

C-1 Documentation Package

List of Documents 8-08-2005

Doc #	Description
A1	Excel overview chart of specifications on C-1 – Rev 01
A2	Excel overview chart of specifications on C-1 shim– Rev 01
A3	Coil C shim certificate of compliance dated 4-29-05
A4	Dimensional sketch of shim # 141-073 dated 3-31-05
A5	Traveler – MTS Coil C shim orig. dated 12-14-04 – signed/dated
A6	Radiographic shooting sketch C shim dated 3-10-05
A7	Orig MTS for C shim dated 12-14-04
A8	Coil C-1 certificate of conformance S73140-1 revised dated 7-21-05
1	MTR for ladle 1 heat 27728
2	MTR for ladle 2 heat 27730
3	MTR for ladle 3 heat 27731
4	MTR for weighted average of chemistry – 3 ladles
5	Chemistry of weld material Lot # 3012668/82743
6	Chemistry of weld material Lot # WO19711
7	Westmoreland tensile test report @ -320F dated 4-19-05
8	St Louis Testing tensile test report @ room temperature dated 4-22-05 – corrected 6-15-05
8a	St Louis Testing tensile test report @ room temperature –retest of heat 27728 dated 5-12-05
8b	St Louis Testing tensile test report @ room temperature –retest of heat 27728 dated 6-1-05
9	St Louis Testing charpy test report of heat 27728 @ -320F dated 1-10-05
10	St Louis Testing charpy test report of heat 27728 @ room temperature dated 1-10-05
11	Westmoreland tensile test of weld material @ -320F dated 4-28-05
12	St Louis Testing tensile test of weld material @room temperature dated 4-22-05
13	St Louis Testing tensile test of weld material @ -320F dated 4/6/05
14	St Louis Testing tensile test of weld material @ -320F dated 4/6/05
15	St Louis Testing tensile test of weld material @room temperature dated 2-28-05 – revised 3-2-05
16	Weld map list with mag perm results
17	Metal Tek final inspection report
18	RT reports – X-ray reader sheets from 1-19-05 & 3-19-05
18a	Radiographic Technique sheet
19	Heat treat chart – dated 12-28-04
19a	Heat treat chart stress relief dated 3-5-05
20	CA1219 – major welds dated 2-18-05
21	CA1226 – thru wall weld dated 2-18-05
22	CA1251 – second weld dated 3-22-05
22a	CA 1252 – welding – defects discovered during final LP dated 3/24/2005
22b	CA 1320 – Lack of test material Dated 7/5/2005
23	CA 1300 – test material- lack of ID dated 5-29-05
24	CA 1301 – test material lack of direction dated 5-29-05
24a	CA 1308 – CA for C & A shims out of chemistry
25	MTS C-1 Coil orig dated 12-14-04 incl supplemental routing card on welding dated 3-21-05 – with dated sign-offs
26	Shipping release from EIO

C-1 Specifications Rev 00 APPROVED 6/24/2005 ***See EIO Comments + comments added to calls

4.2.1 Verification of Chemical Composition

Constituent	Min. %	Max. %	Castings (Lads 1) 777.8 D/241	Castings (Lads 2) 777.0 D/242	Castings (Lads 3) 773.1 D/243	Chemical Analysis Average D/244	Weld Metals Head (Lads 4) WD10711 D/245
C	0.04	0.07	0.07	0.05	0.05	0.06	0.02
Mn	2.3	2.8	2.7	2.8	2.6	2.7	3.4
Si	--	0.5	0.5	0.6	0.4	0.5	0.2
Cr	18	18.5	18.2	18.1	19	18.1	17.7
Ni	13	13.5	13.1	13.2	13.1	13.1	15.1
Mo	2.1	2.5	2.2	2.2	2.3	2.2	3
P	--	0.015	0.002	0.001	0.001	0.001	0.03
S	--	0.015	0.004	0.004	0.005	0.005	0.02
N	0.24	0.28	0.26	0.26	0.26	0.26	0.15

Expected Documentation: Certified chemical analysis results. NOTE: due on EIO acceptance per BOW

4.2.2 Verification of Mechanical Properties of the Casting Alloy and Weld Material

Property	77K (-320F)			293K (RT)		
	Required	CI/CI	CI/CI	Required	CI/CI	CI/CI
Elongation	21 Min (14.8 Opn)	24.2 Dose ⁷	24.3 Dose ⁷	20 Min (13.79 Opn)	21.1 Dose ⁸	21.4 Dose ⁸
0.2% Yield Strength	72 ksi (496.1 Mpa)	98.7 Dose ⁷	97.8 Dose ⁷	34 ksi (234.4 Mpa)	33.3 Dose ⁸	34.1 Dose ⁸
Tensile Strength	95 ksi (655 Mpa)	174 Dose ⁷	157.4 Dose ⁷	78 ksi (537.8 Mpa)	82.5 Dose ⁸	83.1 Dose ⁸
Elongation	34%	62% Dose ⁷	41% Dose ⁷	36%	51.5% Dose ⁸	52.5% Dose ⁸
Charpy V-notch Energy	35 B-ft (47.4 J)	90 Dose ⁹	75 Dose ⁹	50 B-ft (67.8 J)	141 Dose ¹⁰	141 Dose ¹⁰

Expected Documentation: Certified test reports of actual results for each characteristic. NOTE: due on EIO acceptance per BOW

Weld Material

Property	77K (-320F)			293K (RT)		
	Required	Head (Lad 4) WD10711	Head (Lad 4) WD10711	Required	Head (Lad 4) WD10711	Head (Lad 4) WD10711
Elongation	21 Min (14.8 Opn)	27.1 Dose ¹¹	26.4 Dose ¹¹	20 Min (13.79 Opn)	23.5 Dose ¹²	23.1 Dose ¹²
0.2% Yield Strength	72 ksi (496.1 Mpa)	126.3 Dose ¹¹	109.5 Dose ¹¹	34 ksi (234.4 Mpa)	36.5 Dose ¹²	34.9 Dose ¹²
Tensile Strength	95 ksi (655 Mpa)	187.7 Dose ¹¹	166.9 Dose ¹¹	78 ksi (537.8 Mpa)	85 Dose ¹²	83.1 Dose ¹²
Elongation	34%	59% Dose ¹¹	34% Dose ¹¹	36%	53% Dose ¹²	54% Dose ¹²
Charpy V-notch Energy	35 B-ft (47.4 J)	51 Dose ¹³	48 Dose ¹³	50 B-ft (67.8 J)	102 Dose ¹⁴	111 Dose ¹⁴

Expected Documentation: Certified test reports of actual results for each characteristic. This includes a minimum of 3 samples for each CVM test. NOTE: due on EIO acceptance per BOW

4.2.3 Verification of the Electrical Properties of the Poloidal Break

Property	Required	Insitu	Insitu	Insitu	Insitu	Insitu
Max. Allowable Insulation (MI) Exposed to Air	1000 Ohm-ft 1000 Ohm-ft	1000 Ohm-ft	1000 Ohm-ft	1000 Ohm-ft	1000 Ohm-ft	1000 Ohm-ft

Expected Documentation: Certified test reports with actual results for each reading.

4.2.4 Verification of Surface Finish

Property	Required	Insitu	Insitu	Insitu	Insitu
Surface Finish RMS	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE

Expected Documentation: Certified inspection reports showing surface finish plus other notation that all are acceptable or notation that areas other than marked areas showing actual results and locations for out-of-tolerance conditions. Accepted "as-is" by PPL. Results were acceptable.

4.2.5 Verification of Relative Magnetic Permeability

Property	Required	Insitu	Insitu	Insitu	Insitu
Relative Magnetic Permeability	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE	Acceptable with NDE

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results.

4.2.5 Verification of Dimension and Tolerances

Required	Results - Acceptable or Acceptable with NDE's	Required	Results - Acceptable or Acceptable with NDE's
Cast surfaces shall be checked with measuring instruments to tolerance of ± 0.004" ± 0.002"		Machined surfaces shall be checked with measuring instruments to tolerance of ± 0.002" ± 0.001"	

Required	Results - Acceptable or Acceptable with NDE's
Final dimensions shall be checked with measuring instruments to tolerance of ± 0.002" ± 0.001"	

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results. Also, IRES or STEP file with points.

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results and inspection method details.

4.2.7.1 Visual Inspection

Required	Results - Acceptable or Acceptable with NDE's	Required	Results - Acceptable or Acceptable with NDE's
Cast surfaces shall be checked to free of ASTM A571 Level II defects.		Machined surfaces shall be checked to free of ASTM A571 Level II defects.	

Expected Documentation: Certified inspection reports identifying all noncompliant areas with descriptions and locations and indicating that all other areas are acceptable.

4.2.7.2 Liquid Penetrant Inspections

Required	Results - Acceptable or Acceptable with NDE's	Required	Results - Acceptable or Acceptable with NDE's
Cast surfaces shall be checked to free of ASTM A571 Level II defects.		Machined surfaces shall be checked to free of ASTM A571 Level II defects.	

