400"

29 random rounded indications (size of bleed-out 30min dwell time)  
>.125" inspected with pin gage  
estimated 50% of rounds would not be rejected based on the size of the discontinuity



## C3 Liquid Penetrant Inspection Map of Indications

Area #5  
Linear indications (size of discontinuity not bleed-out)  
>3.00" non-metallic inclusion (size of bleed out 30min dwell time)

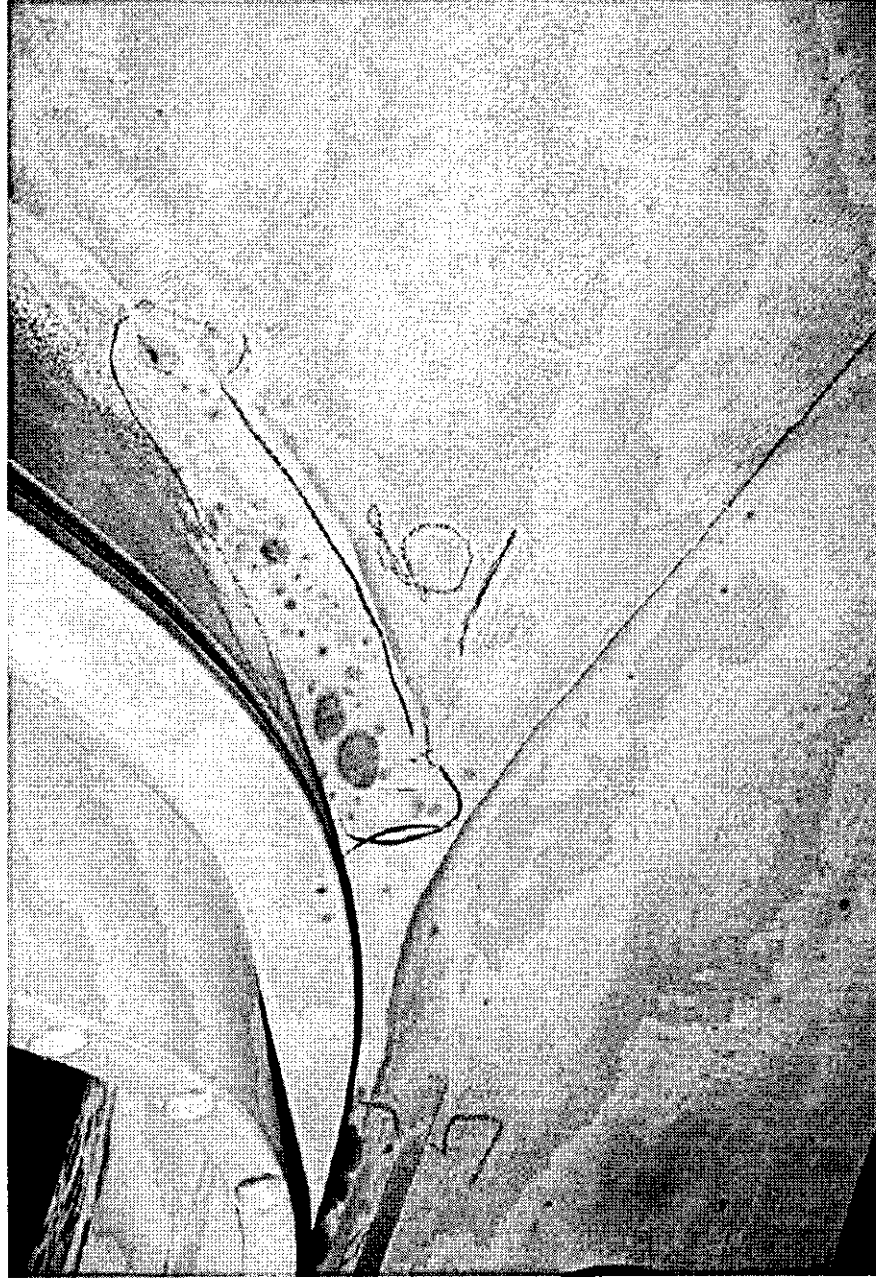


## C3 Liquid Penetrant Inspection Map of Indications

### Area #6

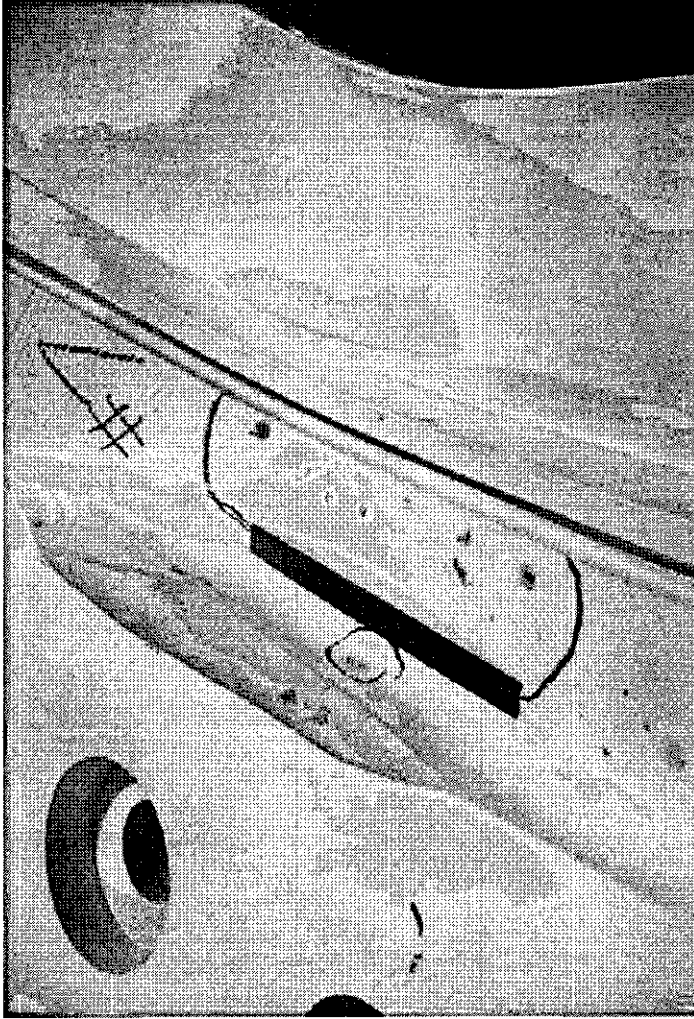
Linear indications (size of discontinuity not bleed-out)  
.075" to .700"

12 random rounded indications (size of bleed-out 30min dwell time)  
>.125" inspected with pin gage  
estimated 50% of rounds would not be rejected based on the size of the discontinuity



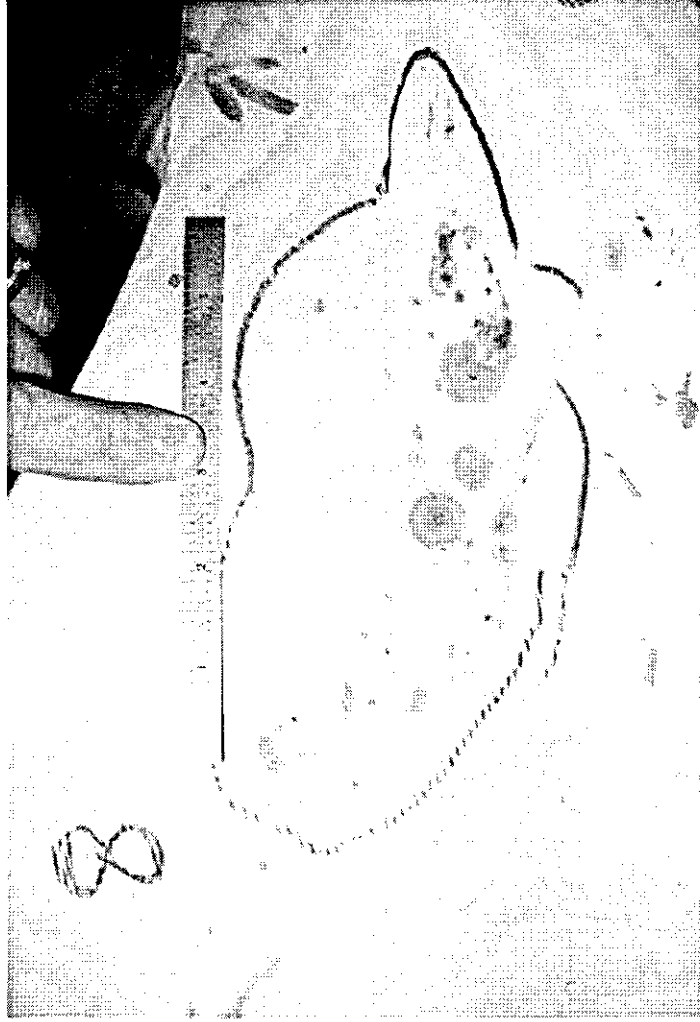
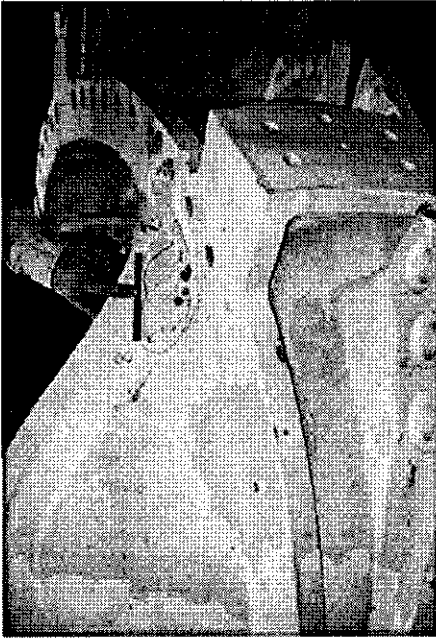
## C3 Liquid Penetrant Inspection Map of Indications

Area #7  
Linear indications (size of discontinuity not bleed-out)  
.200" to .500"



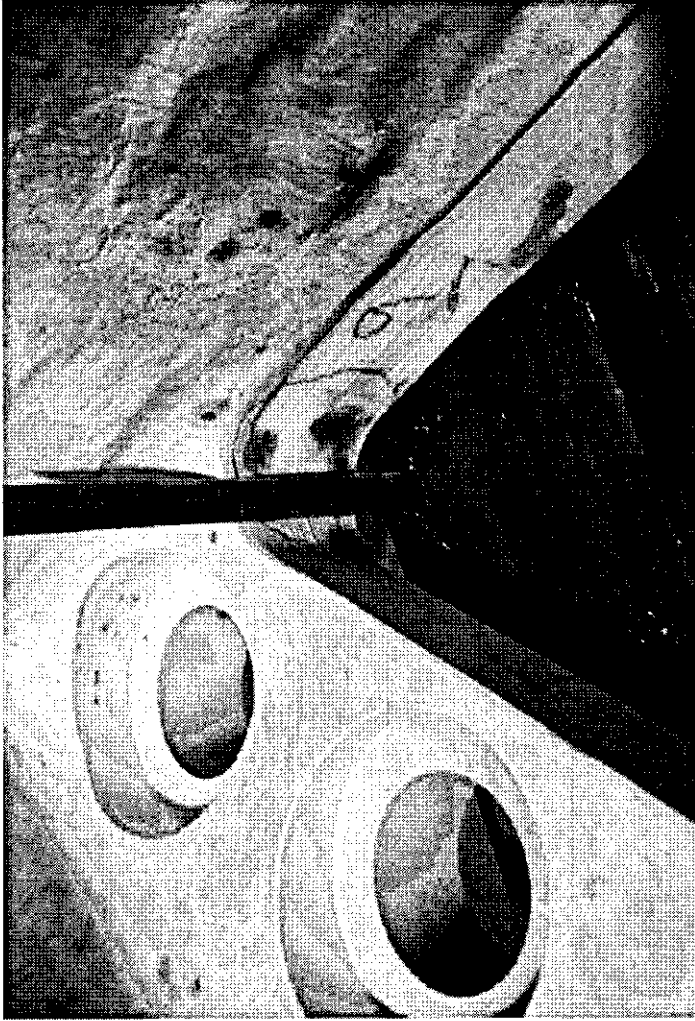
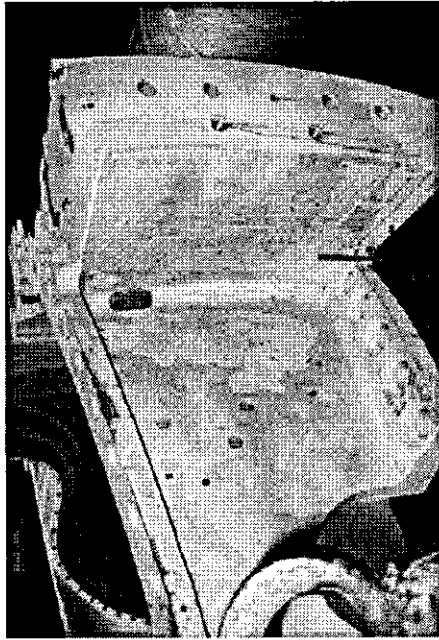
## C3 Liquid Penetrant Inspection Map of Indications

Area #8  
Shrink, inclusion pocket, unable to determine individual size  
bleed-out ranges from .200" to 1.25"



# C3 Liquid Penetrant Inspection Map of Indications

Area #9a  
Linear indications (size of discontinuity not bleed-out)  
.300" to .450"

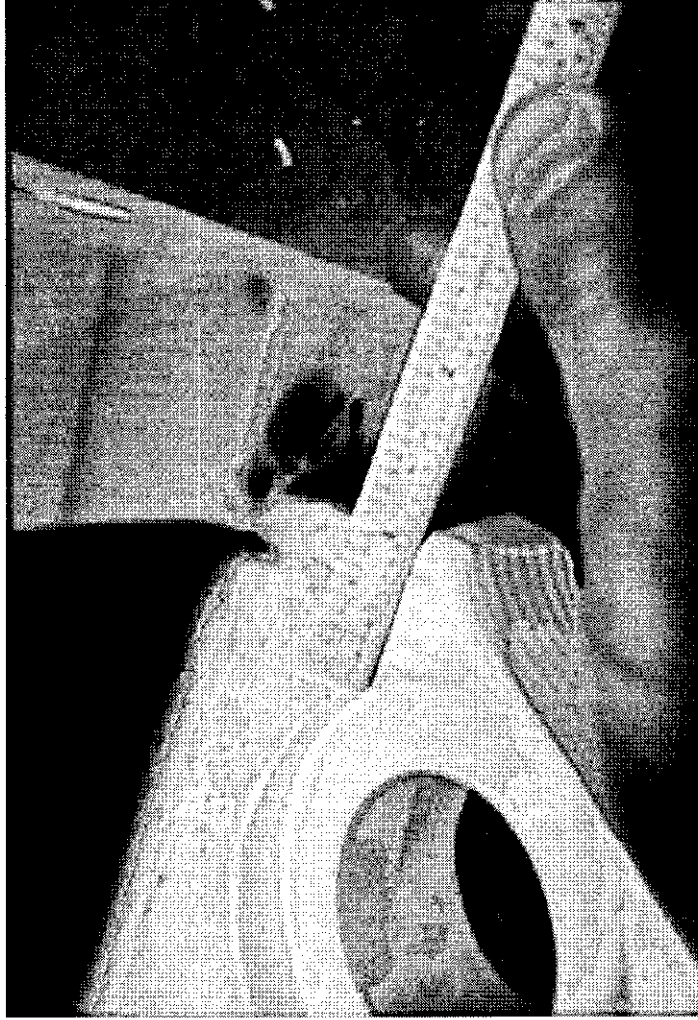
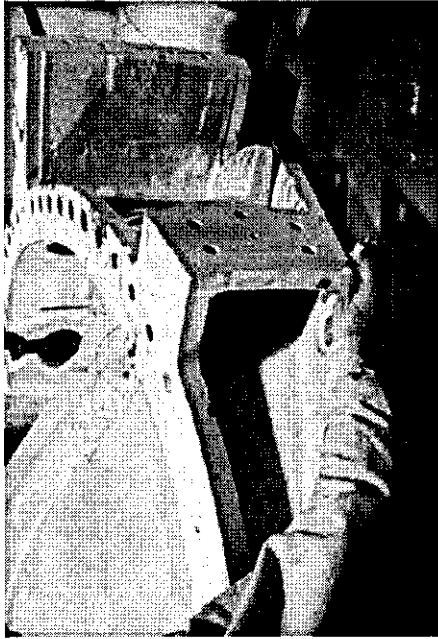