Expected Documentation: Certified inspection reports per AS93.31 identifying all noncompliant areas with descriptions and locations and indicating that all other areas are acceptable.

4.2.8 Inspection for Internal Defects

Required	Results - Acceptable or Acceptable with NDE's	Required	Results - Acceptable or Acceptable with NDE's
Casting shall be inspected and verified to free of defects exceeding ABS 90-4 Standard High Stress areas which shall not contain defects greater than 0.100" in length and 0.050" in width.		Machined High Stress areas shall be inspected and verified to free of defects greater than 0.100" in length and 0.050" in width.	

Expected Documentation: IPI4 & SP64 compliant RT reports, technique sheets, and radiographs.

Additional Documentation required per NCSX ROW 141-02

- Material certificate
- Heat treating charts
- Welding procedure and procedure qualification test reports
- Compendium of material reports including the reports of each MCAF (PRO-E and IRES format) including the location of materials as required in the Product Specification for the Material Call
- Welding Procedure Specifications (WPS) per NCSX-SP-REC-141-02-01 and in 3.3.2.2 - F502060
- Compendium of process sheets
- Part print specifications for Special Processes (Non-Constructive Examination, welding, etc.)
- Special Shipping Headers

C-1 Doc Package Document A1

6-24-05 Comments

Nancy Horton, EIO Program Manager

- a) Currently Approved C-1 Spec Spreadsheet contains data from Metal Tek.
- b) C-1 Spec Spreadsheet will be updated with data from the machine shop, and a revised spreadsheet will be reviewed and approved.
- c) Additional documentation required per NCSX-SOW-141-02 may not be complete as of this submission. All data will be forwarded with the final data package accompanying C-1 to PPPL.
- d) Draft Version of the MTK spreadsheet dated 6-20-05 which was posted to EIO ftp site has been superceded by the Approved Version dated 6-24-05.
- e) Previous copy of the draft version is being maintained in this spreadsheet under tab entitled "Draft C-1 Spec"

Peter Djordjevic, EIO QA Manager

New test data has been submitted showing actual Mn content - Please see document 5

6-20-05 Comments

Peter Djordjevic, EIO QA Manager

#1 The specifications have been reviewed and the following items are being brought to your attention.

Chemical composition

Ladle #2 Si at .5 the max being .5 (Actual pour 3 ladles, #1-#2-#3)

Per specification ASTM A703 this is allowable. Per note 5.1.1 if there exists a significant variation in heat or cast size a weighted average SHALL be used. In this particular case multiple heats are being utilized from furnaces that vary significantly in weight, and poured into the three ladles. A703 5.1&5.1.1 attached.

From a reporting standpoint the weighted average is to be supplied, in this case all chemistries have been supplied.

Item 3.9 per PPPL quality notes dated 5-13-05 (Re test for 33.3 yield) 3 Retests are included on the spreadsheet.

#2 Chemistry weld material. Chemistry typicals were supplied to PPPL previously and I would just like to add

that MN (manganese) will be re tested as MetalTek's current spectrometer can not read

MN > (greater than) 2.6. The channel for the spectrometer will be updated shortly.

Updated - 6/24/05 - new test data has been submitted showing actual Mn content - Please see document 5

Weld rod chemistries supplied by the manufacturer are typicals and a close match to the casting alloy itself.

Variances in some of the other elements exist such as Carbon min .04 tested .02, Chromium min 18% max 18.5% tested 19.5 % & 17.7%, Nickel min 13% max 13.5% tested 15.1 & 16.2, Molybdenum min 2.1% max 2.5% tested 3% and 2.8% Phosphorus .015 max tested .03% and .02%, Sulfur .015 max tested .03, Nitrogen min .24% max .28%.

From a mechanical standpoint all weld material has either met or exceeded all specifications for strength.

NOTE: See EIO notes on sheet 2

6/24/2005

See C-1 Doc Documents

4.1.1 Verification of Chemical Composition

Constituent	Min. %	Max. %	Casting Ladle 1 27728 Doc#1	Casting Ladle 2	Casting Ladle 3	Casting Average
C	0.04	0.07	0.07			
Mn	2.3	2.8	2.7			
Si	--	0.5	0.5			
Al	18	18.5	18.2			
Fe	13	13.5	13.1			
Mg	2.1	2.5	2.2			
P	--	0.015	0.002			
S	--	0.015	0.004			
N	0.24	0.28	0.26			

Expected Documentation: Certified chemical analysis results. NOTE: due on BIO acceptance per SOW.

4.2.2 Verification of Mechanical Properties of the Casting Alloy and Weld Material

Property	Required	77K (-320F)			203K (RT)			Result
		CL11	CL12	CL13	CL11	CL12	CL13	
Elastic Modulus	21 Min (144.4 Gpsi)	24.3	24.3	24.3	20.5	21.1	20.1	24.4
0.2% Yield Strength	72 ksi (496.4 Mpa)	98.7	97.8	98.7	84.8	83.3	87.3	104
Tensile Strength	95 ksi (655 Mpa)	172	167.4	171.2	82.5	83.9	83.1	84.3
Elongation	3.2%	6.2%	4.8%	6.1%	3.5%	3.9%	3.5%	3.5%
Charpy V-notch Energy (47.4 J)	35 ft. lbs (47.4 J)	99	75	68	142	141	143	143

Expected Documentation: Certified test reports of actual results for each characteristic. NOTE: due on BIO acceptance per SOW.

4.2.3 Verification of the Electrical Properties of the Poloidal Break

Property	Required	77K (-320F)			203K (RT)			Property	Required	Result
		Ball1	Ball2	Ball3	Ball1	Ball2	Ball3			
Dielectric Insulation to Each Ball @ 100VDC	>500 kohms				20 Mohm (1.57 p Gpa)			Insulation to All Balls (together)	>500 kohms @ 100VDC	

Expected Documentation: Certified test reports with actual results for each reading.

4.2.4 Verification of Surface Finish

Required	Results - Acceptable or Acceptable with NACE
All machined surfaces must have a RMS (root mean square) surface finish <125 μ inches	

Expected Documentation: Certified inspection reports showing surfaces checked plus either notation that all are acceptable or notation that areas other than marked areas showing actual results and locations for out-of-tolerance conditions. Accepted "as-is" by PPPL, results were acceptable.

4.2.5 Verification of Relative Magnetic Permeability

Required	Results - Acceptable or Acceptable with NACE	Required	Results - Acceptable or Acceptable with NACE
Machined surfaces must be checked at a minimum of 1 point per every 2 sq. in. and magnetic permeability shall not exceed 1.02	Acceptable Doc#16	Machined surfaces shall be checked on a 2 x 2" grid and magnetic permeability shall not exceed 1.02	Acceptable Doc#17

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results.

4.2.6 Verification of Dimensions and Tolerances

Required	Results - Acceptable or Acceptable with NCR's	Required	Results - Acceptable or Acceptable with NCR's
Cast surfaces shall be checked with measurements taken to approximate a 4" x 4" grid.		Cast surfaces shall be checked with measurements taken to approximate a 4" x 4" grid.	

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results. Also, IGES or STEP file with points.

Required	Results - Acceptable or Acceptable with NCR's
Features such as hole parts, etc. shall be verified per standard machine shop practices	

Expected Documentation: Certified inspection reports showing surface map (grid) of check points with indication of acceptability or actual results and inspection method details.

4.2.7.1 Visual Inspection

Required	Results - Acceptable or Acceptable with NCR's	Required	Results - Acceptable or Acceptable with NCR's
Cast surfaces shall be verified to be free of ASTM A82 Level II defects.		Machined surfaces shall be verified to be free of ASTM A82 Level II defects.	

Expected Documentation: Certified inspection reports identifying all noncompliant areas with descriptions and locations and indicating that all other areas are acceptable.

4.2.7.2 Liquid Penetrant Inspection

Required	Results - Acceptable or Acceptable with NCR's	Required	Results - Acceptable or Acceptable with NCR's
Cast surfaces shall be verified to be free of ASTM A93 Level II defects.		Machined surfaces shall be verified to be free of ASTM A93 Level II defects.	

Expected Documentation: Certified inspection reports per A93 S1 identifying all noncompliant areas with descriptions and locations and indicating that all other areas are acceptable.

4.2.8 Inspection for Internal Defects

Required	Results - Acceptable or Acceptable with NCR's	Required	Results - Acceptable or Acceptable with NCR's
Casting shall be radiographed and verified to be free of defects exceeding AWS SP-34 standard, except defined High Stress areas which shall not contain defects greater than 0.100" in base of tee and 0.050" in web of tee.		Machined High Stress areas shall be radiographed and verified to be free of defects greater than 0.100" in base of tee and 0.050" in web of tee.	

Expected Documentation: B14 & SP-54 compliant RT reports, technique sheets, and radiographs.

6/24/2005

- a) Currently Approved C-1 Shim Spreadsheet contains data from Metal Tek.
- b) C-1 Shim Spreadsheet will be updated with data from the machine shop, as appropriate and a revised spreadsheet will be reviewed and approved.
- c) Draft Version of the MTK spreadsheet dated 6-20-05 which was posted to EIO ftp site has been superceded by the Approved Version dated 6-24-05.
- d) Previous copy of the draft version is being maintained in this spreadsheet under tab entitled "Draft C-1 Shim"

6/20/2005

Comments from Peter Djordjevich, EIO QA Manager

The following have been reviewed and are attached.

- #1 Shim C1 certification of conformance
- #2 Chemical and physicals per PPPL spec sheet
- #3 Dimensional sketch
- #4 MTS original
- #5 Shop traveler completed with sign off
- #6 RT reader and technique sheet.

All seems to be in order with no out of tolerance conditions.

Carondelet Division

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

Certificate of Conformance

C-1 Doc Package
Document A3

ENERGY INDUSTRIES OF OHIO

Order Number PPPL-FP-LTS-2

Pattern SE-141-073 COIL C SHIM

Alloy CF8MNMnMOD

Revised Date 4/29/2005

Cert Number

S73220-1

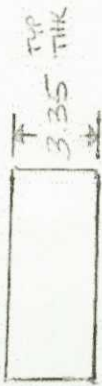
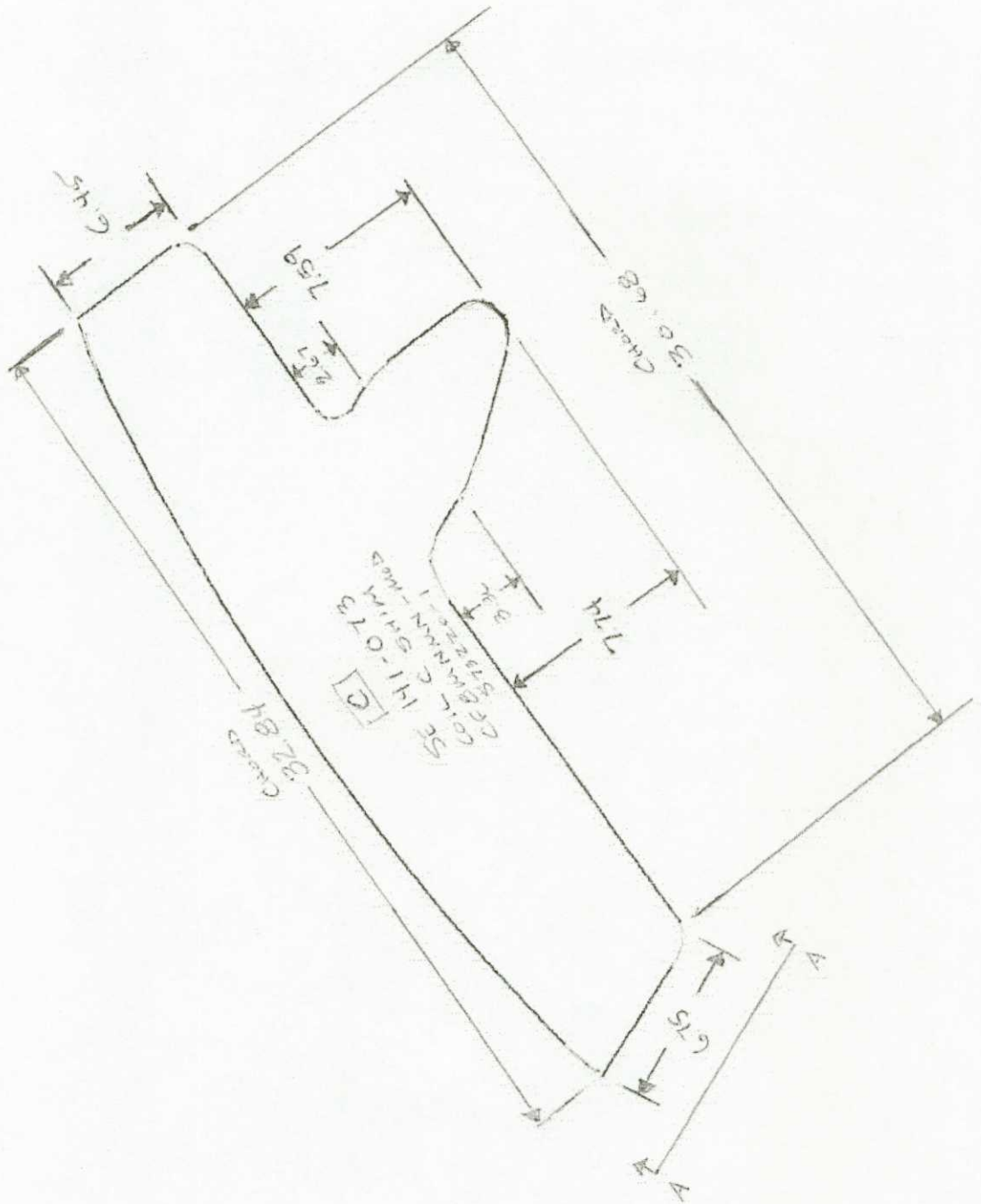
A shim for C-1 coil was poured from heat number 27728. No weld repairs were necessary. No testing for mechanical properties was performed.

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

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

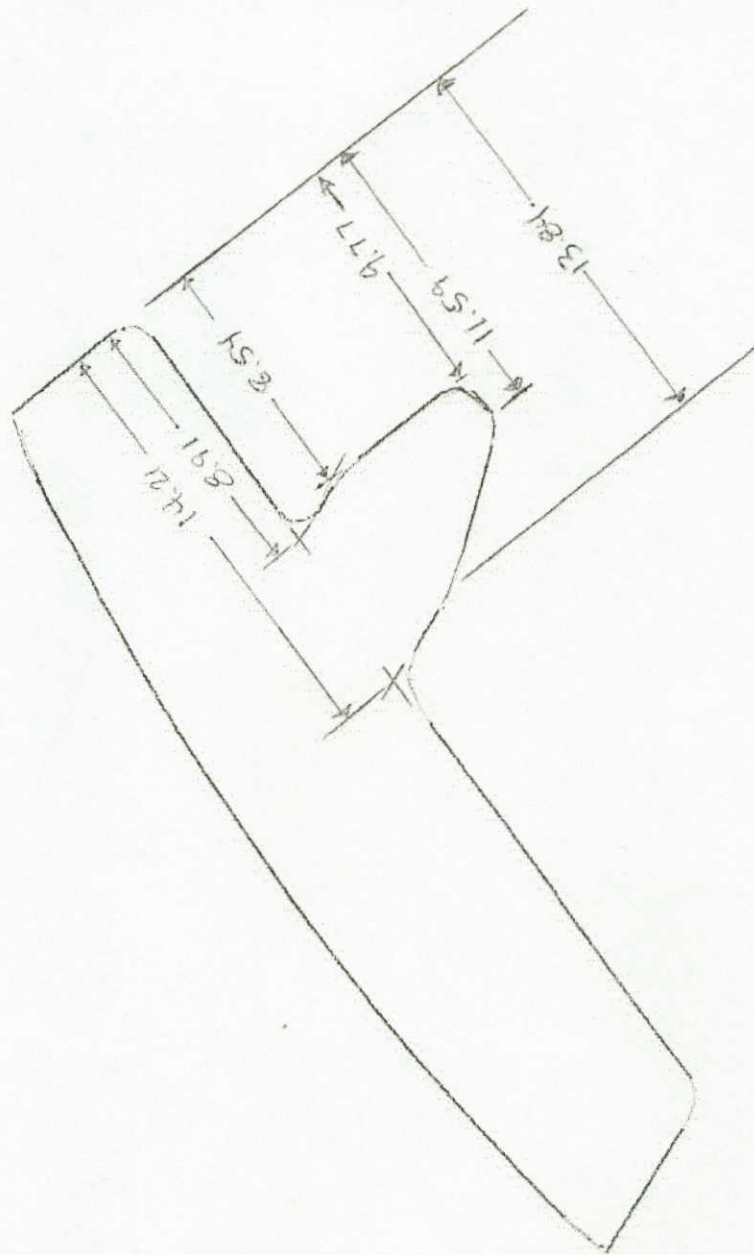
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SECT A-A

SHIM SE 141-073
SKETCH 03/3/05
Kuni Hori



PAGE 2 OF 2
SHIM SE 141-073
SKETCH 03/31/05

Energy Industries of Ohio
Manufacturing and Test Sequence (MTS) Coill C Shim-1

CO# 40851, Pattern SE 141-073 S73220-1 Dated December 14, 2004 Revision: Original Page 6 of 6 Dated Issued: 12-14-04