# C3 Liquid Penetrant Inspection Map of Indications

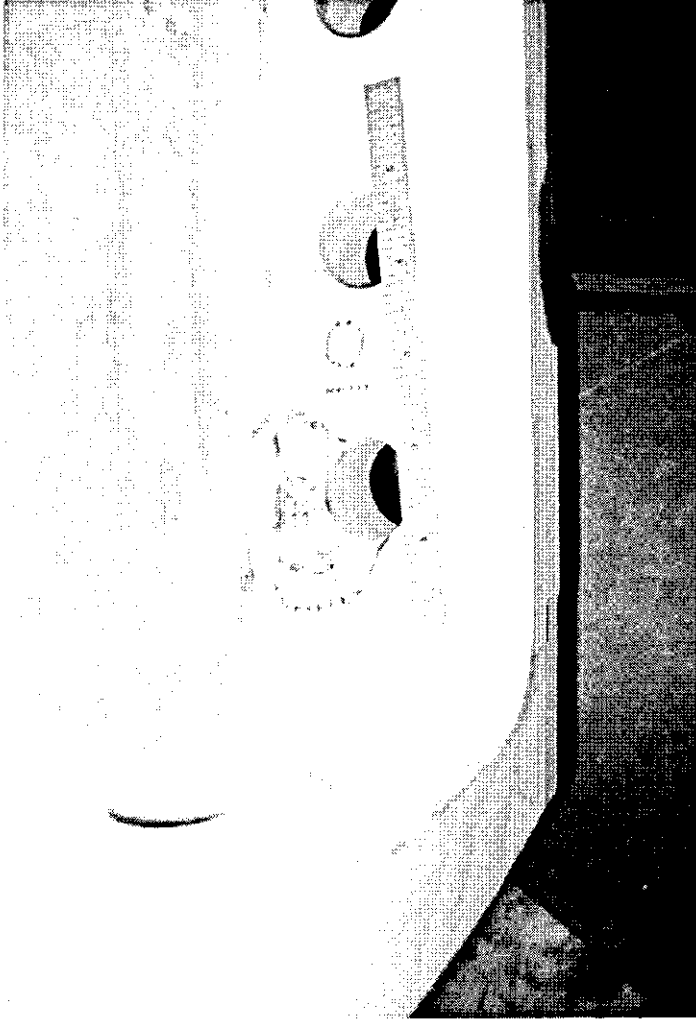
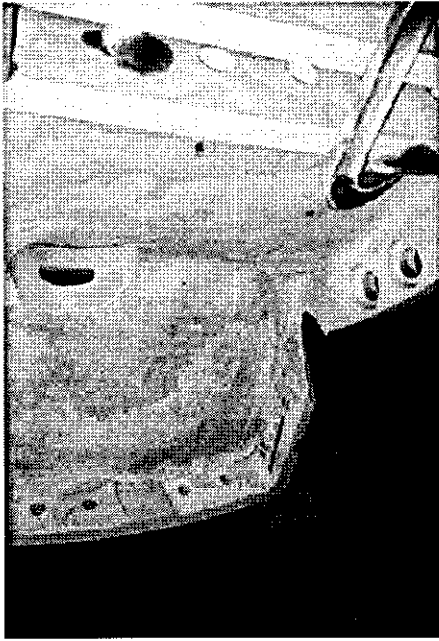
Area #9b

Large defect passes through from machined surface to non-machined surface



# C3 Liquid Penetrant Inspection Map of Indications

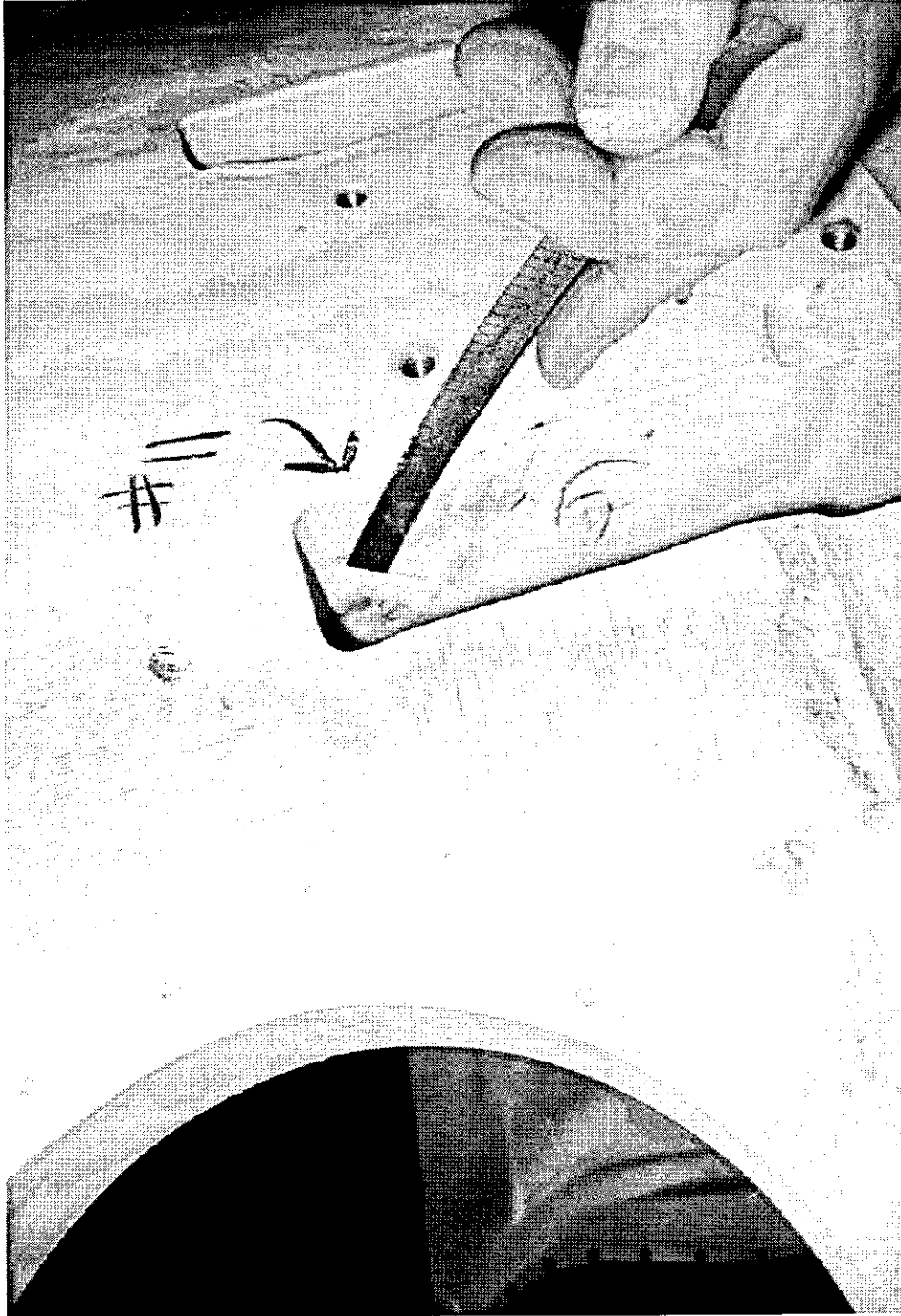
Area #10  
Shrink pocket .600" x .700"





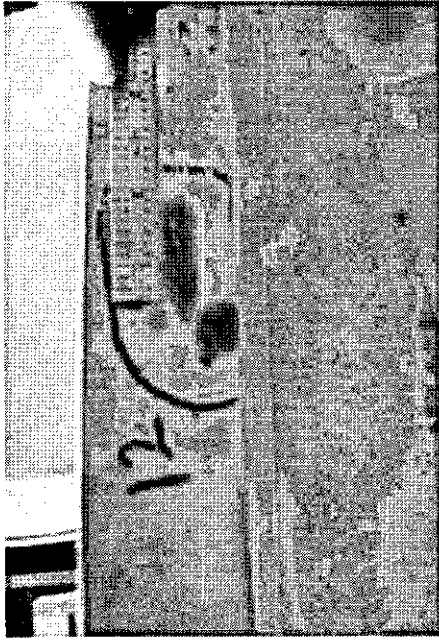
# C3 Liquid Penetrant Inspection Map of Indications

Area #11  
Linear indications (size of discontinuity not bleed-out)  
.400" to 1.200"



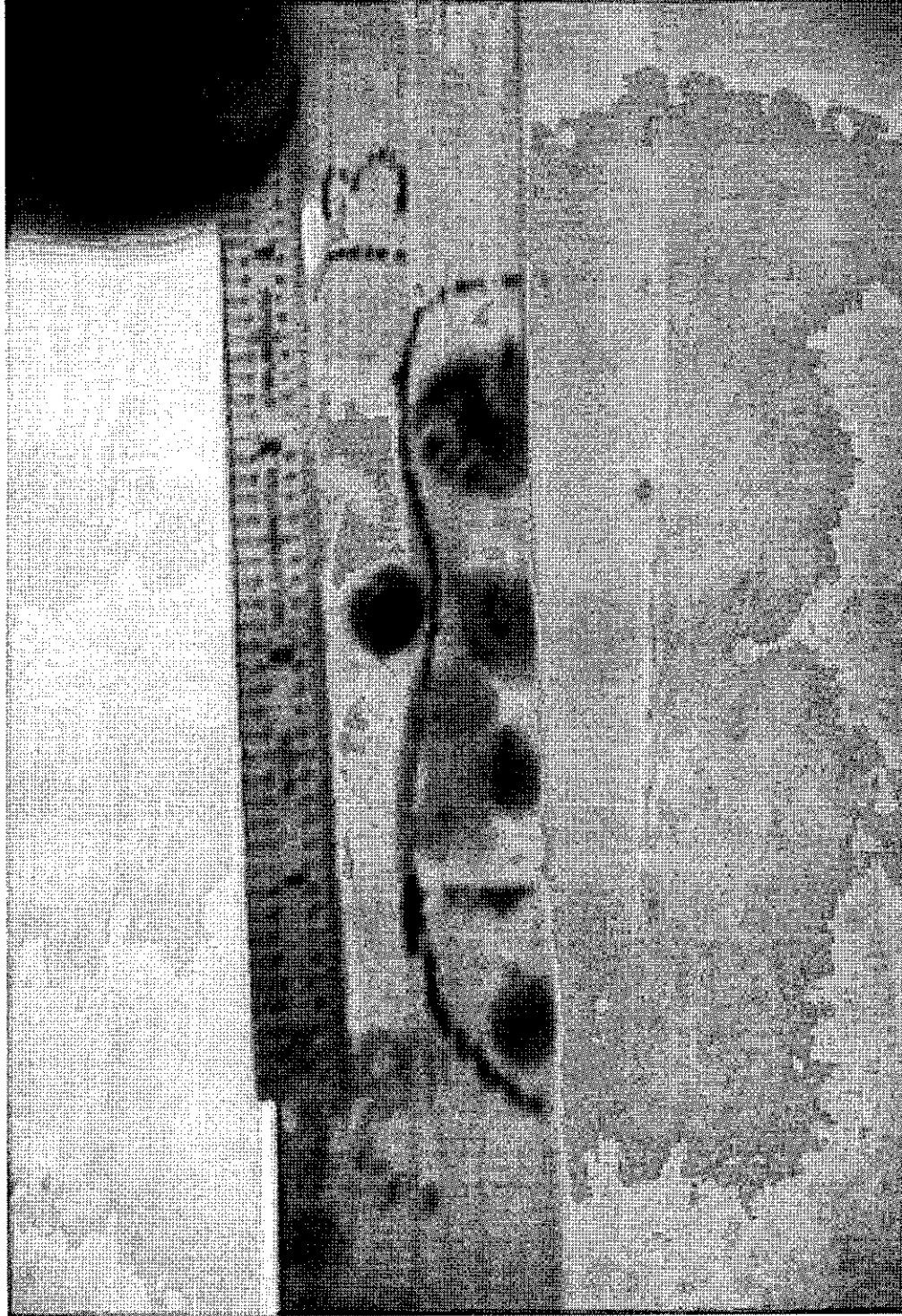
## C3 Liquid Penetrant Inspection Map of Indications

Area #12  
Linear indications (size of discontinuity not bleed-out)  
.100" to .800"



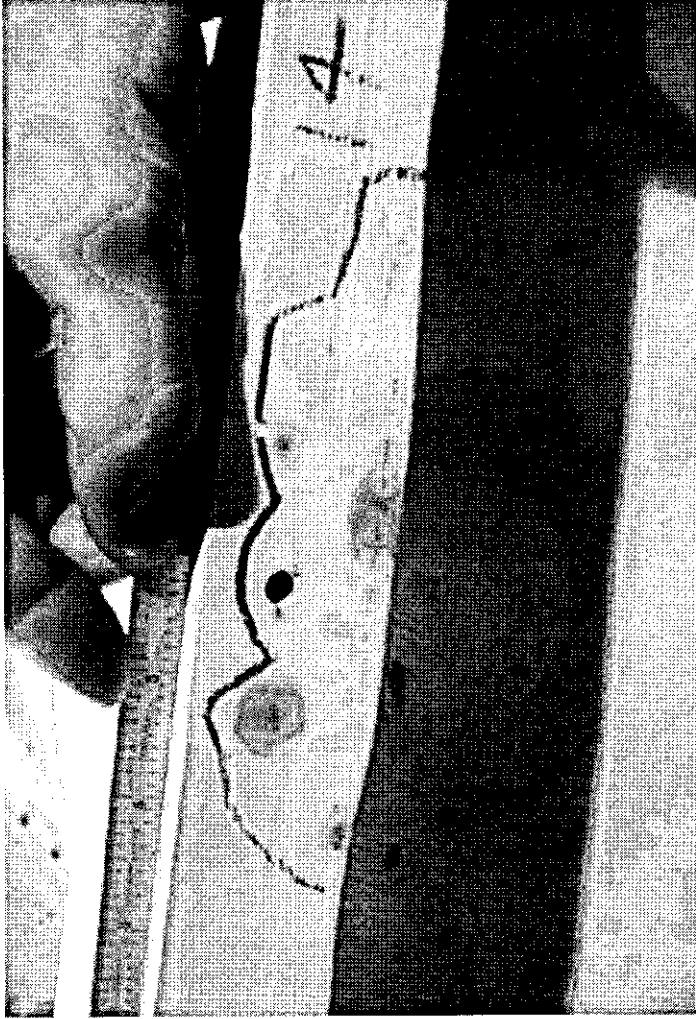
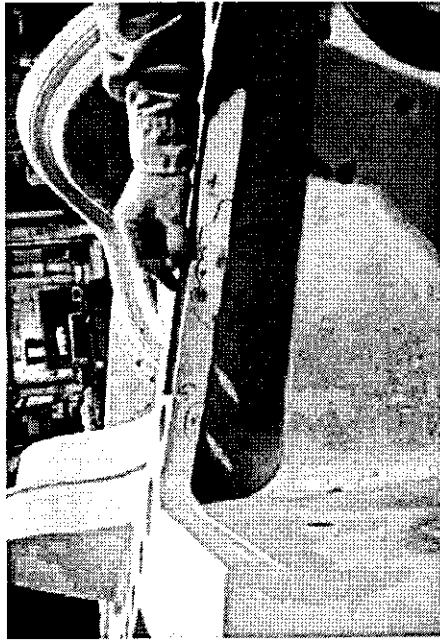
# C3 Liquid Penetrant Inspection Map of Indications

Area #13  
Linear indications (size of discontinuity not bleed-out)  
.200" to .350"



# C3 Liquid Penetrant Inspection Map of Indications

Area #14  
Linear indications (size of discontinuity not bleed-out)  
.100" to 1.250"



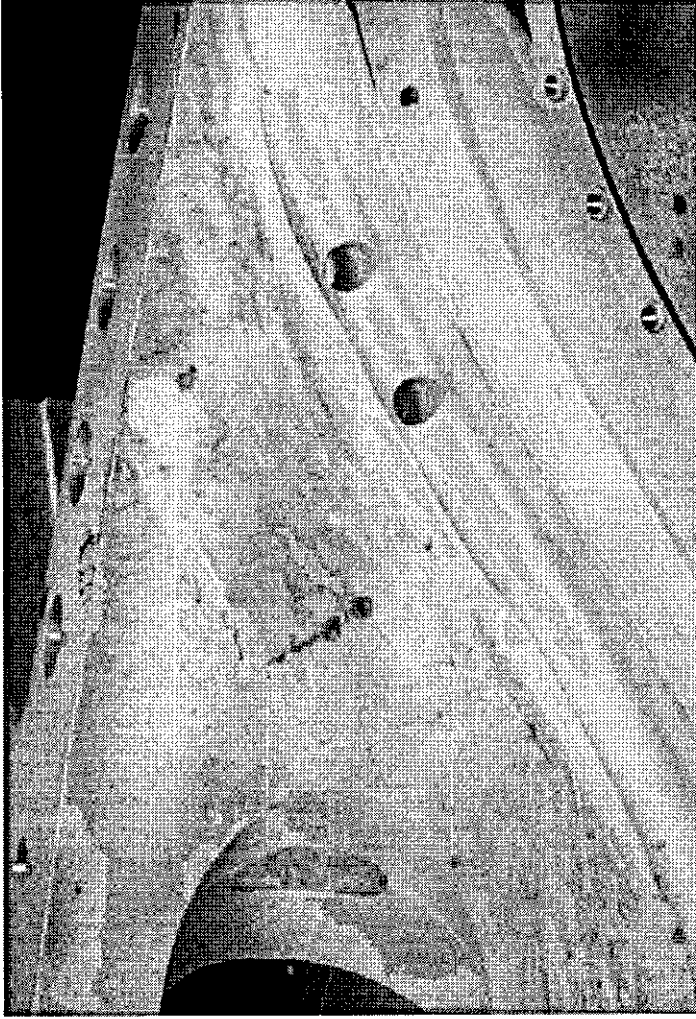
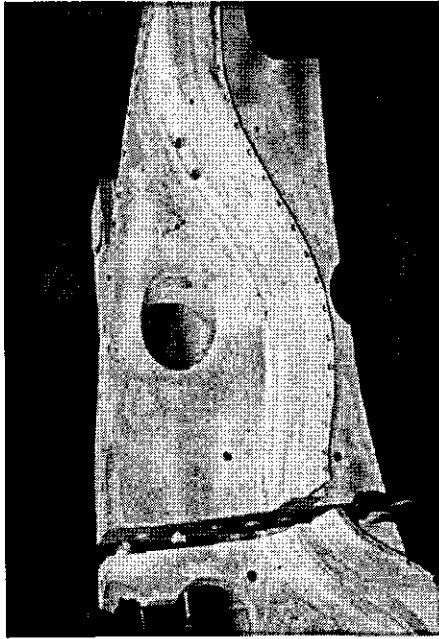
## C3 Liquid Penetrant Inspection Map of Indications

Area #15  
Linear indications (size of discontinuity not bleed-out)  
.100" to .300"



# C3 Liquid Penetrant Inspection Map of Indications

Area #16  
Linear indications (size of discontinuity not bleed-out)  
.100" to .250"





**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: SE141-116 / MODULAR COIL WINDING FORM TYPE**  
Drawing ID: SE141-116      Revision: 8

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: X-RAY FAILURE ON;  
LOCATION "T", VIEW 0-1, POROSITY, MORE THAN 50 INDICATIONS EXCEEDING .080". (section 4 on LPI indications map)  
LOCATION "T", VIEW 1-2, POROSITY, MORE THAN 5 INDICATIONS EXCEEDING .080".  
LOCATION "T", VIEW 2-3, POROSITY, MORE THAN 5 INDICATIONS EXCEEDING .080".  
LOCATION "T", VIEW 0-(-1), POROSITY, MORE THAN 20 INDICATIONS EXCEEDING .080". (section 3 on LPI indications map).

SOME OF THESE FAILURES WERE ALSO REPORTED AS PT FAILURES UNDER NC19269.

**Proposed Disposition:**  
RECOMMEND TO USE AS IS.

Number of additional pages: X-RAY MAP AND READER SHEET ATTACHED.

**Customer Disposition:**     Use As Is     Rework     Repair     Scrap     Replace

PPPL. Reviewed the radiographic films. The one of concern was location T. 0-1. At NCSX's request, the indications were ground to a depth of 0.040 inches. Although some of the indications were lessened, many remained. In parallel ORNL reviewed the stresses and the casting in this area. They found that the stresses were low-and a range of 40 to 70 MPA. Consequently with the stresses so low, we agree with the record recommended disposition to use as is.

Major Tool Implemented By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Phil  
Heitzenroeder

Digitally signed by Phil  
Heitzenroeder  
DN: CN = Phil Heitzenroeder, C =  
US, O = PPPL, OU = Mech. Eng.  
Division  
Reason: I agree to 'specified'  
portions of this document  
Date: 2006.02.23 17:42:11 -05'00'

Brad  
Nelson

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.24 16:16:47  
-05'00'

Tech rep

RLM

n:\mtmapps\Mtnonc14.qrp

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

Part: SE141-116 / MODULAR COIL WINDING FORM TYPE  
Drawing ID: 65707-3 XRAY MAP Revision: --

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: X-RAY FAILURE ON;  
FLANGE 1, VIEW 0-1, POROSITY, MORE THAN 10 INDICATIONS EXCEEDING .080".  
FLANGE 2, VIEW 0-1, POROSITY, MORE THAN 20 INDICATIONS EXCEEDING .080".

THIS REJECTION REPORT IS A SUMMARY OF DEFECTS THAT WERE DETECTED AS A RESULT OF THE X-RAY REQUIREMENT FROM THE DISPOSITION OF NC18776.

**Proposed Disposition:**

RECOMMEND TO USE AS IS.

Number of additional pages: X-RAY MAP AND READER SHEET ATTACHED.

Customer Disposition:  Use As Is  Rework  Repair  Scrap  Replace

A conference call was held between MTM, PPPL, and ORNL on February 21 to review these indications. Based on these discussions, we agree with the proposed disposition to use as is.

Major Tool Implemented By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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: 2006.02.23 17:55:42 -05'00'

Brad  
Nelson

Digitally signed by Brad  
Nelson  
DN: cn=Brad Nelson,  
c=US, o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.24 16:17:33  
-05'00'

Technical Contact Approval:

RLM Approval:



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

MTM N/C: 19298

Page: 1  
Date: 02/21/06  
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: SE141-116 / MODULAR COIL WINDING FORM TYPE  
Drawing ID: SE141-103 Revision: 3

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: Tool Marks, Gouges and Blended Areas on T Section

- #1 .700" L x .100" W x .004" D
- #2 .700" L x .400" W x .012" D
- #3 .300" L x .150" W x .014" D
- #4 1.5" L x .150" W x .080" D
- #5 1.0" L x .150" W x .060" D

#6 Step at outer surface Datum E flange adjacent to poloidal break  
1.950" L x 1.300" W x .225 D SEE ATTACHMENT

**Proposed Disposition:**

PROPOSE TO USE AS IS.

Number of additional pages: 9 pictures

Customer Disposition:  Use As Is     Rework     Repair     Scrap     Replace

MTM notes that corrective actions have been taken to avoid the large step mistakenly machined at location six shown in the attached photos.

Mike  
Griffith

Digitally signed by Mike Griffith  
DN: CN = Mike Griffith, C = US, O =  
Major Tool and Machine, OU =  
CFT White Team  
Reason: I agree to the terms  
defined by the placement of my  
signature on this document  
Date: 2006.03.29 14:13:44 -05'00'

Major Tool Implemented By: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Accepted by:

Phil  
Heitzenroeder

Digitally signed by Phil Heitzenroeder  
DN: CN = Phil Heitzenroeder, C = US,  
O = PPPL, OU = Mech. Eng. Division  
Reason: I agree to the terms defined  
by the placement of my signature on  
this document  
Date: 2006.02.21 15:21:22 -05'00'

Brad  
Nelson

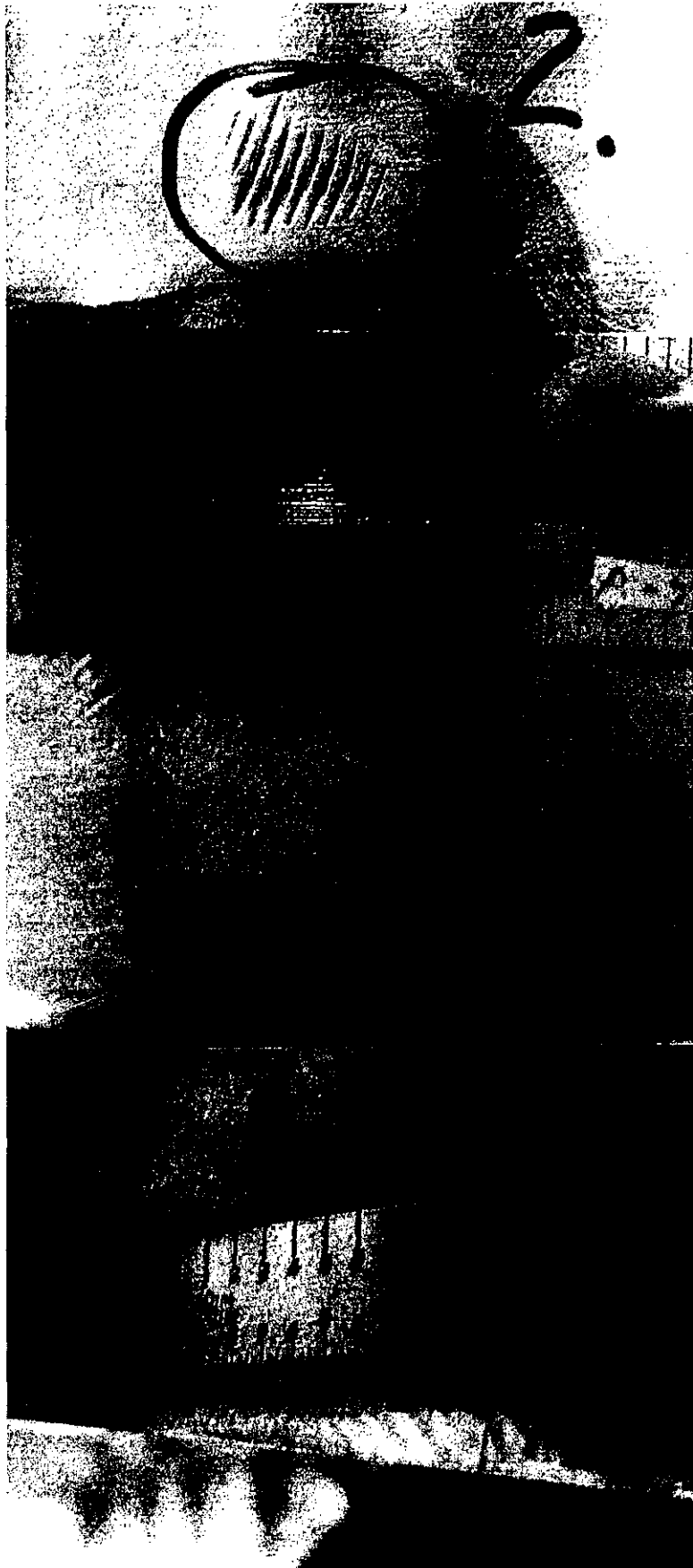
Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.21 17:41:32  
-05'00'

Tech. Rep.

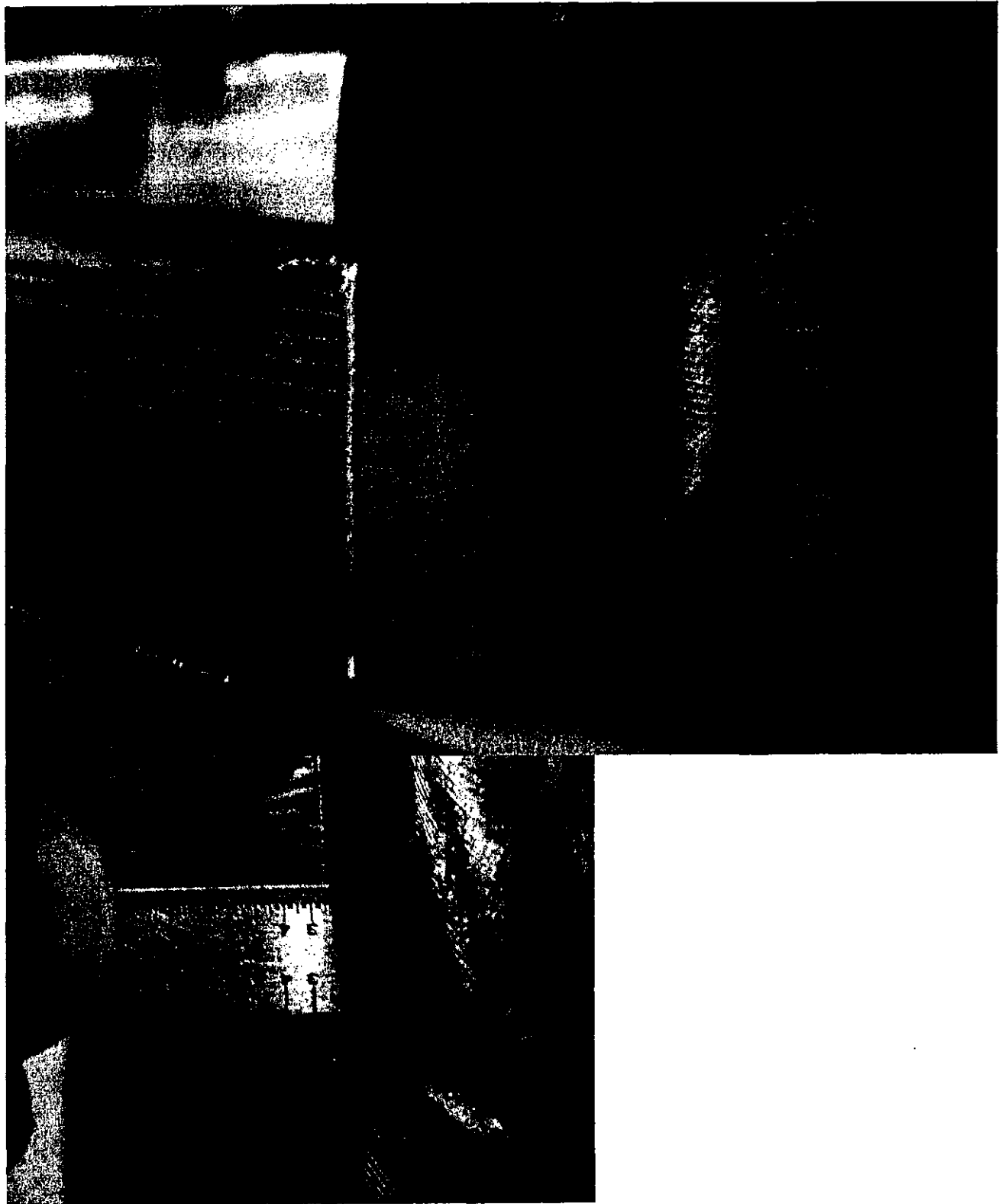
RLM

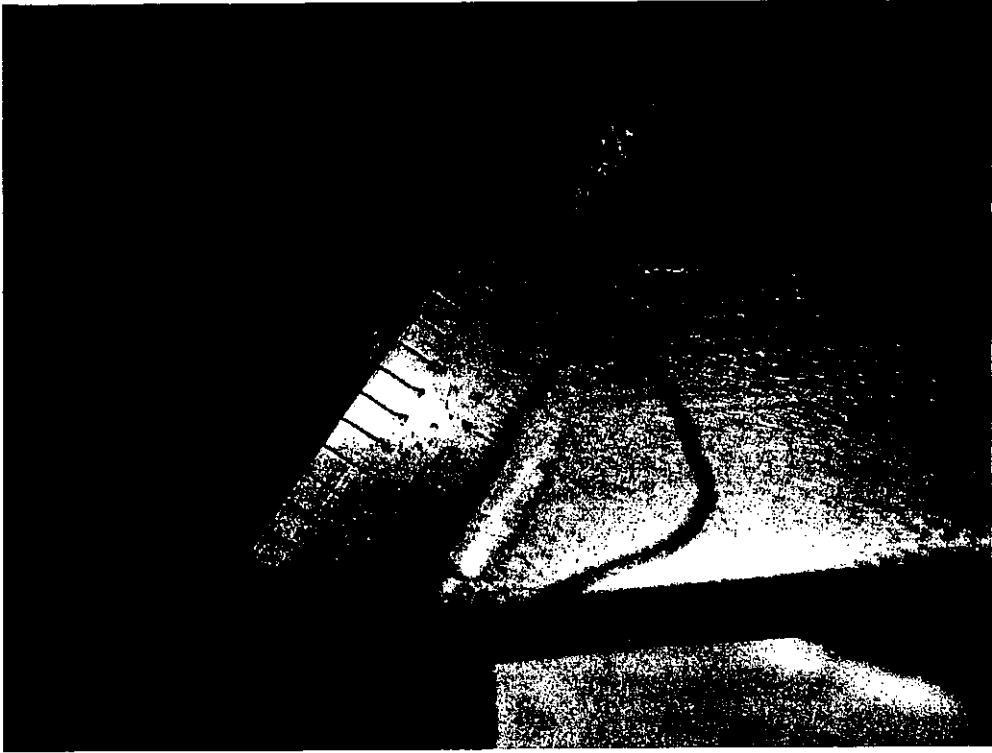
n:\mtm\mpe\Wmnc14.qrp

Major Tool and Machine, Inc. 1458 East 19th Street, Indianapolis, IN 46218-4289 Tel: 317-636-6433 Fax: 317-634-9420









EASTWOOD MANUFACTURING  
CERTIFICATION OF COMPLIANCE

CUSTOMER: MAJOR TOOL AND MACHINE  
ORDER # P05-01160

DATE 5-16-05  
OUR NUMBER 32984

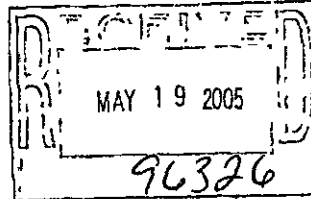
WE CERTIFY THAT THE MATERIALS SUPPLIED ON YOUR ORDER  
LISTED ABOVE COMPLIES WITH THE REQUIREMENTS OF YOUR ORDER  
AND OF THE SPECIFICATIONS LISTED BELOW

DESCRIPTION.