420	GRIND GCIII SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 420. REPEAT UNTILL COMPLIANCE IS ACHIEVED.		NA	
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEP. EIO NOTIFIED ON <u>3/23/05</u> DCMA NOTIFIED ON <u>3/23/05</u>		Q ENG OR QA MGR	<u>Chk</u>
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" BY 6" GRID. REPORT RESULTS. USE A 6" SQUARE BLOCK TO INDICATE TEST LOCATIONS AND RECORD RESULTS. COMPLIANT AREAS WILL NOT BE MARKED. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. OK CHECK HERE _____ AND GO TO STEP 470. IF REJECTED CHECK HERE _____			<u>3/30/05 Chk</u>
440	GRIND GCIII 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.			<u>Chk</u>
470	AUDIT REVIEW	PROCESS DOCUMENT TO PROGRAM MANAGER FOR COMPLIANCE AUDIT.			<u>3/31/05</u>
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)			<u>3/31/05</u>
NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON <u>3/30</u> BY <u>Chk</u> RECEIVED RELEASE FROM EIO ON <u>3/30/05</u>		Q ENG OR QA MGR	<u>Chk</u>
490	PACK AND SHIP	PACKAGE, AND SHIP TO MAJOR TOOL.			<u>3/31/05</u>
1000	REVISION HISTORY	ORIGINAL 12-14-04.		Shipped	
				CARUUD	

Energy Industries of Ohio
Manufacturing and Test Sequence (MTS) Coill C Shim-1

CO# 40851, Pattern SE 141-073 S73220-1 Dated December 14, 2004 Revision: Original Page 5 of 6 Dated Issued: 12-14-04



330	FINAL L.P. CQP 0300 REV 10	MUST BE PERFORMED BY LEVEL II in VT. FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA- LEVEL I 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 _____	LP - LEVEL II KHA 3-30-05
340	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION.	N/A CA-3-30-05
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
Manufacturing and Test Sequence (MTS) Coill C Shim-1
CO# 40851, Pattern SE 141-073 S73220-1 Dated December 14, 2004 Revision: Original Page 4 of 6 Dated Issued: 12-14-04

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	NA
	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.		NA
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON 7/23/05 DCMA NOTIFIED ON 7/23/05	Q ENG OR QA MGR	NA
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 _____ IF REJECTED CHECK HERE _____ MARK AND REPAIR AT STEP 340.	VT - LEVEL 1	3/30/04 R. Garcia-Soria

Energy Industries of Ohio
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 X-RAY PER TECHNIQUE: To be determined. USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION.

170	CAP 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 300. 190 thru to 310 OK	RT - LEVEL II RBK	3-10-05
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 300. 190 thru to 310 OK	RT - LEVEL II RBK	3-10-05
190	LAYOUT	INSPECT CASTING TO VERIFY DIMENSIONS. THIS MAY BE PERFORMED BEFORE OR AFTER STEP 180. NO BIP AVAILABLE MADE REVISION SCUTCHIAH (ENGINEER ONLY)	RBK	3/31/05
200	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	NA	
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	
220	WELD MAP	MAP ALL WELDS WITH DIGITAL PHOTO/MAPS. SERIALIZE DEFECTS ON CASTING, USE SCAI.F 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-CF8MMN MOD REV 1 FOR WELDS < 8" - WPS 15-GMAW-CF8MMN MOD REV 2		
250	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.		

Handwritten notes:
 12/20/04
 3/31/05
 RBK

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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.	MA B.C 1-09-05
100	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	M1W 1-7-05
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 <input checked="" type="checkbox"/> MARK AND REPAIR AT STEP 130.	VT - LEVEL IV Pmkh 1-7-05
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LP STEP. EIO NOTIFIED ON 1/3/05 DCMA NOTIFIED ON 1/3/05 <i>again on 1/4/05 for as early as 1/7/05</i>	Q ENG OR QA MGR <i>Chad</i>
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 <input checked="" type="checkbox"/> MARK AND REPAIR AT STEP 130.	LP - LEVEL II CQP 1/7/05
130	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION. DEFECTS GROUND ON ONLY NO WELDING REQUIRED	CQA 3/9/05
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- I-LEVEL 2.	LP LEVEL I N/A ↓
150	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	M1W 3/9/05
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.	N/A ↓
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF XRAY AND LAYOUT STEPS. EIO NOTIFIED ON 3/9/05 DCMA NOTIFIED ON 3/9/05	Q ENG OR QA MGR Chad

Chad
1/7/05
1/7/05

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OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON 12/15/04 FROM <u>Patrick</u> SIGNED QUALITY MANAGER	<u>ADR</u>	12/15/04
20	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, FOUNDRY MARK, TO THE PATTERN.	<u>ADR</u>	12/17
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>ADR</u>	12-17-04
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>2250</u> CASTING POURED AT: <u>5:30 AM</u> DATE: <u>12/19/04</u> HEAT #'S: <u>2728, 2729, 2730, 2731</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>JG</u> Analyzed: <u>J. Galetke</u> Date: <u>12-19-04</u>	<u>ADR</u>	
50	MELT SOP 0800R2	SHAKEOUT	<u>ADR</u>	12-21-04
60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.	<u>ZAB</u>	12-21-04
70	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. With C-1 Coil. 2050° HOLD	<u>DLS</u>	12/28/04
80	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 480.	<u>WAT</u>	12/28/04

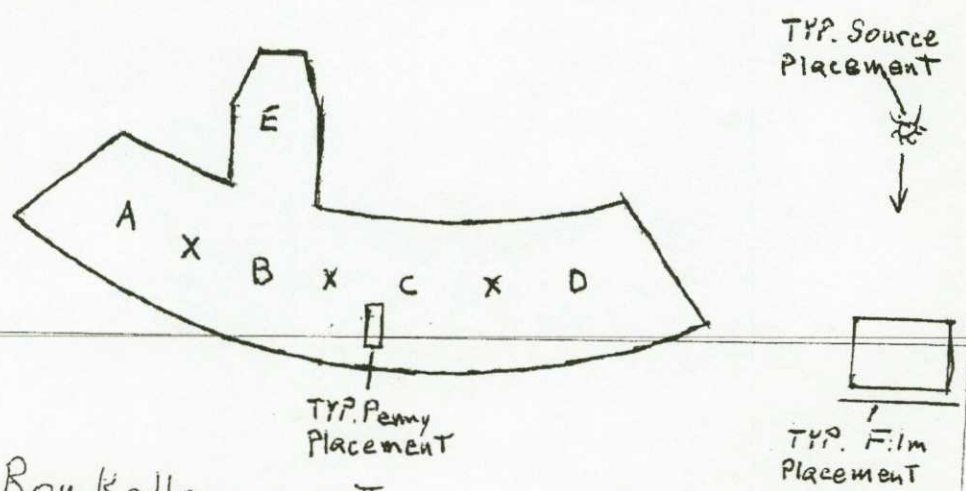
RADIOGRAPHIC STANDARD SHOOTING SKETCH

Customer <u>Energy Industries of Ohio</u>	Pattern Number <u>SE-141-073</u>
Material <u>CF8MNMN-MOD</u>	Traceability Number <u>M573220</u>
Film Manufacturer <u>FUJI</u>	Source Number <u>CO60 24.7 CI</u>
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	E
Thickness (IN.)	<u>3 3/8"</u>	→	→	→	→
S/F Distance (IN.)	<u>24"</u>	→	→	→	→
Penetrameter	<u>50</u>	→	→	→	→
Time (MIN.)	<u>calculate</u>	→	→	→	→
Focal Spot (IN.)	<u>0.1</u>	→	→	→	→
Film Size (IN.)	<u>14X17</u>	→	→	→	→
Screen Size (Pb) Front/Back	<u>.01</u>	→	→	→	→
S.W.E./D.W.E.	<u>SWE</u>	→	→	→	→
S.W.V./D.W.V.	<u>SWV</u>	→	→	→	→
Film Type	<u>80</u>	→	→	→	→
Acceptance Standard	<u>E186</u>	→	→	→	→
Severity Level	<u>III</u>	→	→	→	→

Shooting Sketch (Use Additional Pages as Needed)

use Spec. MSS-SP-54



Technique Prepared By: Roy Kelley
Technique Approved By: [Signature]

Level: II
Level: III

Date: 3-10-05
Date: 3-10-05

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <i>Energy Industries of Ohio</i>		PURCHASE ORDER NUMBER <i>28030003</i>			DATE <i>3-9-05</i>		CONTROL NO. <i>40851</i>		PAGE <i>1 of 1</i>												
PART NO. <i>SE-141-073</i>		SPECIFICATION <i>MSS-SP-54</i>			CLASS <i>See Spec</i>		TOTAL PIECES <i>1</i>		PIECES ACCEPTED <i>1</i>												
RADIOGRAPHED BY: <i>Moly</i>				INTERPRETED BY: <i>Moly</i>			ASNT LEVEL <i>II</i>														
FILM TYPE <i>FUJI 80</i>		MATERIAL <i>CF8M N/A N-M2d</i>			ISOTOPE <i>IRIDIUM 192</i> <i>COBALT 60</i> ✓			CODE <i>ASTM E94</i> ✓ <i>ASME</i> <i>MIL-STD-453</i>													
<i>M573220</i>		VIEW		ACCEPT		REJECT		SHRINK		INCLUSION		POROSITY		LINER		SURFACE		LOF/LOP		COMMENTS	
<i>RT-1</i>		<i>A</i>		<i>50</i>		/															
		<i>B</i>				/															
		<i>C</i>				/															
		<i>D</i>				/															
		<i>E</i>				/															

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
270	REPEAT TEST MAG PERM SOP MAG PERM 100, REV 1	REPEAT STEPS 220 TO 260 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS 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 _____	QA ENG.
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.	
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
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 _____ IF REJECTED CHECK HERE _____ MARK AND REPAIR AT STEP 340.	VT - LEVEL II

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
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 AND SEND TO STEP 310. REJECTED CHECK HERE MARK UP DEFECTS AND SEND THE CASTING TO STEP 200.	RT - LEVEL II
190	LAYOUT	INSPECT CASTING TO VERIFY DIMENSIONS. THIS MAY BE PERFORMED BEFORE OR AFTER STEP 180. DIMENSIONED _____ DATE _____ RELEASED _____ (ENGINEER ONLY)	
200	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	
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
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.	