Lot No.	Part.	Heat No.	
32984-1	DS141-036	8969595	1 7/16 Round, machined to size
28 PIECES	ASTM A286		Heat Treat. 36891
	Silver plated		Silver plate. IMF 00132583
	Per AMS2410		Post plate bake. SEI 37905
			Tensile test. WH 05-0420-01

TENSILE KSI	YIELD KSI	ELONGATION	REDUCTION	HARDNESS
150	120	14	35	
PASS	PASS	PASS	PASS	PASS

DALE STARK  
EASTWOOD MANUFACTURING



1-4  
B-1

studs

MTM 03 5/19/05



401 ROSE AVE S E  
MASSILLON, OH 44646

FAX 330-837-7017

CERTIFICATE OF TESTS

REPUBLIC ENGINEERED PRODUCTS

JANUARY 26, 2005  
PAGE: 1 OF 3

PURCHASE ORDER: 42904-3  
PART NUMBER : SH 47670  
ORDER NUMBER: 12-52585-06 821  
HEAT : 8369595  
CHARGE ADDRESS

PURCHASE ORDER DATE: 05/24/04  
ACCOUNT NUMBER : 37759001  
SCHEDULE : 5882B-

*Systems*

FRY STEEL COMPANY  
BUNNIE ISAKA  
13325 MOLETTE ST  
SANTA FE SPRINGS CA 90670

FRY STEEL COMPANY  
BUNNIE ISAKA  
C/O CMI  
4201 N 35TH ST  
CHICAGO IL 60623

MATERIAL DESCRIPTION  
COLD FINISHED STEEL BARS ALLOY DOUGLAS SPEC DMS-1555H GRADE B DTD 07/02/91 EXC  
MARK & PARA 3.4 OIL TEMP & 3.5 BORING SPEC BMS 7-280 ASTM A 331-95 ASTM A  
108-03 LEVEL 1 MILL S 5000E COND E-4 EXC MARK AMS 6415R EXC BHN AMS 6409B AMS  
2310E AMS 2301J AMS 2304A AMS 6484B AMS -S- 5000 TSS 3/99 COND E-4 EXC MARK &  
PARA 4.3 EF-AISI-E-4340 AIRCRAFT Q DEL TRANSV MECH PROP COLD DRANN NOR  
M & SUBCRITICAL ANN BEFORE CD REST CREM

SIZE: RDS 1.4375 X 11 /13FT

LADLE CHEMISTRY

C	MN	P	S	SI	CU	NI	CR	MO	AL
0.42	00.75	.007	.002	0.22	0.10	01.70	00.84	0.21	00.028
V	N	CB	SN						
0.005	.0064	0.002	.007						

AUSTENITIC GRAIN SIZE

AUST GRAIN SZ 7.

SEMI-FINISH RESULTS

DEVELOPED TRANS	ASTM E8	ASTM A370	TEMPER 1
NORMALIZE	AUSTENITIZE	QUENCHANT	DEG F
DEG F	DEG F	OIL	900.
1650.	1550.		
TEMP 1 TIME			
HOURS			
2.0			

TENSILE	REDUCTION AREA
10102	185010.
10302	180280.
10303	185240.
10304	185240.
10305	185240.
10306	185240.
10307	185240.
10308	185240.
10309	185240.
10310	185240.

DEVELOPED TRANS	ASTM E8	ASTM A370	TEMPER 1
TENSILE	AUSTENITIZE	QUENCHANT	DEG F
DEG F	DEG F	OIL	475.
1650.	1500.		
TEMPER 2/SR	TEMP 1 TIME	TEMP 2 TIME	
DEG F	HOURS	HOURS	
475.	2.0	2.0	

TENSILE	YIELD (.2%)	REDUCTION AREA	ELONGATION
10102	262320.	47.0	10.4
10302	264250.	44.8	12.4
10303	262170.	44.6	14.3
10304	261840.	43.9	11.4
10305	261260.	43.3	12.9
10306	261050.	43.3	12.9

*32984*

*19/10/05*

ANAN BHATIA  
GEN MGR COLD FINISH OPERATIONS

*Anan Bhatia*

MTH 80  
*5/19/05*



401 ROSE AVE S E  
MASSILLON, OH 44646

FAX 330-837-7017

CERTIFICATE OF TESTS REPUBLIC ENGINEERED PRODUCTS

JANUARY 26, 2005

PAGE: 2 OF 3

PURCHASE ORDER: 42904-3 PURCHASE ORDER DATE: 05/24/04  
PART NUMBER: 8# 47670 ACCOUNT NUMBER: 27759001  
ORDER NUMBER: 12-52585-06 821 SCHEDULE: 58828-  
HEAT: 8969595

SEMI-FINISH RESULTS (CONTINUED)

DEVELOPED TRANS TENSILE ASTM E8 ASTM A370  
NORMALIZE AUSTENITIZE QUENCHANT TEMPER 1  
DEG F DEG F DEG F  
1650. 1500. OIL 475.  
TEMPER 2/SR TEMP 1 TIME TEMP 2 TIME  
DEG F HOURS HOURS  
475. 2.0 12.0

PCE	H	10102	TENSILE	YIELD (.20)	REDUCTION AREA	ELONGATION
			PSI	PSI	PERCENT	PERCENT
PCE	H	10302	256220.	218900.	35.8	9.7
PCE	H	10503	260560.	221410.	46.3	10.6
PCE	H	30101	254270.	220610.	14.6	7.6
PCE	H	30302	263550.	222210.	35.4	11.0
PCE	T	30302	261190.	223640.	46.8	12.3
PCE	T	30504	258710.	221100.	44.3	11.8

JOMINY STD SAE J406 ASTM A255  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 20 22 24 25 28 30 32  
58 58 57 57 57 57 56 56 56 56 56 55 55 55 55 54 53 52 51 51 50 49 49

MACROETCH SRC ASTM E381 MIL STD 430  
AVG SURFACE 1. RANDOM 1. CENTER 1.

MAG PARTICLE 2301 AMS 2301  
AVG AVG FREQ 0.00 AVG SEV 0.00

MAG PARTICLE 2304 AMS 2304  
AVG AVG FREQ 0.00 AVG SEV 0.00

FINISH SIZE RESULTS SCHEDULE: 58828  
DECARBURIZATION SAE J415 ASTM E1077

PCE 01 TOTAL DEPTH INCHES .015  
HBW SURFACE (LAB) ASTM E10 ASTM A370  
PCE 01 HBW 217.  
PCE 02 HBW 217.  
PCE 03 HBW 217.  
PCE 04 HBW 217.  
PCE 05 HBW 223.

MATERIAL SOURCES RED. RATIO TO 1 73.6

TENSILE HT TRTD ASTM E8 ASTM A370  
NORMALIZE  
PCE 01 DEG F 1625.

NOTES  
THE MATERIAL WAS NOT EXPOSED TO MERCURY OR ANY METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURE DURING PROCESSING OR WHILE IN OUR POSSESSION.

CHEMICAL ANALYSIS CONFORMS TO APPLICABLE SPECS: ASTM E415, ASTM E1019, AND ASTM E1085.

AMAN BHATTIA  
GEN MGR COLD FINISH OPERATIONS  
*Aman Bhattia*

MTM US 5/19/05

*h2024*





401 ROSE AVE S E  
MASSILLON, OH 44646

FAX 330-837-7017

CERTIFICATE OF TESTS REPUBLIC ENGINEERED PRODUCTS

JANUARY 26, 2005  
PAGE: 3 OF 3

PURCHASE ORDER: 42904-3  
PART NUMBER : SH 47670  
ORDER NUMBER: 12-52485-06 821  
HEAT : 8969595

PURCHASE ORDER DATE: 05/24/04  
ACCOUNT NUMBER : 27759001  
SCHEDULE : 58828-

NOTES (CONTINUED)

NO WELDING OR WELD REPAIR WAS PERFORMED ON THIS MATERIAL.

RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENT OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FED STATUTE TITLE 18 CHAPTER 47.

I HEREBY CERTIFY THAT THE MATERIAL LISTED HEREIN HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE RESULTS OF SUCH INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS.

CERTIFICATE OF TESTS SHALL NOT BE REPRODUCED EXCEPT IN FULL.

WHEN EVALUATED, MACRO ETCHES WERE VISUALLY RATED ON SAMPLES ETCHED USING HYDROCHLORIC ACID AT A TEMPERATURE 170 DEGREES(F) (+/- 10 DEGREES F)

ALL TESTING HAS BEEN PERFORMED USING THE CURRENT REVISION OF THE TESTING SPECIFICATIONS.

MFG IN THE U.S.A.

ALISON J. BLONDHEIM  
NOTARY PUBLIC, STATE OF OHIO  
MY COMMISSION EXPIRES MARCH 10, 2009

END OF DATA  
FAX SHIP TO 1 COPY ATTENTION BUNNIE ISAKA  
MAIL SOLD TO 1 COPY ATTENTION BUNNIE ISAKA  
FILE 1 COPY  
WITH SHIPMENT 1 COPY

END OF DATA  
562-802-7481

SHIPPING AREA:

32984

PRV STEEL CO. CERTIFIES THAT THIS IS  
A TRUE COPY OF THE ORIGINAL MILL TEST  
REPORT NOW ON FILE  
RECEIVED AND INSPECTED

FEB 14 2005

*Bunnie Isaka*  
BUNNIE ISAKA

AMAN BHATIA  
GEN MGR COLD FINISH OPERATIONS

*Aman Bhatia*

WITH GS 5/14/05

84/22/2005 12:14

7138958986

WH LABORATORIES

PAGE 82

**Tensile Test Report**

Company: Eastwood Mfg. Date: 4/22/2005  
 Lab Report #: 05-0420-01  
 Attention: Date Stark P.O. #: 32984  
 Identification: AISI 4340  
 Procedure: 1-3/8" O.D.  
 Process: \_\_\_\_\_  
 Filter: Heat#8969585  
 Qualification: \_\_\_\_\_  
 Welder: \_\_\_\_\_

32984

32984

**TENSILE TEST**

Lab ID	Dimensions	Area	Yield Lbs	Ultimate Load Lbs	Yield P.S.I.	Tensile P.S.I.
C	.504 round	.1995	31,880	34,700	159,700	174,000

Elongation	Reduction of Area	Fracture	Comments
18.2%	52.3%	Ductile	

Tests performed in accordance with ASTM A370, E8, and WH Laboratories, LLC Quality Assurance Manual.  
 2% Offset Yield - Gauge Length 2.000" for 360°, and 1.400" for 360° tensile per ASTM A370.  
 Test specimens retained for one (1) week maximum; unused material is retained for one (1) month.

Approved by: Robert French  
 Robert French

MTM 05 5/19/05

MAY-13-2005 12:55 FROM:

TO: 2814470098

P:2/2

# SEI HEAT TREAT

PO BOX 14339 HOUSTON, TX 77212  
PHONE (713) 689-3892 FAX (713) 684-0891

<b>CUSTOMER:</b> EASTWOOD MANUFACTURING	<b>CERTIFICATION DATE:</b> MAY 11, 2005
<b>CERTIFICATION/SO NUMBER:</b> 37905	<b>CUSTOMER ORDER NUMBER:</b> 32984

<b>MATERIAL:</b> 4340	<b>NUMBER OF PIECES:</b> 28
<b>DESCRIPTION:</b> 1-3/8" X 8" STUDS SILVER PLATED	<b>PART NUMBER(S):</b> N/A
<b>SPECIFICATION NUMBER:</b> EASTWOOD MANUFACTURING	<b>REFERENCE:</b> N/A

HEAT TREAT PROCESS	TIME AT HEAT	COOLANT
Bake	950°	AIR

<b>HARDNESS TEST:</b>	<b>NUMBER OF PIECES TESTED:</b>

<b>WE HEREBY CERTIFY THAT THE SERVICE FURNISHED ON THE ABOVE PURCHASE ORDER IS PROVIDED IN ACCORDANCE WITH OUR QUALITY CONTROL MANUAL, REVISION B, DATED JANUARY 21, 2001</b>	<b>QUALITY CONTROL:</b> <i>Louis</i>
---	---

32984

32984

MTM 09 5/19/05



INDUSTRIAL METAL FINISHING

CERTIFICATE OF COMPLIANCE

TO: EASTWOOD MFG. 5/86  
P.O. BOX 41447  
HOUSTON, TX 77241

THIS IS TO CERTIFY THAT THE METAL FINISHING SERVICE RENDERED ON ITEM(S)

126 EA. - 1.375 X 9 DE STUDS  
252 EA. - 2.75 OD WASHERS  
252 EA. - 1.375 12PT NUTS

ON PURCHASE ORDER 22984 LISTED ON OUR INVOICE #00122581  
MEETS OR EXCEEDS THE REQUIREMENTS OF SPECIFICATION NUMBER


CERT: SILVER PLATE PER AMS 2410  
NO BAKE REQUIRED

QUALITY PROGRAM DATED: 05/01/93 REVISION: 1 DATED: 04/01/94

NAME: *Tair McElroy*

TITLE: *QC Manager* DATE: *5/10/05*

*22984*

 *5/19/05*

EASTWOOD MANUFACTURING  
CERTIFICATION OF COMPLIANCE

CUSTOMER: MAJOR TOOL AND MACHINE  
ORDER #: P05-0116#

DATE: 5-16-05  
OUR NUMBER 32982

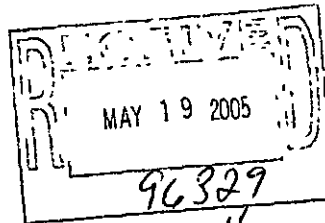
WE CERTIFY THAT THE MATERIALS SUPPLIED ON YOUR ORDER  
LISTED ABOVE COMPLIES WITH THE REQUIREMENTS OF YOUR ORDER  
AND OF THE SPECIFICATIONS LISTED BELOW

DESCRIPTION:

Lot No. 32982-1	56 PIECES	Part DS141-060 ASTM A286 Silver plated Per AMS2410	Heat No. 8977349	1 5/8 Round, forged and machined to size Heat Treat. 36891 Silver plate. IMF 00132583 Post plate bake. none Tensile test. WH 05-0426-20
--------------------	-----------	--	---------------------	---

TENSILE KSI	YIELD KSI	ELONGATION	REDUCTION	HARDNESS
150	120	14	35	
PASS	PASS	PASS	PASS	PASS

DALE STARK  
EASTWOOD MANUFACTURING



1-4  
B-7



*Washers*      *NUTS*



GARY COLD FINISHED BAR PLANTS  
PHONE: 219-886-8129 FAX: 219-886-8123

CERTIFICATE OF TESTS REPUBLIC ENGINEERED PRODUCTS SEPTEMBER 27, 2004  
PAGE: 1 OF 2

PURCHASE ORDER: 4271425 PURCHASE ORDER DATE: 03/11/04  
PART NUMBER: S# 51250 ACCOUNT NUMBER: 27759001  
ORDER NUMBER: 12-51689-04 823 SCHEDULE: 54199-  
HEAT: 8977349  
CHARGE ADDRESS SHIP TO

6/11/05

FRY STEEL COMPANY  
BUNNIE ISAKA  
13325 MOLETTE ST  
SANTA FE SPRINGS CA 90670

FRY STEEL COMPANY  
BUNNIE ISAKA  
C/O CMI  
4201 W 36TH ST  
CHICAGO IL 60623

MATERIAL DESCRIPTION  
COLD FINISHED STEEL BARS ALLOY ASTM A 331-95 ASTM A 108-03 LEVEL 2 MIL S 5626C  
& AMD 1 COND C-4 EXC MARK & PARA 4.3.1 & 4.12.1 WAIVED AMS 6382M AMS 2304A AMS  
6349C EXC THERMAL TREATMENT AMS 2301J AMS - S - 5626 ISS 12/98 EXC PARA 4.3.1 &  
4.12.1 EF-AISI-4140 AIRCRAFT Q TURNED & POLISHED ANN BEFORE TURN

SIZE: RDS 1.6250 X 11-1/13FT. LADLE CHEMISTRY  
C 0.42 MN 00.90 P .011 S .020 SI 0.24 CU 0.18 NI 00.16 CR 00.97 MO 0.21 AL 00.027  
V 0.004 N .0067 CB 0.002 SN 009

SEMI-FINISH RESULTS  
AUSTENITIC GRAIN SIZE: AUST GRAIN SZ 7  
JOMINY STD EAE J406 ASTM A255  
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 20 22 24 26 28 30 32  
58 57 57 56 56 56 55 55 53 52 50 48 47 45 44 43 40 39 38 38 38 37 38 37

MACROETCH SRC ASTM E361 MIL STD 430  
AVG SURFACE 1 RANDOM 1 CENTER 1  
MAG PARTICLE 2301 AMS 2301  
AVG AVG FREQ 0.00 AVG SEV 0.00  
MAG PARTICLE 2304 AMS 2304  
AVG AVG FREQ 0.00 AVG SEV 0.00

FINISH SIZE RESULTS SCHEDULE: 54199  
BHN HT TRTD (LAB) ASTM E10 ASTM A370  
PCE 01 SURFACE 187  
PCE 02 SURFACE 187  
PCE 03 SURFACE 187  
PCE 04 SURFACE 187  
PCE 05 SURFACE 187

5/18/05

MATERIAL SOURCES  
RED. RATIO  
TO 1  
58.2

NOTES  
DECARB NIL

THE MATERIAL WAS NOT EXPOSED TO MERCURY OR ANY METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURE DURING PROCESSING OR WHILE IN OUR POSSESSION.

CHEMICAL ANALYSIS CONFORMS TO APPLICABLE SPECS:  
ASTM E 327 ASTM E 1086 ASTM E 415 ASTM E 1019 ASTM E 1085 ASTM E572.

NO WELDING OR WELD REPAIR WAS PERFORMED ON THIS MATERIAL

AMAN BHATIA  
GEN MGR COLD FINISH OPERATIONS  
*Aman Bhatia*

5/15/05  
MTM 03



GARY COLD FINISHED BAR PLANTS  
PHONE: 219-886-8129 FAX: 219-886-8123

CERTIFICATE OF TESTS REPUBLIC ENGINEERED PRODUCTS

SEPTEMBER 27, 2004  
PAGE: 2 OF 2

PURCHASE ORDER: 42714-5  
PART NUMBER: SW 51250  
ORDER NUMBER: 12-51689-04 823  
HEAT: 8977349

PURCHASE ORDER DATE: 03/11/04  
ACCOUNT NUMBER: 27759001  
SCHEDULE: 54199-

NOTES (CONTINUED)

I HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS

CERTIFICATE OF TESTS SHALL NOT BE REPRODUCED EXCEPT IN FULL.

ALL TESTING HAS BEEN PERFORMED USING THE CURRENT REVISION OF THE TESTING SPECIFICATION.

MFG IN THE U.S.A.

EVELYN GREENE  
NOTARY PUBLIC, STATE OF INDIANA  
MY COMMISSION EXPIRES OCTOBER 10, 2009

END OF DATA  
FAX BY FAX PC 1 COPY ATTENTION BUNNIE ISAKA  
MAIL SOLD TO 1 COPY ATTENTION BUNNIE ISAKA  
FILE 1 COPY  
WITH SHIPMENT 1 COPY PRINTED AT SHIPPING AREA

END OF DATA  
562-802-7481

REPUBLIC CO CERTIFIES THAT THIS IS  
A TRUE COPY OF THE ORIGINAL MILL TEST  
REPORT NON S.P.H.

OCT 05 2004

*Bunnie Isaka*  
BUNNIE ISAKA - QA ENGINEER

AMAN BHATIA  
GEN MGR COLD FINISH OPERATIONS

*Aman Bhatia*

5/15/05  
MTM  
05



04/27/2005 07:39 7136958985

WH LABORATORIES

PAGE 02

**Tensile Test Report**

Company: Eastwood Mfg. Date: 4/27/2005  
 Lab Report #: 05-0428-20  
 Attention: Dale Stark P.O. #: 32882  
 Identification: AISI 4140  
 Procedure: \_\_\_\_\_ 1-5/8" Diameter Bar  
 Process: \_\_\_\_\_  
 Filler: \_\_\_\_\_  
 Qualification: \_\_\_\_\_  
 Welder: \_\_\_\_\_

**TENSILE TEST**

Lab ID	Dimensions	Area	Yield Lbs	Ultimate Load Lbs	Yield P.S.I.	Tensile P.S.I.
E	.252 round	.0489	7,140	8,000	143,100	180,400

Elongation	Reduction of Area	Fracture	Comments
18.9%	61.2%	Ductile	

Tests performed in accordance with ASTM A370, E8, and WH Laboratories, LLC Quality Assurance Manual.  
 2% Offset Yield - Gauge Length 2.000" for .800", and 1.400" for .350" tensile per ASTM A370.  
 Test specimens retained for one (1) week maximum; unused material is retained for one (1) month.

Approved by: Robert French  
 Robert French

5/19/05  




INDUSTRIAL METAL FINISHING

CERTIFICATE OF COMPLIANCE

TO: EASTWOOD MFG. 5/86  
P.O. BOX 41447  
HOUSTON, TX 77241

THIS IS TO CERTIFY THAT THE METAL FINISHING SERVICE RENDERED ON ITEM(S)

126 EA. - 1.375 X 9 DE STUDS  
252 EA. - 2.75 OD WASHERS  
252 EA. - 1.375 12PT NUTS

ON PURCHASE ORDER 12984 LISTED ON OUR INVOICE #00112581  
MEETS OR EXCEEDS THE REQUIREMENTS OF SPECIFICATION NUMBER

CERT: SILVER PLATE PER AMS 2410  
NO BAKE REQUIRED

QUALITY PROGRAM DATED: 05/01/93 REVISION: 1 DATED: 04/01/94

*Toni McPherson*  
NAME:

*QC Manager* *5/10/05*  
TITLE DATE

*12984*

*5/19/05*  


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

**YOUR PURCHASE  
ORDER NUMBER**  
P05-01260

MCMASTER-CARR  
600 COUNTY LINE ROAD  
ELMHURST IL 60126-2001  
IF THERE ARE ANY QUESTIONS ABOUT THIS  
SHIPMENT CONTACT OUR SALES DEPARTMENT  
(630)833-0300

**PAGE**  
1  
**MCM NUMBER**  
6148181-02

Warehouse Location	McMaster Carr Part Number	FR Quantity	Item Description	Your Line	Your Order	This Shipment
<b>P A C K I N G L I S T  E X T R A</b>	74765 AB6	1 EA	LOCTITE PRISM SUPER GLUE TOUGHENED, NUMBER 411, 1-POUND BOTTLE, CLEAR	3	1 EA	1
	74765 AB6	1 EA	LOCTITE PRISM SUPER GLUE TOUGHENED, NUMBER 411, 1-POUND BOTTLE, CLEAR	4	1 EA	1
	74765 AB6	1 EA	LOCTITE PRISM SUPER GLUE TOUGHENED, NUMBER 411, 1-POUND BOTTLE, CLEAR	5	1 EA	1
	74765 AB6	1 EA	LOCTITE PRISM SUPER GLUE TOUGHENED, NUMBER 411, 1-POUND BOTTLE, CLEAR	6	1 EA	1

3/9/05  
94076  
Lines 3-6  
B.J.

MCM  
02  
3/9/05

REFER TO: 6148181-02  
MAJOR TOOL & MACHINE INC

**TAG  
CCP**

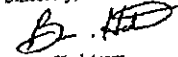
PACKS	NUMBER OF CARTONS	PILLER	LNS: 4
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CYCLE

**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

MCM NO. 6148181-02 04

**PURCHASE ORDER**  
P05-01260

FROM:  
MCMASTER-CARR  
600 COUNTY LINE ROAD  
ELMHURST IL 60126-2001 USA

SHIP TO:

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

CCP



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	80624	065171-00	1	0	YELLOW	072435	DE
Item	Part / Description / Details				Order Quantity	Ship City	
000001	39G1CNT73125NMWLF U/MSH SO Item 4				1.00000		
	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  <i>Sheet lead 3.58076</i>					1.00000	

### 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 DESCRIBED ABOVE.

LOT # \_\_\_\_\_ DOM \_\_\_\_\_  
 Authorized By: Mark J. Cantillo Date: 05/17/2005

Customer Copy

Page # 1

Form: 3CSHIP Rev: 8/99

000/200

ATLAS FIBRE CO.

8847 674 1723

05/26/05 13:00



**Spaulding**  
COMPOSITES

56 Nadeau Drive  
Rochester, NH 03867  
Ph: (603) 332-6555 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	FOB
05/17/2005	60624	063189-00	1	716	YELLOW	072434	DE
Item	Part / Description / Details				Order Quantity	Ship Qty	
000001	39G1CNT71850NMWLF U/M SHY SO Item 5				1.00000		
	G-11-CR 48" *UNTRIMMED X 36" *UNTRIMMED THK: 1.850" +/- .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: *[Signature]*

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 DESCRIBED ABOVE.

LOT # \_\_\_\_\_ DOM.  
Authorized By: *Mark L. Cantillo* Date: 05/17/2005

Customer Copy

Page # 1

Form: SCSHIP Rev: 8/99

000/000

ATLAS FIBRE CO.

7847 674 1723

05/26/05 13:00

INSPECTION DATA CHECKLIST

Quality Assurance Documentation for Part ID: SE141-103 - Item: 16

Workorder: 65707/3-0 Sub:1 Op:140

Part: SE141-103 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-103 Rev: 3		INSPECTION INSTRUCTIONS		RESULTS		INSPECTED BY		
SHEET	ZONE	GAGE/EQUIP	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
*		MULTIMETER	QA	J-1358	1.4 G-OHMS	503-B.H		
(10)								
*		MULTIMETER	QA	J-1358	2.2 G-OHMS	503-B.H		
(20)						02-22-06		

METRODE PRODUCTS LIMITED  
HANWORTH LANE, CHERTSEY

SURREY, UK, KT16 9LL

Tel: +44 (0) 1832 566721

Fax: +44 (0) 1832 565188

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



### 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	W020132
SPECIFICATION	BS EN 12072:2000 W 20 18 3 Mn L

Chemical Analysis (Weight %)										Type: BS EN 10204: 3.1.B / ASME 8FA-5.01: Sch. H			
C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu				
0.015	7.43	0.42	0.008	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	R <sub>p0.2</sub> (MPa)	R <sub>m</sub> (MPa)	A <sub>4</sub> (%)	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.

Berrie Kyles - Q.A. Manager

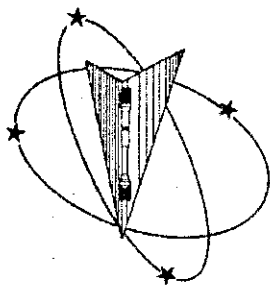
ASME SFA-5.01; Lot classification S4

3/3/05  
93911  
Linc B.1

Notes:  
% Mn (C) includes incidental Cu unless otherwise specified.  
% Mn (C) includes incidental Fe unless otherwise specified.  
Porosity is given as PH (Porosity number) and measured on air-welded gas using instrument calibrated against NBS-related secondary standards (see AWS A5.9-97) unless otherwise specified.

MTHA  
G9  
3/7/05





**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](http://www.wmtr.com)

*WMTR is a technical leader in the material testing industry.*

April 22, 2005

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

**CERTIFICATION**

Corrected Date  
May 4, 2005

Page IM1 of 1  
WMTR Report No. 5-25008  
P.O. No. P05-01764  
PQR No. 434  
Welder Jason Bever #465



621-01 & 621-02



Attention: Josh Mayne

Subject: All processes, performed upon the material as received, were conducted at WMTR, Inc. in accordance with the WMTR 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: Metalek 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	AIUR
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

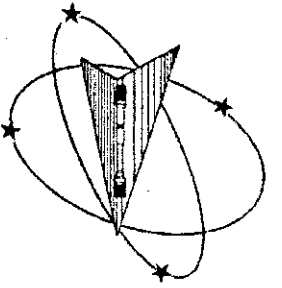
AIUR: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

KNOWINGLY OR UNWITTINGLY FALSIFYING OR CONCEALING A MATERIAL FACT ON THIS FORM OR MAKING FALSE STATEMENTS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS HEREON COULD CONSTITUTE A FELONY PENALIZABLE UNDER FEDERAL STATUTES. THIS CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF WMTR, INC.

Testing Specialists for Aerospace, Automotive, and Material Testing Fields  
Locations in Youngstown, PA U.S.A. ~ Tel. (724) 537-3131 and  
Garbury U.K. ~ Tel. +44 (0) 1295 261211

Richard G. Parks  
Project Manager/Industrial Technology Engineer

5/4/05  
May 4, 2005



April 20, 2005

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

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 ER316Mnnt

DISPOSITION: Report

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

DISPOSITION: Report

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

Specimen ID	TestLog Number	Orig.		Final		Orig.		Final		Failure Location/Type	Machine Number	AU/R
		Width (in./mm)	Thick (in./mm)	Width (in./mm)	Thick (in./mm)	Dia. (in./mm)	GL (in./mm)	Dia. (in./mm)	GL (in./mm)			
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

**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](http://www.wmtr.com)  
WMT&R is a technical leader in the material testing industry.

**CERTIFICATION**



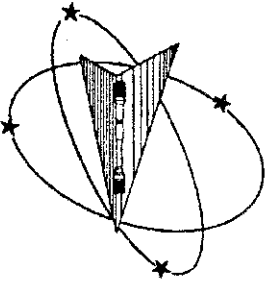
Section 1 of 2  
WMT&R Report No. 5-25008  
P.O. No. P05-01764  
PQR No. 434  
Welder Jason Bayer #465

E21-01 & E21-02

KNOWINGLY OR UNWITTINGLY FALSIFYING OR CONCEALING MATERIAL FACT ON THIS FORM OR MAKING FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS HEREIN SHALL CONSTITUTE A FELONY PUNISHABLE UNDER FEDERAL STATUTES. THIS CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF WMT&R, INC.

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

Testing Specialists for Aerospace, Automotive, and Material Testing Fields  
Locations in Youngstown, PA U.S.A. ~ Tel. (724) 537-3131 and  
Ganbury U.K. ~ Tel. +44 (0) 1295 261211



April 20, 2005

Major Tool & Machine Inc.

**CERTIFICATION**

*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](http://www.wmtr.com)  
 WMTR is a technical leader in the material testing industry.

**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 ER316MnHf**

**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

AU/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	AU/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

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



621-01 & 621-02



Section 2 of 2  
 WMTR Report No. 5-25008  
 P.O. No. P05-01764

*Matthew Stoyan*  
 Roy E. Stammatt Wojcik  
 Technical Services Manager / Onsite Supervisor

April 20, 2005

*4-20-05*

*Testing Specialists for Aerospace, Automotive, and Material Testing Fields*  
 Locations in Youngstown, PA U.S.A. ~ Tel (724) 537-3131 and  
 Danbury, CT ~ Tel. +44 (0) 1295 261211

KNOWINGLY OR UNWITTINGLY FALSIFYING OR CONCEALING A MATERIAL FACT ON THIS FORM OR MAKING FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS HEREIN SHALL CONSTITUTE A FELONY PUNISHABLE UNDER FEDERAL STATUTES. THIS CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF WMTR, INC.

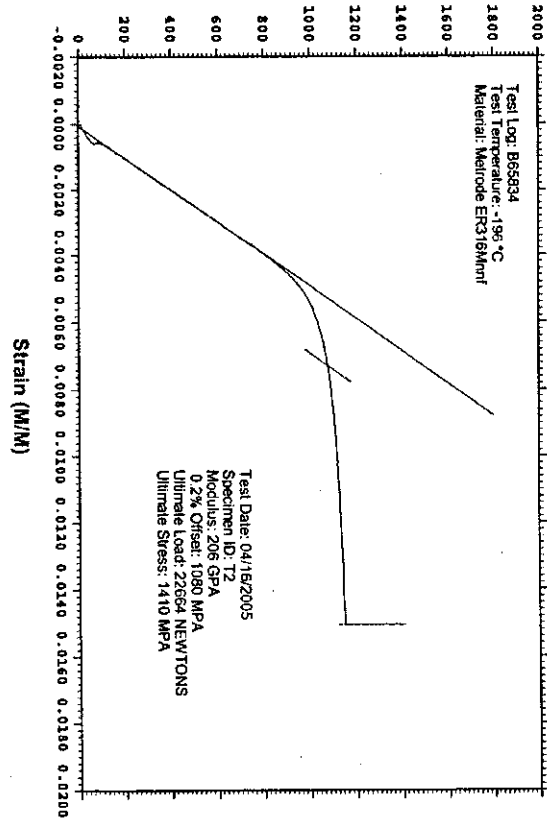
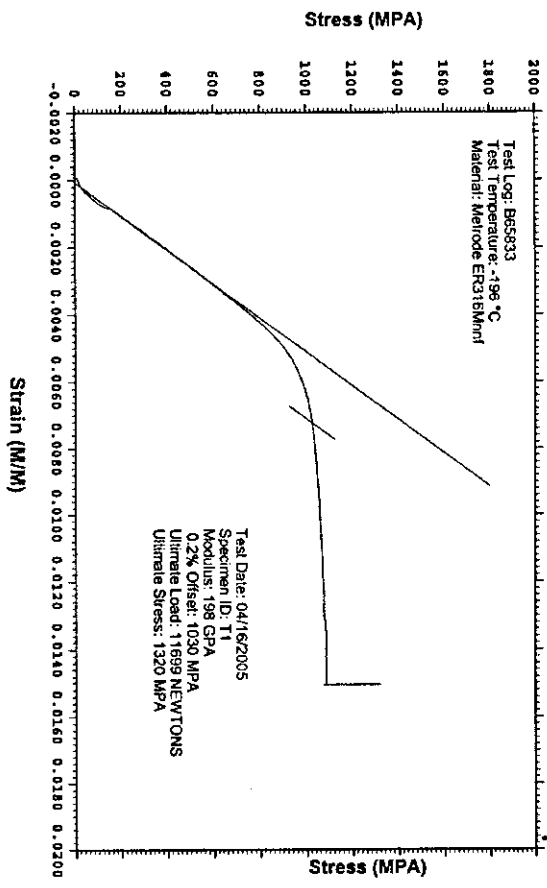
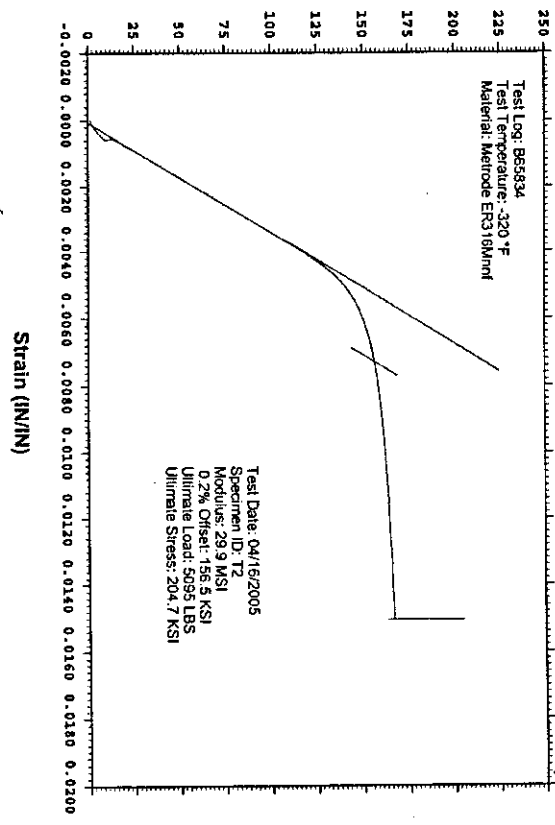
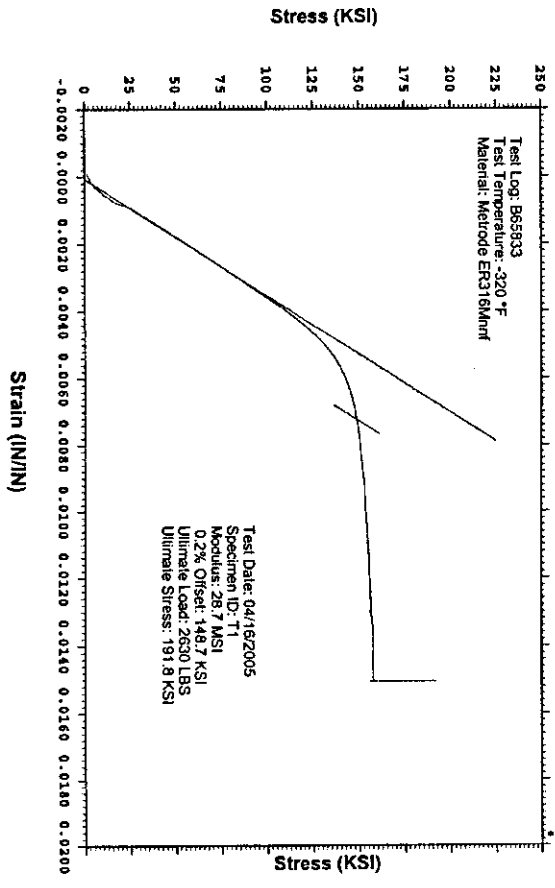
**WESTMORELAND MECHANICAL TESTING & RESEARCH, Inc**