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.		
100	SAND BLAST BLAS SOP 0100R6	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.		
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	
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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OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON _____ FROM _____ SIGNED QUALITY MANAGER		
20	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, FOUNDRY MARK, TO THE PATTERN.		
30	MOLD MOLD SOP 0400 REV 8 CALIBRATION PER MOLD SOP 0900 REV 5 PREPARATION PER MOLD SOP 1100R2/1200R2/13 00R1 SAND TESTING PER MOLD SOP 1400R2/1500R3/16 00R2	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.		
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: _____ CASTING POURED AT: _____ DATE: _____ HEAT #': _____ ELAPSED POUR TIME: _____ KEEL BLOCKS POURED: _____ Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: _____ Analyzed: _____ Date: _____		
50	MELT SOP 0800R2	SHAKEOUT		
60	ARC RISE SOP 0100R1	REMOVE RISERS AS DIRECTED BY SUPERVISOR.		
70	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. With C-1 Coil.		
80	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 480.		

420	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 420. REPEAT UNTILL COMPLIANCE IS ACHIEVED.		
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____	Q ENG OR QA MGR	
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" BY 6" GRID. REPORT RESULTS. USE A 6" SQUARE BLOCK TO INDICATE TEST LOCATIONS AND RECORD RESULTS. COMPLIANT AREAS WILL NOT BE MARKED. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. OK CHECK HERE _____ AND GO TO STEP 470. IF REJECTED CHECK HERE _____		
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.		
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.		
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)		
NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO. SENT ON _____ BY _____ RECEIVED RELEASE FROM EIO ON _____	Q ENG OR QA MGR	
490	PACK AND SHIP	PACKAGE AND SHIP TO MAJOR TOOL.		
1000	REVISION HISTORY	ORIGINAL. 12-14-04.	CARUUD	

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330	FINAL L.P. CQP 0300 REV 10	MUST BE PERFORMED BY LEVEL II in VT. FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA- LEVEL I FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ WASH AND SEND TO STEP 410. IF REJECTED CHECK HERE _____	LP - LEVEL II
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.	

Carondelet Division

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Phone: 636-479-4499 - Fax: 636-479-3399

C-1 Doc Package
Document A-8

Certificate of Conformance

ENERGY INDUSTRIES OF OHIO

Order Number PPPL-FP-LTS-2

Pattern MCWF-C1

ASTM CF8MNMN MOD

Revised Date 7/21/2005

Cert Number

S73140-1

Coil C-1, certification number S73140-1 was poured from three ladles known as heat numbers 27728, 27730 and 27731. Heat 27728 is actually a ladle containing material from heats 27728 and 27729. Cast on test bars located in each of the three zones were used for testing purposes. Test reports from St Louis Testing use Heat number 27728 for all test bar samples. Test bars did not have zone identification. Corrective action number 1300 was issued to correct.

Weld repairs were made using approved procedures and Lincoln material LMN 44/55, lot number 3012668/82743.

A shim, certification number S73220-1, for C-1 coil was poured from heat number 27728. No weld repairs were necessary.

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

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

Superior Quality Engineered Metal Products

www.MetalTekInt.Com



C-1 Package
Document # 1

Carondelet Division

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Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2
Pattern Number MCWF-C1
CAF Metal Designation CF8MNMnMod
Material Spec CF8MNMnMOD
Ladle#1 Heat 27728

Cert Number S73140-1
Pour Date 12/19/2004

Revised 8/1/05

Element	Min	Actual	Max
C	0.04	0.07	0.07
MN	2.3	2.7	2.8
SI	0.0	0.5	0.5
CR	18.0	18.2	18.5
NI	13.0	13.1	13.5
MO	2.1	2.2	2.5
P*	0.0	----	0.015
S*	0.0	----	0.015
N	0.24	0.26	0.28

* Reported on weighted average MTR see Doc. #4.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

Superior Quality Engineered Metal Products

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C-1 Doc Package
Document # 2

Carondelet Division

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Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2
Pattern Number MCWF-C1
CAF Metal Designation CF8MNMnMod
Material Spec CF8MNMnMOD
Ladle#2 Heat 27730

Cert Number S73140-1
Pour Date 12/19/2004

Revised 8/1/05

Element	Min	Actual	Max
C	0.04	0.05	0.07
MN	2.3	2.8	2.8
SI	0.0	0.6	0.5
CR	18.0	18.1	18.5
NI	13.0	13.2	13.5
MO	2.1	2.2	2.5
P*	0.0	----	0.015
S*	0.0	----	0.015
N	0.24	0.25	0.28

* Reported on weighted average MTR see Doc. #4.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

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3

C-1 Doc Package
Document # 3

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Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2
Pattern Number MCWF-C1
CAF Metal Designation CF8MNMnMod
Material Spec CF8MNMnMOD
Ladle#3 Heat 27731

Cert Number S73140-1
Pour Date 12/19/2004

Revised 8/1/05

Element	Min	Actual	Max
C	0.04	0.05	0.07
MN	2.3	2.6	2.8
SI	0.0	0.4	0.5
CR	18.0	18	18.5
NI	13.0	13.1	13.5
MO	2.1	2.3	2.5
P*	0.0	----	0.015
S*	0.0	----	0.015
N	0.24	0.28	0.28

* Reported on weighted average MTR see Doc. #4.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager



4

C-1 Doc Package
Document # 4

Carondelet Division

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Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2
Pattern Number MCWF-C1
CAF Metal Designation CF8MNMnMod
Material Spec CF8MNMnMOD

Cert Number S73140-1
Pour Date 12/19/2004

Weighted average of 3 heats – 27728(32.4%), 27730(25.1%), 27731(42.5%) Total Weight 28779 lbs.

Revised 8/1/05

Element	Min	Actual	Max
C	0.04	0.06	0.07
MN	2.3	2.7	2.8
SI	0.0	0.5	0.5
CR	18.0	18.1	18.5
NI	13.0	13.1	13.5
MO	2.1	2.2	2.5
P*	0.0	0.018	0.015
S*	0.0	0.014	0.015
N	0.24	0.27*	0.28

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

*P is above the specification.

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

Superior Quality Engineered Metal Products

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5

C-1 Doc Package
Document # 5

Carondelet Division

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Phone: 636-479-4499 - Fax: 636-479-3399

Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2

Pattern Number MCWF-C1

Weld Material Batch 3012668/82743

Element	Actual
C	0.02
MN	7.3
SI	0.4
CR	19.5
NI	15.2
MO	3.0
P	0.03
S	0.03
N	0.17

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "CAR" or similar, written in a cursive style.

Charles A. Ruud
Quality Assurance Manager

Superior Quality Engineered Metal Products

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C-1 Doc Package
Document # 6

Carondelet Division

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Material Test Report

ENERGY INDUSTRIES OF OHIO

Purchase Order Number PPPL-FP-LTS-2

Pattern Number MCWF-C1

Weld Material Batch WO 19711

Cert Number S73140-1

Pour Date 12/19/2004

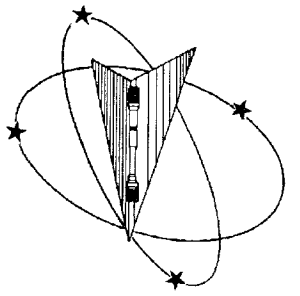
Element	Actual
C	0.02
MN	3.4
SI	0.2
CR	17.7
NI	16.2
MO	2.8
P	0.02
S	0.002
N	0.15

Respectfully Submitted,

Charles A. Ruud
Quality Assurance Manager

Superior Quality Engineered Metal Products

www.MetalTekInt.Com



Westmoreland Mechanical Testing & Research, Inc.
 P.O. Box 388
 Westmoreland Drive
 Youngstown, PA 15696-0388 U.S.A.
 Telephone: 724-537-3131 Fax: 724-537-3151
 Website: www.wmtr.com

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

CERTIFICATION

Section 1 of 1

WMT&R Report No. 5-25287
 WMT&R Quote No. QN250563
 Req No. 2767



621-01 & 621-02



Metatek 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

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: 0.0050 in./in./min., 0.0500 in./in./in.