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



KNOWINGLY OR WILLFULLY FALSIFYING OR CONCEALING A MATERIAL FACT ON THIS FORM OR MAKING FALSE EIGHTIOUS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS HEREIN COULD CONSTITUTE A FELONY PUNISHABLE UNDER FEDERAL STATUTES.



# Nondestructive Test

## Certification for Liquid Penetrant Examination

Quality Assurance Documentation for Part ID: SE141-116 - Item: 21

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

**Date of Inspection:** 02/16/2006      **Type of Material:** CAST STAINLESS      **NDT#:** 15679

<b>Stage of Inspection:</b> <input type="checkbox"/> Incoming Inspection <input type="checkbox"/> In-Process Inspection <input type="checkbox"/> After Repair <input checked="" type="checkbox"/> Final Inspection	<b>Manufacturing Process:</b> <input type="checkbox"/> Weldment <input checked="" type="checkbox"/> Casting <input type="checkbox"/> Bar Stock <input type="checkbox"/> Plate <input type="checkbox"/> Forging <input type="checkbox"/> Other	<b>Surface Condition:</b> <input checked="" type="checkbox"/> Machined <input type="checkbox"/> Rough <input checked="" type="checkbox"/> Other FINAL MACHINED & AS CAS	<b>Test Being Run to:</b> <input checked="" type="checkbox"/> Router Instructions <input checked="" type="checkbox"/> Drawing <input type="checkbox"/> Test Plan <input type="checkbox"/> Technique Card SEE NOTES	<b>Heat Treated:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	--	---	---	--

<b>Part Information:</b> MTM Job Number: 65707/3.0 -Sub:1 -Op:100 Resource ID: 810-LIQUID PENETRANT INSPE Part ID: SE141-116 Part Name: MODULAR COIL WINDING FOR Serial Number: Customer P.O.: S005242-F Customer Unit/Plant:	<b>Test Results:</b> Quantity Inspected: 1 Quantity Accepted: 0 Quantity Rejected: 1  Run Hours: 0.0	<b>Inspection Results:</b> Customer N/C #: <input type="checkbox"/> Accepted <input checked="" type="checkbox"/> Rejected <input type="checkbox"/> N/C-Report <input type="checkbox"/> Rework MTM N/C #: 19269
--	---	--

<b>Customer Inspection Plan:</b> SEE NOTES <b>Test Step:</b> <b>Revision:</b> <b>Material Test Number:</b>	<b>Inspection Criteria:</b> <b>Customer Specification:</b> ASTM A903/A903M <b>MTM Spec Number:</b> PS582 (REF NDT-WI-09) <b>Acceptance Standard:</b> ASTM A903 (SEE NOTES)
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<b>Inspection Materials Used:</b> <b>Manufacturer:</b> SHERWIN <b>Type of Penetrant:</b> DP-51 <b>Batch Number:</b> 41-E47 <b>Developer:</b> D-100 <b>Batch Number:</b> 520-H6	<b>Penetrant Examination Processes:</b> <b>Type:</b> II (Visible) / Dwell Time: 15 Minutes <b>Method:</b> A (Water Wash) <b>Method of Drying:</b> Forced Air Fan <b>Form:</b> e (nonaqueous for Type II visible dye) / Dwell Time: 15 Min
---	---

**Inspection Requirements:**

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

**Notes:**

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

ACCEPTANCE CRITERIA: ASTM A903/A903M LEVEL II FOR AS CAST SURFACES

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

PART HAS REJECTABLE INDICATIONS PER CUSTOMER REQUIREMENTS ON MACHINED AND AS CAST SURFACES. SEE NCR-19269 AND PHOTOS FOR MORE DETAILED INFO.

THIS PENETRANT INSPECTION ALSO INCLUDES THE REINSPECTION OF DISCONTINUITIES THAT WERE WELD-REPAIRED THAT WERE DISCOVERED DURING MACHINING OPERATION, AS NOTED IN NC 18607.

THE THE LPI EXAMINATION OF THE WELD REPAIR AREA(S) WAS FOUND TO BE ACCEPTABLE.

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

**Inspector:** 581-D.EDWARDS

**Date:** 02/16/2006

*Douglas D. Edwards Level II*





**Major**  
Tool & Machine, Inc.

**INSPECTION DATA CHECKLIST**

Quality Assurance Documentation for Part ID: SE141-116 - Item: 22

Workorder: 65707/3-0 Sub:1 Op:130

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-103 Rev: 3		INSPECTION INSTRUCTIONS		RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
2*	D3	Ø.001 - Ø.002 CHECK CLEARANCE OF ITEM 5 TO ITEM 6.	FEELER GAGES	MFG	J-1144	ACCEPT	242-M.G	339-E.R	A
(10)				QA			02-15-06	02-15-06	
2*	F2	ENSURE THAT POLOIDAL BREAK GAP DOES NOT EXCEED .002"	FEELER GAGES	MFG	J-1144	.013" SHIM WILL ST ART / GAP THROUGH I S <.002"	242-M.G	339-E.R	R
(20)				QA			02-24-06	02-15-06	



**INSPECTION DATA CHECKLIST**

Quality Assurance Documentation for Part ID: SE141-116 - Item: 23

Workorder: 65707/3-0 Sub:1 Op:134

**Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C**

SHEET ZONE		CHARACTERISTIC	INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY	
			GAGE/EQUIP	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
1*	E8	47.19 ± .03	CMM	QA	00064	47.25	339-E.R		
(10)							02-21-06		R
1*	B8	47.19 ± .03	CMM	QA	00064	47.26	339-E.R		
(20)							02-21-06		R
1*	D6	47.19 ± .03	CMM	QA	00064	47.06	339-E.R		
(30)							02-21-06		R
1*	C6	47.19 ± .03	CMM	QA	00064	47.07	339-E.R		
(40)							02-21-06		R
1*	E6	// .02 A	CMM	QA	00064	.028	339-E.R		
(50)							02-21-06		R
1*	B6	// .02 A	CMM	QA	00064	.012	339-E.R		
(60)							02-21-06		A
2*	H6	2X R.187 +.025 - .005	PIN GAGE	QA	J-652	ACCEPT	339-E.R		
(80)							02-21-06		A
2*	G8	2X .03 X 45°		QA	VISUAL	.03 X 45	339-E.R		
(90)							02-21-06		A
2*	G8	.40 ± .010	CALIPER	QA	J-707	0.32	339-E.R		
(100)							02-21-06		A
2*	G8	2X .030 X 45°		QA	VISUAL	.03 X 45	339-E.R		
(110)							02-21-06		A
2*	F7	2X .32	CALIPER	QA	J-707	0.32	339-E.R		
(120)							02-21-06		A
2*	F7	2X R.11	RADIUS GAGE	QA	R-25	.10 - .20	339-E.R		
(130)							02-21-06		R
2*	G6	⊖ .2 R S T P TO M	CMM	QA	00064	-300 TO .425 70 PTS / 54 OOT	242-M.G		
(140)							02-27-06		R
2*	G6	4.790 OR SHELL INTERSECT. VERIFY USING TEMPLATE PER DRAWING NOTE 16 (MIMFX-3473)	CMM	QA	00064	ACCEPT	242-M.G		
(150)							02-24-06		A
2*	G3	⊖ .2 R S T	CMM	QA	00064	-.015 TO .0785	242-M.G		
(160)							02-24-06		A





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**INSPECTION DATA CHECKLIST**

Page: 4  
Date: 03/29/06  
User ID: GRIFFIT#

(160)	Q T O N				53 PTS	02-27-06		
2*	G3	4.790 OR SHELL INTERSECT. VERIFY USING TEMPLATE PER DRAWING NOTE 16 (MTMF3-3473)		QA	ACCEPT	242-M.G		A
(170)						02-24-06		
2*	E6	$\square$ .02 R   S   T M TO MI	CMM	QA	-0465 TO .0425 981 PTS / 328 OOT	242-M.G		R
(180)						02-27-06		
2*	F3	$\square$ .02 R   S   T N TO NI	CMM	QA	-0456 TO .0485 977 PTS / 341 OOT	242-M.G		R
(182)						02-27-06		
2*	E5	$\square$ .1 R   S   T MI TO NI	CMM	QA	-0423 TO .0443 359 PTS	242-M.G		A
(185)						02-27-06		
Drawing ID: NCSX-CSPEC-141-03 Rev: 11		RESULTS		DATA/REMARKS		INSPECTED BY		
SHEET ZONE	CHARACTERISTIC	GAGE/EQUIP	BY SAMPLE	SER#		INSP	VERFD	AUDIT
4*	3.1.1.1 <sup>125</sup> THE TWO "L" MACHINED SURFACES OF TEE.	PROFILOMETER	QA	J-1152	60	339-E.R		A
(188)						02-21-06		
Drawing ID: SE141-116 Rev: 8		RESULTS		DATA/REMARKS		INSPECTED BY		
SHEET ZONE	CHARACTERISTIC	GAGE/EQUIP	BY SAMPLE	SER#		INSP	VERFD	AUDIT
2*	B5 $\phi$ .06 R   S   T 96X .375-16 UNC .750 DEEP .625 C'BORE .188 DEEP	CMM	QA 50%	00064	.004 TO .098 48 PTS / 19 OOT	242-M.G		R
(190)						02-27-06		
2*	B5 .375-16 UNC .750 DEEP GAGE 100% OF THE HOLES AND VERIFY CLEANLINESS.	THREAD PLUG GA	QA 100%	A-443	ACCEPT	339-E.R		A
(195)						02-21-06		
2*	B4 2X .06-.09 X 45°		QA	VISUAL	ACCEPT	339-E.R		A
(200)						02-21-06		
3*	G7 $\phi$ .01 A   B   C 8X Ø1-8 UNC THRU	CMM	QA	00064	.022 TO .054	339-E.R		R
(210)						02-21-06		
3*	H3 $\square$ .01 DATUM -E- FLANGE	CMM	QA	00064	.020	242-M.G		R
(230)						02-27-06		
3*	H4 <sup>125</sup> DATUM -E- FLANGE	PROFILOMETER	QA	J-1152	23 - 55	339-E.R		A
(240)						02-21-06		
3*	F3 $\square$ .01 DATUM -D- FLANGE	CMM	QA	00064	.030	242-M.G		R
(250)						02-27-06		
3*	F3 <sup>125</sup>	PROFILOMETER	QA	J-1152	28 - 106	339-E.R		A



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INSPECTION DATA CHECKLIST

Page: 5  
Date: 03/29/06  
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SHEET	ZONE	CHARACTERISTIC	INSPECTION INSTRUCTIONS		RESULTS	INSPECTED BY
			GAGE/EQUIP	BY SAMPLE		
(260)		DATUM -D- FLANGE				
3*	E4	Φ.01   A   B   C 8X Ø1.13 THRU BACK SPOT FACE Ø2.38 MIN DEPTH FOR CUP	CMM	QA	.046 TO .056 / ACCE PT SPOTFACE	02-21-06 339-E.R
(280)						
4*	H8	Φ.060   D   A   N 3X Ø1.885 THRU	CMM	QA	.0054 TO .016	02-24-06 339-E.R
(290)						
4*	H8	3X Ø1.885 +/- .003 Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA	1.885 - 1.890 / ACC EPT SPOTFACE	02-21-06 339-E.R
(291)						
		Drawing ID: SE141-116 Rev: 7				
		CHARACTERISTIC				
4*	H7	Φ   Ø.01   D   A   N 3X SPH R.75 TO .75 DEEP	CMM	QA	.0084 - .0986	339-E.R 02-21-06
(300)						
		Drawing ID: SE141-116 Rev: 8				
		CHARACTERISTIC				
4*	H6	Φ   Ø.060   D   A   N 17X Ø1.885 THRU	CMM	QA	.004 TO .104	339-E.R 02-24-06
(310)						
4*	H6	3X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA	1.882 - 1.884 / ACC EPT	339-E.R
(311)						
4*	H5	Φ   Ø.060   D   A   N 3X Ø1.13	CMM	QA	.0462 TO .0564	339-E.R 02-21-06
(320)						
4*	H5	3X Ø1.13 +/- .010 Ø2.38 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA	1.125 - 1.126 / ACC EPT SPOTFACE	242-M.G
(321)						
4*	E6	Φ   Ø.060   D   A   N 3X Ø1.375-6 UNC THRU	CMM	QA	.0096 TO .0316	339-E.R 02-24-06
(340)						
4*	E6	Φ   Ø.060   D   A   N 5X Ø1.885 THRU	CMM	QA	.0352 TO .0550	339-E.R 02-24-06
(350)						
4*	E6	5X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	SCALE	QA	ACCEPT	339-E.R 02-21-06
(351)						



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**INSPECTION DATA CHECKLIST**

4* (360)	D4	Φ   Ø .060   D   A   N Ø1.885 THRU	CMM	QA	00064	0.1088	339-E.R 02-21-06	R
4*	D4	Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	SCALE	QA	J-922	ACCEPT	339-E.R	A
(361)							02-21-06	
4* (370)	B5	Φ   Ø .060   D   A   N 3X Ø1.13	CMM	QA	00064	.046 TO 0.1008	339-E.R 02-24-06	R
4*	B5	3X Ø1.13 +/- .010 Ø2.38 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA	00064	1.125 - 1.126 / ACC EPT SPOTFACE	339-E.R	A
(371)							02-21-06	
4* (375)	D1	12X .25-20 UNC-2B	THREAD PLUG GA	QA	A-67	ACCEPT	339-E.R 02-21-06	A
5* (380)	E8	Φ   Ø .060   E   A   J Ø1.885 THRU	CMM	QA	00064	.034	339-E.R 02-24-06	A
5*	E8	Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	SCALE	QA	J-922	ACCEPT	339-E.R	A
(381)							02-21-06	
5* (400)	F6	Φ   Ø .060   E   A   J 3X Ø1.375-6 UNC THRU	CMM	QA	00064	.033, .036, .037	339-E.R 02-24-06	A
		Drawing ID: SE141-116 Rev: 7	INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	RESULTS	INSPECTED BY	
SHEET ZONE		CHARACTERISTIC	GAGE/EQUIP			DATA/REMARKS	INSP	VERFD
5* (410)	F6	Φ   Ø .01   E   A   J 3X SPH R.75 TO .75 DEEP	CMM	QA	00064	.022, .023, .026	339-E.R 02-24-06	R
		Drawing ID: SE141-116 Rev: 8	INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	RESULTS	INSPECTED BY	
SHEET ZONE		CHARACTERISTIC	GAGE/EQUIP			DATA/REMARKS	INSP	VERFD
5* (420)	F7	7X .25-20 UNC-2B	THREAD PLUG GA	QA	A-67	ACCEPT	339-E.R 02-21-06	A
5* (430)	E7	Φ   Ø .060   E   A   J 24X Ø1.885 THRU	CMM	QA	00064	.0072 TO .039	339-E.R 02-24-06	A
5*	E7	24X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	SCALE	QA	J-922	ACCEPT	339-E.R	A
(431)							02-21-06	
5* (431)	E7	Φ   Ø .060   E   A   J	CMM	QA	00064	.015, .016, .017	339-E.R	A