MATERIAL: Metatek CF8MNMNMOD

CAST on Bars from C-1 coil *4/1/05*

DISPOSITION: Acceptable

Sample	Test-log Number	Temp. °F	UTS KSI	0.2% YS KSI	Elong %	RA %	Modulus MSI	Ult. Load LBS	0.2% YLD. LBS	Orig. Dia. (in.)	Final Dia. (in.)	4D Orig GL (in.)	4D Final GL (in.)	Orig. Area (Sq. In.)	Machine Number	A/U/R
Tensile-2	B67872	-320	172.0	98.7	62	68	24.2	16590	9522	0.3504	0.1968	1.40	2.27	0.09643131	M9	A
Tensile-4E	B67873	-320	167.4	97.8	44	36	23.3	16120	9416	0.3502	0.2805	1.40	2.02	0.09632126	M9	A
Tensile-5A	B67874	-320	171.2	98.7	61	64	22.5	16450	9481	0.3498	0.2090	1.40	2.25	0.09610135	M9	A

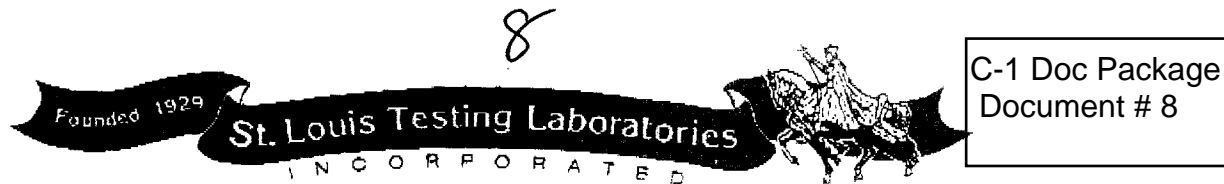
A/U/R: A=ACCEPTABLE, U=UNACCEPTABLE, R=REPORT

C-1 Doc Package Document # 7

KNOWINGLY OR WILLFULLY FALSIFYING OR CONCEALING A MATERIAL FACT ON THIS FORM OR MAKING FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS HEREIN COULD 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.

[Signature]
 Roy E. Star/Matt Wojton
 Technical Services Manager / Tensile Supervisor
 April 19, 2005

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



C-1 Doc Package
Document # 8

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

March 22, 2005
Lab No. 05P-0864
P.O. No. 12516
Page 1 of 2
(Corrected Report 6/15/05)

Attention: **Chuck Ruud**

REPORT OF MECHANICAL TESTS

SAMPLE ID: 3 EA., HT# 27728 Alloy CF8MNMNMOD +70°F

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Modulus of Elasticity	Elongation (2.0" Gage Length)	
							in.	%
27728-1	.1948	.0683	64.9	34,600	82,500	21.3	1.06	53.0
27728-2	.1886	.0697	63.0	34,800	85,100	20.5	1.03	51.5
27728-3	.1924	.0683	64.5	33,300	83,900	21.1	1.00	50.0

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.

[Signature]
Ken Schmitz, Director
Materials Testing



Certificate No. 0307-11
Certificate No. 0307-02

AN OFFICIAL COPY OF TEST REPORT WILL BE PROVIDED BY THIS LABORATORY ON REQUEST. DO NOT REPRODUCE.
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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

March 22, 2005
Lab No. 05P-0864
P.O. No. 12516
Page 2 of 2
(Corrected Report 6/15/05)

Attention: **Chuck Ruud**

REPORT OF MECHANICAL TESTS

SAMPLE ID: HT# 28597 & HT# 28679

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
						in.	%
28597	.1886	.1140	39.5	54,600	84,100	0.48	24.0
28679	.1863	.1029	44.7	57,400	82,900	0.46	23.0

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.

*Unrelated
to project
C/R 4/14/05*

[Signature]
Kar Schmitz, Director
Materials Testing



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

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

May 12, 2005
Lab No. 05P-1439
P.O. No. 12516
Page 1 of 1

Attention: **Chuck Ruud**

REPORT OF MECHANICAL TESTS

SAMPLE ID: HT# 27728

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Modulus MSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
							in.	%
27728	.1948	.0651	66.6	37,300	28.1	83,100	1.1	55.0

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/tw

Karl Schmitz, Director
Materials Testing



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Certificate No. 0397-02

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

June 1, 2005
Lab No. 05P-1658
P.O. No. 12516
Page 1 of 1

May 31

Attention: Chuck Ruud

REPORT OF MECHANICAL TESTS

SAMPLE ID: HT# 27728, 29511, 29497, 29563, 29560, 29553

Retest of material

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)		Modulus of Elasticity (MSI)
						in.	%	
27728	.1886	.0830	56.0	36400	83100	1.05	52.5	24.4
27728b	.1886	.0908	51.9	34100	84300	1.00	50.0	23.4

OK F
OK P F
OK F
OK
OK

Sample ID	Original Area Sq. Inches	Reduced Area Sq. inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)	
						in.	%
29511	.1995	.1878	05.9	40600	60400	0.12	06.0
29497	.1932	.1772	08.3	35700	62100	0.18	09.0
29563	.1847	.1840	00.4	37700	37900	0.04	02.0
29560	.1863	.1728	07.3	47500	69500	0.24	12.0
29553	.1886	.1765	06.4	50100	72700	0.16	08.0

Round, reduced section tensiles

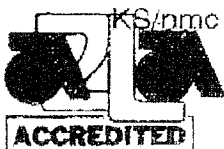
Yield taken at .2% offset

Tested in accordance with ASTM A 370-03a

Identification of tested specimens provided by the client.

unrelated to project
6/24/05

Karl Schmitz, Director
Materials Testing



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

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Pevsley, MO 63070

January 10, 2005
Lab No. 05P-0008
P.O. No. 12516
Page 3 of 3

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): HT# 27728, Alloy CF8 MnMN-MOD
SPECIFICATION: ASTM A 370-03a
SPECIMEN TYPE: "A" Vee Notch
SPECIMEN SIZE: 10 mm x 10 mm
TEMPERATURE OF TEST: -320°F

RESULTS:

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-1	98	0.051	50
27728-2	91	0.060	50
27728-3	80	0.045	50
Average	90	0.052	50
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-4	77	0.038	40
27728-5	86	0.055	50
27728-6	61	0.032	40
Average	75	0.042	43
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-7	64	0.041	50
27728-8	67	0.043	50
27728-9	72	0.030	40
Average	68	0.038	47

on chart

Identification of tested specimens provided by client.

Karl Schmitz
Karl Schmitz, Director
Materials Testing



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

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Pevsley, MO 63070

January 10, 2005
Lab No. 05P-0008
P.O. No. 12516
Page 2 of 3

Attention: **Chuck Ruud**

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): HT# 27728, Alloy CF8 MnMN-MOD
SPECIFICATION: ASTM A 370-03a
SPECIMEN TYPE: "A" Vee Notch
SPECIMEN SIZE: 10 mm x 10 mm
TEMPERATURE OF TEST: +70°F

RESULTS:

BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-1	139	0.097	100
27728-2	119	0.081	100
27728-3	167	0.091	100
Average	142	0.090	100
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-4	170	0.107	100
27728-5	124	0.071	100
27728-6	129	0.060	100
Average	141	0.079	100
BASE METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
27728-7	141	0.103	100
27728-8	137	0.052	100
27728-9	150	0.114	100
Average	143	0.090	100

on chart

Identification of tested specimens provided by client.

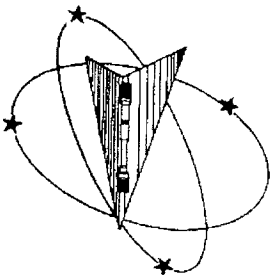
[Signature]
Karl Schmitz, Director
Materials Testing



Certificate No. 0317-01
Certificate No. 0317-02

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SEE REVERSE FOR CONDITIONS





April 28, 2005

Metiatek International
The Carondelet Division
8600 Commercial Blvd.
L-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

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

SOAK TIME: 5 Minutes

SPEED OF TESTING: 0.0050 in./min./min., 0.0500 in./min./in.