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**INSPECTION DATA CHECKLIST**

SHEET	ZONE	CHARACTERISTIC	INSPECTION INSTRUCTIONS		BY SAMPLE	SER#	RESULTS		INSPECTED BY
			GAGE/EQUIP	INSTRUCIONS			DATA/REMARKS	INSP VERFD	
(440)		3X Ø1.5 TO 2.00 DEEP Ø3.00 TO 1.00 DEEP						02-24-06	
5*	D7	3X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM		QA	00064	ACCEPT	242-M.G	A
(450)								02-24-06	
		Drawing ID: SE141-116 Rev: 7							
5*	G2	SPH R.75 TO .75 DEEP	CMM		QA	00064	.745 - .750	339-E.R	A
(460)								02-21-06	
		Drawing ID: SE141-116 Rev: 8							
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	DATA/REMARKS	INSP VERFD	AUDIT
6*	E3		CALIPER		QA	J-707	0.98 - 0.99	339-E.R	A
(470)		4X Ø1.00 THRU						02-21-06	
8*	G7	4.00 ± .010	SCALE		QA	J-922	4.0	339-E.R	A
(650)								02-21-06	
8*	D7	6X Ø.375-16 UNC TO .75 DEEP .03 X 45° CHAMFER	THREAD PLUG GA		QA	A-443	ACCEPT	339-E.R	A
(750)								02-21-06	
8*	D7	13.6 °	CMM		QA	00064	12.93	339-E.R	R
(760)								02-21-06	
8*	D7	5.88 VERIFY THAT PAD MEETS THE MINIMUM OF 5.88	SCALE		QA	J-922	> 5.88	339-E.R	A
(770)									
8*	D7	2.19 ± .010	CALIPER		QA	J-707	2.19	339-E.R	A
(780)								02-21-06	
8*	D7	2.19 ± .010	CALIPER		QA	J-707	2.19	339-E.R	A
(790)								02-21-06	
8*	C8	2X 1.56 ± .010 THRU	CALIPER		QA	J-707	1.56 / 1.55	339-E.R	A
(830)								02-21-06	
8*	C8	2X 7.50 ± .010 THRU	CMM		QA	00064	7.50 / 7.499	339-E.R	A
(850)								02-21-06	
8*	C8	8X R.25	RADIUS GAGE		QA	R-25	8X 0.26	339-E.R	A
(860)								02-21-06	
8*	C8	2X 2.52 ± .010	CALIPER		QA	J-707	2.52	339-E.R	A



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**INSPECTION DATA CHECKLIST**

(870)							02-21-06	
9* (900)	E7	2.54 ± .010	CALIPER	QA	J-707	2.54	339-E.R	A
9* (910)	E7	5.08 ± .010	CALIPER	QA	J-707	5.08	339-E.R	A
9* (920)	F3	4X Ø1.0 THRU VERIFY THAT HOLES BREAK COMPLETELY THROUGH INSIDE OF CASTING	CALIPER	QA	J-707	.99 - .100	339-E.R	A
9* (930)	F3	2X Ø .50 ± .010 THRU	CALIPER	QA	J-707	.49 - .50	339-E.R	A
9* (940)	E3	2.44 ± .010	CALIPER	QA	J-707	2.44	339-E.R	A
9* (950)	E3	1.22 ± .010	CALIPER	QA	J-707	1.22	339-E.R	A
9* (960)	C7	4X Ø1.0 THRU VERIFY THAT HOLES BREAK COMPLETELY THROUGH INSIDE OF CASTING	CALIPER	QA	J-707	.99 - .100	339-E.R	A
9* (970)	C6	2X Ø.25 T.C. HOLE TO 2.5 DEEP	CALIPER	QA	J-707	.250 / 2.5	339-E.R	A
Drawing ID: SE141-116 Rev: 7								INSPECTED BY
SHEET ZONE	10* (980)	C8	CHARACTERISTIC	INSPECTION INSTRUCTIONS	SER#	DATA/REMARKS	INSP	VERFD
			□ .125   A   B   C	QA	00064	-278 / .492 75 PTS / 5 OOT	242-M.G	
Drawing ID: SE141-116 Rev: 8								INSPECTED BY
SHEET ZONE	10* (990)	D5	CHARACTERISTIC	INSPECTION INSTRUCTIONS	SER#	DATA/REMARKS	INSP	VERFD
			□ .5   A   B   C DATUM -D- SIDE INNER CAST	QA	00064	-.989 TO .733 90 PTS / 17 OOT	242-M.G	
Drawing ID: SE141-116 Rev: 7								INSPECTED BY
SHEET ZONE	10* (1010)	C4	CHARACTERISTIC	INSPECTION INSTRUCTIONS	SER#	DATA/REMARKS	INSP	VERFD
			□ .125   A   B   C DATUM -E- SIDE LARGE WING	QA		.048 TO .1062 35 PTS / 9 OOT	242-M.G	
Drawing ID: SE141-116 Rev: 8								INSPECTED BY
SHEET ZONE			CHARACTERISTIC	INSPECTION INSTRUCTIONS	SER#	DATA/REMARKS	INSP	VERFD



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**INSPECTION DATA CHECKLIST**

10* (1030)	D1	5	A	B	C	CMM	QA	00064	-0.339 / .656 69 PTS / 18 OOT	242-M.G 02-27-06	R		
Drawing ID: SE141-116 Rev: 7													
SHEET ZONE	CHARACTERISTIC					INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
10*	E1	MACHINE / GRIND THIS AREA TO PROFILE OF +.05/-.10					CMM	QA	00064	-0.114 TO -.160 ACTUAL DEVIATION FROM NOMINAL	242-M.G		R
Drawing ID: NCSX-CSPEC-141-03 Rev: 10													
SHEET ZONE	CHARACTERISTIC					INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
4*	3.1.1.	UOS ALL MACHINED SURFACES TO BE 250 RMS SURFACE FINISH RECORD RANGE					PROFILOMETER	QA	J-1152	31 - 125	339-E.R		A
Drawing ID: SE141-116 Rev: 8													
SHEET ZONE	CHARACTERISTIC					INSPECTION INSTRUCTIONS	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1*		NOTE 9 RECORD THE WEIGHT OF THE PART 6000LBS MAX						QA	VISUAL	5640	339-E.R		A
(1050)											02-24-06		
4*	H7	22.13 ± .010					CMM	QA	00064	22.12	339-E.R		A
(1060)											02-21-06		
4*	H7	47.79 ± .010					CMM	QA	00064	47.91	339-E.R		A
(1070)											02-21-06		
4*	H6	59.18 ± .010					CMM	QA	00064	59.17	339-E.R		A
(1080)											02-21-06		
4*	H6	73.27 ± .010					CMM	QA	00064	73.27	339-E.R		A
(1090)											02-21-06		
4*	H5	80.49					CMM	QA	00064	80.50	339-E.R		A
(1100)											02-21-06		
4*	H5	87.87 ± .010					CMM	QA	00064	87.89	339-E.R		R
(1110)											02-21-06		
4*	H5	89.64 ± .010					CMM	QA	00064	89.64	339-E.R		A
(1120)											02-21-06		
4*	G4	31.83 ± .010					CMM	QA	00064	31.85	339-E.R		R
(1130)											02-21-06		



**INSPECTION DATA CHECKLIST**

4* (1140)	F4	24.10 ± .010				CMM	QA	00064	24.10	339-E.R 02-21-06	A
4* (1150)	F4	11.48 ± .010				CMM	QA	00064	11.52	339-E.R 02-21-06	R
4* (1160)	E4	5.20 ± .010				CMM	QA	00064	5.24	339-E.R 02-21-06	R
4* (1170)	D4	18.31 ± .010				CMM	QA	00064	18.26	339-E.R 02-21-06	R
4* (1180)	D4	32.50 ± .010				CMM	QA	00064	32.45	339-E.R 02-21-06	R
4* (1190)	C5	77.13 ± .010				CMM	QA	00064	77.12	339-E.R 02-21-06	A
4* (1200)	C6	55.56 ± .010				CMM	QA	00064	55.55	339-E.R 02-21-06	A
4* (1210)	B7	23.74 ± .010				CMM	QA	00064	23.72	339-E.R 02-21-06	R
4* (1220)	C7	37.09 ± .010				CMM	QA	00064	37.06	339-E.R 02-21-06	R
4* (1230)	D8	17.22 ± .010				CMM	QA	00064	17.21	339-E.R 02-21-06	A
4* (1240)	F8	28.17 ± .010				CMM	QA	00064	28.18	339-E.R 02-21-06	A
4* (1260)	G8	40.75 ± .010				CMM	QA	00064	40.76	339-E.R 02-21-06	A
4* (1270)	G8	43.42 ± .010				CMM	QA	00064	43.42	339-E.R 02-21-06	A
5* (1290)	H8	88.39 ± .010				CMM	QA	00064	88.41	339-E.R 02-21-06	R
5* (1300)	H7	86.42 ± .010				CMM	QA	00064	86.42	339-E.R 02-21-06	A
5* (1310)	H6	59.08 ± .010				CMM	QA	00064	59.08	339-E.R 02-21-06	A
5* (1320)	H5	28.71 ± .010				CMM	QA	00064	28.70	339-E.R 02-21-06	A
5* (1330)	G5	32.42 ± .010				CMM	QA	00064	32.44	339-E.R 02-21-06	R
5* (1330)	D4	22.117 ± .005				CMM	QA	00064	22.100	339-E.R 02-21-06	R



**Major**  
Tool & Machine, Inc.

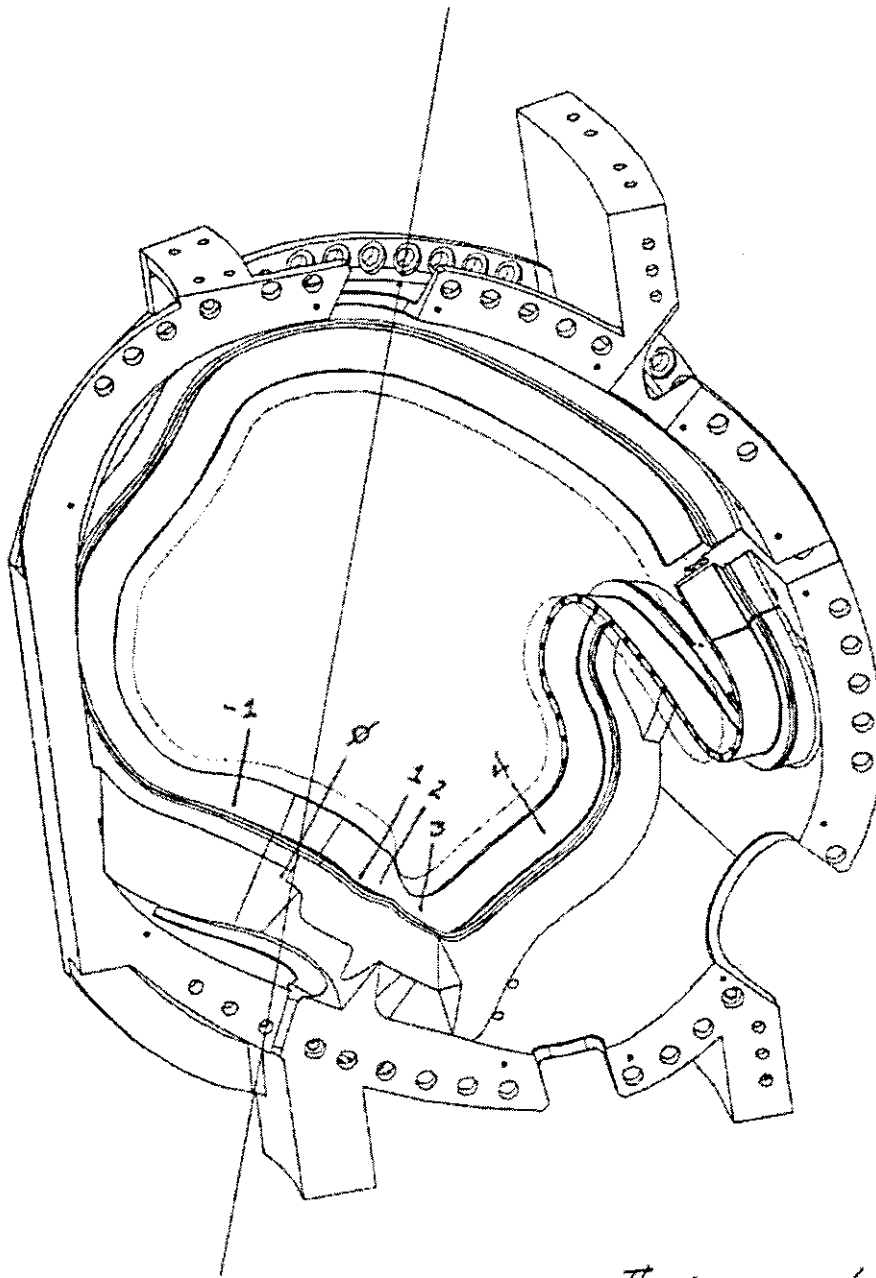
**INSPECTION DATA CHECKLIST**

Page: 11  
Date: 03/29/06  
User ID: GRIFFIT#

(1340)									02-21-06	
5*	D4	38.14 ± .010	CMM	QA		00064	38.12		339-E.R	R
(1350)									02-21-06	
5*	D5	21.33 ± .010	CMM	QA		00064	21.32		339-E.R	A
(1360)									02-21-06	
5*	D7	87.62 ± .010	CMM	QA		00064	87.58		339-E.R	R
(1370)									02-21-06	
5*	E8	7.53 ± .010	CMM	QA		00064	7.50		339-E.R	R
(1380)									02-21-06	
5*	E8	4.91 ± .010	CMM	QA		00064	4.89		339-E.R	R
(1390)									02-21-06	
5*	G8	36.13 ± .010	CMM	QA		00064	36.13		339-E.R	A
(1400)									02-21-06	
8*	D8	2.63 ± .010	CMM	QA		00064	2.62		339-E.R	A
(1420)									02-21-06	







FILM SIZE:  
4 1/2" X 17"

MTM # 65707/Lot 3.0  
SUB 1, Op. 160  
RES. 818 RADIOGRAPHY  
Pg 2 of 2 2/18/06  
REF MQS READER SHEET

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: SE141-116 / MODULAR COIL WINDING FORM TYPE**  
Drawing ID: SE141-116                      Revision: 8

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: X-RAY FAILURE ON;  
LOCATION "T", VIEW 0-1, POROSITY, MORE THAN 50 INDICATIONS EXCEEDING .080". (section 4 on LPI indications map)  
LOCATION "T", VIEW 1-2, POROSITY, MORE THAN 5 INDICATIONS EXCEEDING .080".  
LOCATION "T", VIEW 2-3, POROSITY, MORE THAN 5 INDICATIONS EXCEEDING .080".  
LOCATION "T", VIEW 0-(-1), POROSITY, MORE THAN 20 INDICATIONS EXCEEDING .080". (section 3 on LPI indications map).

SOME OF THESE FAILURES WERE ALSO REPORTED AS PT FAILURES UNDER NC19269.

**Proposed Disposition:**  
RECOMMEND TO USE AS IS.

Number of additional pages: X-RAY MAP AND READER SHEET ATTACHED.

**Customer Disposition:**     Use As Is     Rework     Repair     Scrap     Replace

PPPL. Reviewed the radiographic films. The one of concern was location T. 0-1. At NCSX's request, the indications were ground to a depth of 0.040 inches. Although some of the indications were lessened, many remained. In parallel ORNL reviewed the stresses and the casting in this area. They found that the stresses were low-and a range of 40 to 70 MPA. Consequently with the stresses so low, we agree with the record recommended disposition to use as is.

Major Tool Implemented By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Phil  
Heitzenroeder

Digitally signed by Phil  
Heitzenroeder  
DN: CN = Phil Heitzenroeder, C =  
US, O = PPPL, OU = Mech. Eng.  
Division  
Reason: I agree to 'specified'  
portions of this document  
Date: 2006.02.23 17:42:11 -05'00'

Brad  
Nelson

Digitally signed by Brad Nelson  
DN: cn=Brad Nelson, c=US,  
o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.24 16:16:47  
-05'00'

Tech rep

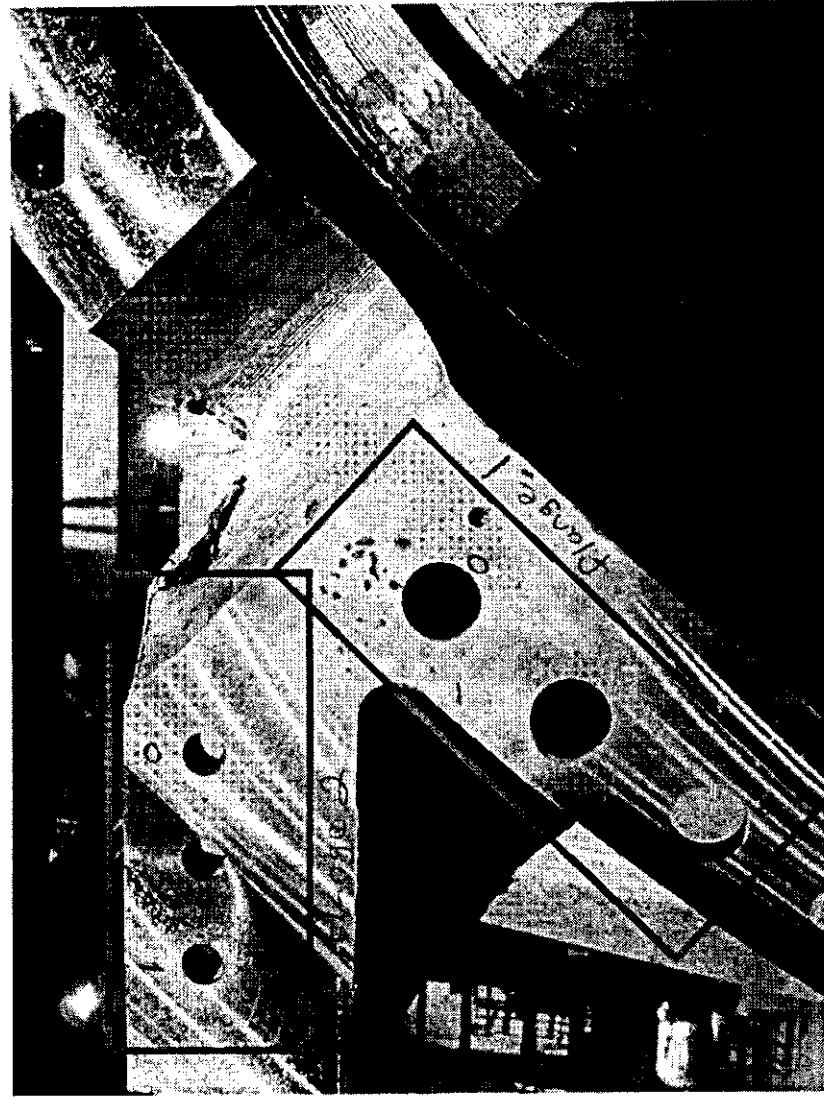
RLM

n:\mtmapps\Mtmonc14.qpp



XRay Map for Customer Disposition of NC18776.

Workorder: 65707/3  
Datum -D- Flange



65707/3.0/1/170/88  
SE/41-116 rev. 8  
2/18/04  
Page 2 of 2

Mike Griffith  
Rev. --

**Customer: ENERGY INDUSTRIES OF OHIO**

Contact: NANCY HORTON  
E-Mail: NKHFlowen@aol.com

Telephone: 216-496-2314  
Fax: 216-328-2001

**Part: SE141-116 / MODULAR COIL WINDING FORM TYPE**  
Drawing ID: 65707-3 XRAY MAP      Revision: --

Customer P.O.: S005242-F/Ln:3  
Serial No./Qty: C3

Reported By: MIKE GRIFFITH  
E-Mail: mGriffith@MajorTool.com

Telephone: 317-636-6433  
Fax: 317-634-9420

Problem: X-RAY FAILURE ON;  
FLANGE 1, VIEW 0-1, POROSITY, MORE THAN 10 INDICATIONS EXCEEDING .080".  
FLANGE 2, VIEW 0-1, POROSITY, MORE THAN 20 INDICATIONS EXCEEDING .080".

THIS REJECTION REPORT IS A SUMMARY OF DEFECTS THAT WERE DETECTED AS A RESULT OF  
THE X-RAY REQUIREMENT FROM THE DISPOSITION OF NC18776.

**Proposed Disposition:**  
RECOMMEND TO USE AS IS.

Number of additional pages: X-RAY MAP AND READER SHEET ATTACHED.

**Customer Disposition:**     Use As Is     Rework     Repair     Scrap     Replace

A conference call was held between MTM, PPPL, and ORNL on February 21 to review these indications. Based on these discussions, we agree with the proposed disposition to use as is.

Major Tool Implemented By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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: 2006.02.23 17:55:42 -05'00'

Brad  
Nelson

Digitally signed by Brad  
Nelson  
DN: cn=Brad Nelson,  
c=US, o=ORNL, ou=FED,  
email=nelsonbe@ornl.gov  
Date: 2006.02.24 16:17:33  
-05'00'

Technical Contact Approval:

RLM Approval:



Major  
Tool & Machine, Inc.

### INSPECTION DATA CHECKLIST

Quality Assurance Documentation for Part ID: SE141-116 - Item: 28

Workorder: 65707/3-0 Sub:1 Op:190

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

SHEET	ZONE	DRAWING ID: SE141-116 Rev: 8	CHARACTERISTIC	INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY	
				GAGE/EQUIP	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERIFIED	AUDIT
*			D A T U M - E - S I D E MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ. CHECK 3 PLACES ADJACENT TO EVERY 5TH HOLE IN T SECTION.	MASTER GAGE	QA	J-1165	LESS THAN 1.02	503-B.H		A
(10)								02-20-06		
*			D A T U M - D - S I D E MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ. CHECK 3 PLACES ADJACENT TO EVERY 5TH HOLE IN T SECTION.	MASTER GAGE	QA	J-1165	LESS THAN 1.02	503-B.H		A
(20)								02-20-06		
*			INSPECT PERMEABILITY OF WELD REPAIR PER NC18607. MAG PERMEABILITY TO BE NO GREATER THAN 1.02µ.	MASTER GAGE	QA	J-1165	LESS THAN 1.02	503-B.H		A
(30)								02-20-06		



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

# Nondestructive Test Certification for Liquid Penetrant Examination

Quality Assurance Documentation for Part ID: SE141-116 - Item: 29

**Date of Inspection:** 12/23/2005

**Type of Material:** CAST STAINLESS

**NDT#:** 15062

<b>Stage of Inspection:</b> <input type="checkbox"/> Incoming Inspection <input type="checkbox"/> In-Process Inspection <input checked="" type="checkbox"/> After Repair <input type="checkbox"/> Final Inspection	<b>Manufacturing Process:</b> <input checked="" type="checkbox"/> Weldment <input type="checkbox"/> Casting <input type="checkbox"/> Bar Stock <input type="checkbox"/> Plate <input type="checkbox"/> Forging <input type="checkbox"/> Other <b>WELD REPAIR OF CASTING</b>	<b>Surface Condition:</b> <input checked="" type="checkbox"/> Machined <input checked="" type="checkbox"/> Rough <input type="checkbox"/> Other <b>HAND BLENDED FLUSH</b>	<b>Test Being Run to:</b> <input checked="" type="checkbox"/> Router Instructions <input checked="" type="checkbox"/> Drawing <input type="checkbox"/> Test Plan <input type="checkbox"/> Technique Card	<b>Heat Treated:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	---	---	--	--

<b>Part Information:</b> MTM Job Number: 65707/3.0 -Sub:12 -Op:20 Resource ID: 810-LIQUID PENETRANT INSPE Part ID: SE141-116 Part Name: MODULAR COIL WINDING FOR Serial Number: Customer P.O.: S005242-F Customer Unit/Plant:	<b>Test Results:</b> Quantity Inspected: 1 Quantity Accepted: 1 Quantity Rejected: 0  Run Hours: 0.0
--	---

<b>Customer Inspection Plan:</b> Test Step: Revision: Material Test Number:	<b>Inspection Criteria:</b> Customer Specification: ASTM A903/A903M MTM Spec Number: PS582 (REF NDT-WI-09) Acceptance Standard: ASTM A903 (SEE NOTES)
--	--

<b>Inspection Materials Used:</b> Manufacturer: SHERWIN Type of Penetrant: DP-51 Batch Number: 41-E47 Developer: D-100 Batch Number: 520-H6	<b>Penetrant Examination Processes:</b> Type: II (Visible) / Dwell Time: 15 Minutes Method: C (Solvent Wipe) Method of Drying: Normal Evaporation Form: e (nonaqueous for Type II visible dye) / Dwell Time: 12 Min
--	---

**Inspection Requirements:**

% of all accessible surfaces   
  Joint Preps   
  Root Pass   
  Back Gouge   
  Cover Pass   
  Other  
 SEE NOTES

**Notes:**  
 Perform localized PT inspection on casting repair areas prior to final machining (4 locations).  
 Reference MTM NC 18889 for additional information.  
 Acceptance Criteria: ASTM A903/A903M Level I for machined surfaces including the entire "T" section (high stress areas)  
 Repair areas are free of rejectable indications at time of inspection.

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

**Inspector:** 581-D.EDWARDS

**Date:** 12/23/2005

*Douglas D. Edwards* Level II







# CERTIFICATE OF TEST

Page 02 of 02

Certification Date  
9-JAN-2006

**CUSTOMER ORDER NUMBER**

PO6-00025

2301 AIRWEST BLVD  
PLAINFIELD IN 46168

**Invoice Number**

T479315

**CUSTOMER PART NUMBER**

Ship# T731400

**SOLD TO:** MAJOR TOOL & MACHINE INC  
1458 E 19TH ST  
INDIANAPOLIS IN 46218

**SHIP TO:**

MAJOR TOOL & MACHINE INC  
29267  
1458 EAST 19TH STREET  
INDIANAPOLIS IN 46218

Description: 316/316L HRAP BAR  
1 X 3 X 12' R/L  
HEAT: M11443

ITEM: 522335

ASTM A479  
Line Total: 259 LB

THERMAL TREATMENT: OK  
HT TRT QUENCHED 1040 DEG C 30 MIN WATER  
CORROSION: OK  
MACRO: OK  
MICRO1: OK



JAN 09 2006

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession.

DAMIAN GURRI

MANAGER, QUALITY ASSURANCE

ABNAHMEPRUEFZEUGNIS B  
INSPECTION CERTIFICATE B  
CERTIFICAT DE RECEPTION B  
nach/according to/selon EN 10204-3.1  
Blatt/Sheet/Feuille 1 von/Of/Da 2

ISO 9001  
BSI Registration  
No. FM00777

**BÖHLER**  
EDELSTAHL

Nr./No./No.: 010.350 05.06.23  
Seite/Page/Page: 01/01 16/ACK

Bestelleff./Purchaser/Comment  
AMB SPECIALITY STEEL, INC.

3304 COLLINS RD, PO BOX 1021  
28173 WAXHAW, NC 28173-  
USA  
Bestell-Nr./Purchaser's Order No/No. de commande  
2898/P791235

RS34135  
S22335

Unsere Auftrags-Nr./Works Order No/No. de commande /Usine Lieferschein/Dispatch note/Avis d'expédition  
354.175/USA vom 05.02.23/01/ 20/511.846/K vom 05.06.20  
Anforderungen/Requirements/Cuigenoa  
+ :

Prüfgegenstand/Objekt of test/Objet d'examen  
AISI 316/316L, UNS-S-31600, UNS-S-31603, DIN 1017  
STAINLESS STEEL FLAT BARS,  
HOT ROLLED, QUENCHED/SOLUTION ANNEALED AND PICKLED

Umfang der Lieferung/Volume of delivery/Lista descriptiva		Gewicht kg Weight Lbs Poids kg	Schmelze Heat No No. de coulée Apr. provena	Prüf-Nr Test No Apr. provena
03 FL 76,200MM X 25,400MM 1" X 3"	11,33 - 12,97 FT	2415,00 5324,1	M11443 LBS	I067

"MATERIAL IS FREE OF MERCURY CONTAMINATION"  
"NO WELD REPAIR"

+ :  
ASTM A484/A484M-03, ASTM A276-03, AMS-QQ-S-763-98, AMS 5653F-02,  
AMS 5648K-02, ASTM A479/A479H-03, ASTM A182/A182M-03, ASTM A193/A193M-03,  
ASTM A320/A320M-03, ASME SA479-01, ASME SA 182-00b,

COUNTRY OF ORIGIN: AUSTRIA

Erschmelzungsart/Steelmaking Process/Procédé de génération EAF

Kennzeichnung/Marking/Marque  
Markenbezeichnung/Grade of Material/nuance du materiel:  
Werkstoff Nr./Material No./Matériau No. X  
Schmelze/Heat No./No. de coulée X

Besichtigung und Nachmessung: Kein Anstand  
Inspection and Checking of Dimension: satisfactory  
Inspection of Control des dimensions: satisfaisant

Ergebnis der Prüfungen/Test Results/Resultat des essais  
Die gestellten Anforderungen sind erfüllt.  
The material has been furnished in accordance with  
the requirements.  
Le matériel a été trouvé conforme aux exigences.

Zeichen des Lieferwerkes  
Brand of Manufacturer  
Marque de l'usine



Zeichen des Prüfers  
Symbol of Inspector  
Symbole de l'inspecteur



**BÖHLER**  
Edelstahl-LB+H

ISO 9001 REGISTERED  
CERTIFICATE NO. 010.350

MTM  
016

JAN 09 2006

ABNAHMEPRUEFZEUGNIS B  
INSPECTION CERTIFICATE B  
CERTIFICAT DE RECEPTION B

ISO 9001  
BSI Registration  
No. FM00777



Ergebnis der Pruefungen/Test results/Resultat des essais  
Blatt/Sheet/feuille 2 von/Of/De 2

Nr./No./No.: 010.350 05.06.23  
Seite/Page/Page: 01/01

Chemische Zusammensetzung/Chemical Composition/Composition chimique (%)

Schmelze Heat No. No. de coulée	C	SI	MN	P	S	CR	MO	NI	V	W
M11443	0,03	0,57	1,25	0,037	0,024	16,84	2,00	10,63	0,03	0,07
	CO=0,057 TI= 0,05 AL=0,059 NB=0,010 N = 0,04 CU=0,27									

Mechanische Eigenschaften/Mechanical Properties/Caractéristiques mécaniques

Pruef-Nr Test No Epreuve	TEMP	YIELD ST.	TENS. ST	ELONG.	R/A
	° C	KSI	KSI	A4 %	%
I067	0020	058	075-115	>40	>50
			091	44	71

BRINELLHARDNESS : 194 BHN

MACRO AND MICRO TESTS : SATISFACTORY

CONFUSION-TEST : SATISFACTORY

GRAIN SIZE ACC. TO ASTM E112 : 10

INTERCRYSTALLINE CORROSION TEST ACC. TO ASTM A262 PR.E : SATISFACTORY

HEAT-TREATMENT:  
QUENCHED: 1040 ° C - 30 MIN - WATER

Anlegen:  
Enclosure:  
Annexe:

BOEHLER  
Edelstahl GmbH

DER ANNAHMEPRUEFER/INSPECTOR REPRESENTATIVE



JAN 09 2006



Major  
Tool & Machine, Inc.

### INSPECTION DATA CHECKLIST

Quality Assurance Documentation for Part ID: SE141-137 - Item: 31

Workorder: 65707/3-0 Sub:13 Op:40

Part: SE141-137 - -

Drawing ID: SE141-137 Rev: 0		INSPECTION INSTRUCTIONS		RESULTS		INSPECTED BY		
SHEET	ZONE	GAGE/EQUIP	BY SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
1*	G2	MASTER GAGE	QA	J-1270	BETWEEN 1.02 AND 1.03 PER RFD 14-01	503-B.H		
(10)		RECORD MAGNETIC PERMEABILITY. RESULTS TO BE NO GREATER THAN 1.02μ PER DRAWING NOTE 5.			1			A
						01-23-06		



**Major**  
Tool & Machine, Inc.

**INSPECTION DATA CHECKLIST**

Quality Assurance Documentation for Part ID: SE141-138 - Item: 33

Workorder: 65707/3-0 Sub:14 Op:40

Part: SE141-138 - -

SHEET	ZONE	CHARACTERISTIC	INSPECTION INSTRUCTIONS		RESULTS	INSPECTED BY		
			GAGE/EQUIP	BY SAMPLE		INSP	VERFD	AUDIT
1*	G2	RECORD MAGNETIC PERMEABILITY. RESULTS TO BE NO GREATER THAN 1.02μ PER DRAWING NOTE 5.	MASTER GAGE	QA	BETWEEN 1.02 AND 1.03 REF RFD 14 -011	503-B.H		
(10)						01-23-06		A

Employees: 242-M.Griffith / 339-E.Root / 503-B.Houk