MATERIAL: 316 S/S

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
Bar#1 (Lot#3012668/82743)	B75123	-320	187.7	126.3	33	22	27.1	37740	25394	0.5060	0.4471	2.00	2.65	0.20109020	M9	A
Bar#2 (Batch#W019711)	B75124	-320	166.9	109.5	34	27	26.4	33500	21990	0.5056	0.4315	2.00	2.67	0.20077240	M9	A

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

D. J. [Signature]

C-1 Doc Package
Document # 11

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

CERTIFICATION

Section 1 of 1

WMT&R Report No. 5-26097
P.O. No. 19386R9
WMT&R Quote No. QN250563
Req. No. 4315



[Signature]
Roy E. Starr
Technical Services Manager
Tensile Supervisor
4-28-05

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12



C-1 Doc Package
Document # 12

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METALTEK INTERNATIONAL
8600 Commercial Blvd.
Pevely, MO 63070

April 22, 2005
Lab No. 05P-1170
P.O. No. 12516
Page 1 of 1
(revised 6/15/05)

Attention: **Chuck Ruud**

REPORT OF MECHANICAL TESTS

SAMPLE ID: 1 Ea., Sample Bar #1, Lot 3012668/82743
1 Ea., Sample Bar #2, Batch # WO19711

Sample ID	Original Area Sq. Inches	Reduced Area Sq. Inches	Reduction in Area %	Yield Strength PSI	Tensile Strength PSI	Elongation (2.0" Gage Length)		Elastic Modulus
						in.	%	
#1	.1901	.0855	55.0	56,500	85,000	0.80	55.0	25.5 MSI
#2	.1917	.0881	54.0	63,900	98,100	0.88	54.0	23.1 MSI

Round, reduced section all weld room temperature tensiles

Yield taken at .2% offset

Tested in accordance with ASTM A 370

Identification of tested specimens provided by the client

KS/tw

Karl Schmitz
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. DO NOT REPRODUCE.
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April 8, 2005
Lab No. 05P-1007
P.O. No. 12516
Page 1 of 2

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): 1 Ea., Material (1) LNM4455, Lot # 3012668/82743
SPECIFICATION: ASTM A 370-03a
SPECIMEN TYPE: "A" Vee Notch
SPECIMEN SIZE: 10 mm x 10 mm
TEMPERATURE OF TEST: -320°F

ALL WELD METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
LNM4455-1	52	0.027	40
LNM4455-2	50	0.022	40
LNM4455-3	50	0.016	20
Average	51	0.022	33

Identification of tested specimen provided by client.

KS/tw

[Signature]
Ken Schmitz, Director
Materials Testing



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

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April 6, 2005
Lab No. 05P-1007
P.O. No. 12516
Page 2 of 2

Attention: Chuck Ruud

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID): (2) Metrode B316NF, Batch # WO19711
SPECIFICATION: ASTM A 370-03a
SPECIMEN TYPE: "A" Vee Notch
SPECIMEN SIZE: 10 mm x 10 mm
TEMPERATURE OF TEST: -320°F

ALL WELD METAL	FOOT LBS.	LATERAL EXPANSION	% SHEAR
B316NF-1	48	0.030	30
B316NF-2	52	0.027	30
B316NF-3	44	0.027	30
Average	48	0.028	30

Identification of tested specimen provided by client.

KS/tw

Karl Schmitz, Director
Materials Testing



Certificate No. 0387-01
Certificate No. 0387-02

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February 28, 2005
Lab No. 05P-0554
P.O. No. 12516
Page 1 of 2
(Revised Report 3-2-05)

Attention: Rick Suria

REPORT OF CHARPY IMPACT TEST

MATERIAL (SAMPLE ID):

Electrode LNM 4455 & B316NF

301 26682743

SPECIFICATION:

ASTM A 370-03a

L W01974 Cste 6/14/05

SPECIMEN TYPE:

"A" Vee Notch, All Weld

SPECIMEN SIZE:

10 mm x 10 mm

TEMPERATURE OF TEST:

+70°F

RESULTS:

ALL WELD	JOULES	FOOT LBS.	LATERAL EXPANSION	% SHEAR
LNM 4455-7	149	110	0.055	50
LNM 4455-8	130	96	0.050	50
LNM 4455-9	134	99	0.051	50
Average	138	102	0.052	50
ALL WELD	JOULES	FOOT LBS.	LATERAL EXPANSION	% SHEAR
B316NF-7	155	114	0.056	50
B316NF-8	151	111	0.053	50
B316NF-9	146	108	0.052	50
Average	151	111	0.054	50

Identification of tested specimen provided by client.

Karl Schmitz
Karl Schmitz, Director
Materials Testing

KS/clm



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

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February 28, 2005
Lab No. 05P-0554
P.O. No. 12516
Page 2 of 2
(Revised Report 3-2-05)

Attention: Rick Suria

PROCEDURE QUALIFICATION

WELDER: TERRY STANFIELD
MATERIAL: 1" CF8MnMn, Mod
SPECIFICATION: ASME IX
ELECTRODE: B316NF
PROCESS: SMAW

REDUCED SECTION TENSILE

SAMPLE ID	WIDTH INCHES	THICKNESS INCHES	AREA SQ. INCHES	ACTUAL LBS.	TENSILE STRENGTH PSI	FRACTURE
TS-2	.750	1.000	.7500	70,000	93,300	Weld Metal
TS-5	.750	1.010	.7575	71,000	93,700	Weld Metal

GUIDED BEND TEST

SAMPLE ID	BEND	RESULTS
TS-1	Side	Acceptable, No Discontinuities
TS-3	Side	Acceptable, No Discontinuities
TS-4	Side	Acceptable, No Discontinuities
TS-6	Side	Acceptable, No Discontinuities

KS/clm

Karl Schmitz
Karl Schmitz, Director
Materials Testing
CWI No. 92120161



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

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MEMBER
ACIL



Doc 16

only welds 7/10²/10
submitted 2/19/05
to EIO.
CJR

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
1	1	3	1 1/2	3/16	NO	OK
2	1	5 1/2	2	1/4	NO	OK
3	1	9	4 1/2	1/4	NO	OK
4	1	12	4	1/4	NO	OK
5	1	2	1	1/4	NO	OK
6	1	2	1	1/4	NO	OK
7	1	3 7/8	3	3/16	NO	OK
8	1	1	1	1/4	NO	OK
9	1	3	2	1/4	NO	OK
10	1	2 3/4	1 3/4	1/4	NO	OK
11	1	1 3/4	1	1/4	NO	OK
12	1	2	1	1/4	NO	OK
13	2	4	3	1/4	NO	OK
14	2	3	1 1/2	1/4	NO	OK
15	2	2	1 1/2	1/4	NO	OK
16	2	2	1	1/4	NO	OK
17	2	1 3/4	1	1/4	NO	OK
18	2	2	1	1/4	NO	OK
19	2	2	1 1/4	1/4	NO	OK
20	2	2	1 1/2	1/4	NO	OK
21	2	1 1/2	1 1/2	1/4	NO	OK
22	58	2	1	1/4	NO	OK
23	3	2	2	1/2	NO	OK
24	3	2	1	3/16	NO	OK
25	3	4	3	3/4	NO YES	OK
26	3	2	3 1/2	3/8	NO	OK
27	3	2	1	1/2	NO	OK
28	3	2 1/2	1 1/2	1/4	NO	OK
29	4	2 1/2	1 1/2	1/4	NO	OK
30	5	1 1/2	2	1/4	NO	OK
31	5	2 1/2	1 1/2	1/4	NO	OK
32	5	3 1/2	1 1/2	1/4	NO	OK
33	5	2	1 1/2	1/4	NO	OK
34	5	3	2	1/4	NO	OK
35	6	3	3/4	1/4	NO	OK

Checked
3/6/05
1.02

X

Scanned
5/9/05 EIO.

C COIL RT1 WELD MAP

3/6/05
← 1.02

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
36	6	1 1/4	1	3/8	NO	OK
37	6	3 1/2	2 1/2	3/8	NO	OK
38	6	3	2 3/4	3/4	NO	OK
39	6	2	1 1/2	1/8	NO	OK
40	6	2	1 1/2	1/4	NO	OK
41	6	5	2	1	YES	OK
42	6	5 3/4	3	1 1/2	YES	OK
43	7	4 3/4	1 1/2	7/8	YES	OK
44	7	2 1/2	1 1/2	1/4	NO	OK
45	59	3 1/4	1 1/4	1/4	NO	OK
46	59	5 1/2	3 1/2	2	YES	OK
47	7	2	1 1/2	1/2	NO	OK
48	7	5	2 1/2	2	YES	OK
49	7	6	4	1 1/2	YES	OK
50	8	9	4	THRU	YES	OK
51	8	4	1 1/2	3/8	NO	OK
52	9	1	1/2	1/4	NO	OK
53	9	2 1/2	2	1/4	NO	OK
54	9	2	1	1/4	NO	OK
55	10	6 1/2	3 3/4	1/2	NO	OK
56	10	2 1/2	1 1/4	1/4	NO	OK
57	10	3 1/2	2 1/2	1/8	NO	OK
58	11	2	1 1/2	1/4	NO	OK
59	11	2	1 1/2	1/4	NO	OK
60	14	2 1/2	2	3/4	YES	OK
61	14	2	1 1/4	1/2	YES	OK
62	13	13	5 3/4	THRU	YES	OK
63	14	2 1/4	1 1/2	1/4	NO	OK
64	14	2 1/4	1 1/2	1/4	NO	OK
65	14	7 1/4	5 1/2	1 3/4	YES	OK
66	14	3	1	1/4	NO	OK
67	14	8 1/4	4	1 1/2	YES	OK
68	14	5 1/2	3	1	YES	OK
69	17	6	2	1 1/2	YES	OK
70	17	3	2 1/2	1 3/4	YES	OK
71	17	7 1/2	4 1/2	2 3/4	YES	OK
72	17	3	1	1/4	NO	OK

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
73	16	3	1	1/4	NO	OK
74	17	1	1/2	1/4	NO	OK
75	15	3	2 1/2	1/4	NO	OK
76	15	2	1 1/2	1/4	NO	OK
77	16	2	1 1/2	1/4	NO	OK
78	19	2 1/2	1 1/2	1/4	NO	OK
79	18	4 7/8	1 1/2	1/2	YES	OK
80	18	1 1/2	1	1/4	NO	OK
81	18	4	3 3/4	1 1/4	YES	OK
82	20	11 1/2	4 1/2	2	YES	OK
83	20	6	3	1	YES	OK
84	23	1 1/2	1	1/8	NO	OK
85	23	3	1 1/2	1/8	NO	OK
86	23	4	3 1/2	3/8	NO	OK
87	23	6	2	3/8	NO	OK
88	21	5	3 1/4	7/8	YES	OK
89	22	8 1/2	2 1/2	3/4	Yes	OK
90	22	3	1 1/2	3/8	Yes	OK
91	60	1	1	1/8	No	OK
92	60	1	1/2	1/8	No	OK
93	23	4	1 1/2	3/8	Yes	OK
94	23	3	2 1/2	3/8	Yes	OK
95	23	1 1/2	1	1/8	No	OK
96	23	1	1	1/8	No	OK
97	23	3	2	1/8	No	OK
98	61	4 1/2	1 1/2	1/4	Yes	OK
99	24	1 1/2	3/4	7/8	Yes	OK
100	24	9 3/4	4 1/4	2 1/8	Yes	OK
101	24	1 1/2	1	1/8	No	OK
102	24	6	2	1/2	Yes	OK
103	24	1	1	1/8	No	OK
104	24	1	1/2	1/2	No	OK
105	24	3 1/2	3	1 1/4	Yes	OK
106	24	6 7/8	2	1	Yes	OK
107	26	1 1/2	1 1/2	3/4	Yes	OK
108	26	7	5	1 1/2	Yes	OK
109	27	11 1/2	6 1/2	2 1/2	Yes	OK

3/6/05
L102

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
110	25	8 1/2	1	3/8	Yes	OK
111	25	1	1	3/8	Yes	OK
112	62	2	1	3/8	Yes	OK
113	62	1	1/2	3/8	Yes	OK
114	28	2	1	3/8	Yes	OK
115	28	3 3/4	1	3/8	Yes	OK
116	28	1	1	3/16	No	OK
117	29	1 1/2	1 1/2	3/16	No	OK
118	29	4	1 1/2	3/16	No	OK
119	28	2	1 1/2	3/8	Yes	OK
120	28	2	1 1/2	3/8	Yes	OK
121	28	1 1/2	1	3/8	No	OK
122	28	3 1/2	1 1/2	3/8	No	OK
123	28	1	1/2	1/8	No	OK
124	28	2	1	3/8	No	OK
125	28	17	2	3/8	No	OK
126	30	2	1 1/2	1/4	No	OK
127	30	3 1/2	1 3/4	3/4	Yes	OK
128	32	1 3/4	1	3/8	Yes	OK
129	32	2	1	1/2	No	OK
130	32	5	1 3/4	1/2	No	OK
131	32	1	1/2	1/2	No	OK
132	32	1/2	1/2	1/2	No	OK
133	32	2 3/4	1/2	3/8	Yes	OK
134	32	2 3/4	1 3/4	1/4	Yes	OK
135	31	5 1/2	3	1 1/2	Yes	OK
136	31	4	2	1 1/2	Yes	OK
137	31	3	2	3/4	Yes	OK
138	31	5 1/2	2	1	Yes	OK
139	31	3	3	1	Yes	OK
140	31	3 1/2	3	1	Yes	OK
141	31	5 1/4	1 1/2	1/4	No	OK
142	31	1 1/2	1	1/4	No	OK

3/6/05
← 1.02

1. Weld maps submitted to EIO/PPPL on _____ By: _____
2. Weld maps approved by EIO/PPPL on _____ By: _____

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
143	33	2	1	1/8	No	OK
144	33	2	1	1/8	No	OK
145	32	3	1/2	1/8	No	OK
146	32	2	1/2	1/8	No	OK
147	35	4	3	1/8	No	OK
148	35	3	1/2	1/8	No	OK
149	35	2 1/2	1 1/2	1/8	No	OK
150	35	3 1/2	2 1/2	1/8	No	OK
151	34	12 1/2	2 1/2	2	Yes	OK
152	34	3	1 1/2	3/4	Yes	OK
153	34	3	2 1/2	1	Yes	OK
154	34	3	1 3/4	7/8	Yes	OK
155	38	2	1	1/8	No	OK
156	38	5 1/2	1 1/2	1/2	Yes -	OK
157	38	1 1/2	1	3/8	Yes -	OK
158	36	2	1 1/2	3/8	Yes -	OK
159	37	3 1/2	3	1	Yes -	OK
160	37	1 1/2	1	1/2	Yes -	OK
161	37	1	1	3/8	Yes -	OK
162	39	1	1 1/2	3/8	Yes -	OK
163	39	1 1/2	1 1/2	1/2	Yes -	OK
164	39	1	1 1/2	1/2	No	OK
165	39	3 1/2	1	3/8	No	OK
166	39	1	1	1/8	No	OK
167	39	1 1/2	1	3/8	Yes -	OK
168	40	4	2	3/8	No	OK
169	40	8	1 1/2	3/8	Yes -	OK
170	40	1 1/2	1 1/2	1/8	No	OK
171	40	6 3/4	4	3/8	Yes -	OK
172	63	5 1/2	1	3/8	Yes -	OK
173	41	4	2 1/4	3/16	No	OK
174	41	4	1	3/8	Yes -	OK
175	41	5	1	3/8	Yes -	OK
176	42	1	1/2	1/2	No	OK
177	43	1	1	3/8	Yes -	OK

3/6/05
L1.02

[Handwritten signature]

16

C COIL RT1 WELD MAP

3/6/05
21.02

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
178	43	1 1/2	1	1/8	No	OK
179	43	1 1/2	1	3/8	No	OK
180	44	1	1	1/2	No	OK
181	44	1	1	1/2	No	OK
182	44	2	2	1	Yes	OK
183	44	2 1/2	2	3/4	Yes	OK
184	45	1	1	1/2	No	OK
185	46	1	1/2	3/8	Yes	OK
186	46	1	1	1/8	No	OK
187	64	2	1 1/2	1/4	No	OK
188	47	2	1 1/2	1/4	No	OK
189	48	2	1 1/2	1/4	No	OK
190	48	3	2 1/4	1/4	No	OK
191	48	9 1/4	3	1 1/8	Yes	OK
192	49	1 1/4	1	3/8	No	OK
193	49	6 1/8	3 3/4	1 1/8	Yes	OK
194	49	1 3/4	1 1/4	3/8	No	OK
195	50	1 1/2	1	1/8	No	OK
196	65	1	1	3/8	No	OK
197	51	2	1 1/4	3/8	No	OK
198	51	6	3/4	1/2	No	OK
199	51	4	1 1/2	3/8	No	OK
200	55	2	1 1/2	1/8	No	OK
201	54	4	3 1/4	2 1/2	Yes	OK
202	52	5	2	1/2	No	OK
203	52	6 3/4	3	3/8	No	OK
204	52	5 1/2	3 1/2	3/4	Yes	OK
205	57	3 1/4	3	2 1/4	Yes	OK
206	56	7 1/2	3	2	Yes	OK
207	66	3	2 1/8	1/8	No	OK
208	66	1	1/2	1/8	No	OK
209	66	2 1/8	1 1/2	3/8	No	OK
210	66	2 1/2	1	3/8	No	OK
211	68	2	1 1/2	1 1/4	Yes	OK
212	68	7	3 1/4	1	Yes	OK
213	68	5 1/2	3 1/4	1 1/2	Yes	OK
214	68	5 1/2	4	3/16	No	OK

C COIL RT1 WELD MAP

3/6/05
Checked
2.02

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
215	69	2 ³ / ₄	2	1 ¹ / ₈	Yes	OK
216	69	1 ¹ / ₂	1	1 ¹ / ₈	No	OK
217	70	12	11	2	Yes	OK
218	70	1	1 ¹ / ₂	3 ¹ / ₁₆	No	OK
219	71	11 ³ / ₄	1 ¹ / ₂	3 ¹ / ₁₆	No	OK
220	72	2 ³ / ₈	1	3 ¹ / ₈	No	OK
221	73	6	4 ³ / ₄	2	Yes	OK
222	74	1	1 ¹ / ₂	1 ¹ / ₈	No	OK
223	74	1	1 ¹ / ₂	1 ¹ / ₈	No	OK
224	74	3	1 ¹ / ₂	1 ¹ / ₈	No	OK
225	75	9 ¹ / ₂	2 ¹ / ₂	2 ¹ / ₂	Yes	OK
226	76	12 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₈	No	OK
227	76	1	1 ¹ / ₂	1 ¹ / ₈	No	OK
228	77	1	1	3 ¹ / ₄	Yes	OK
229	77	4	1 ¹ / ₂	1 ¹ / ₈	No	OK
230	78	2	1	1 ¹ / ₈	No	OK
231	78	9	5	3 ¹ / ₂	Yes	OK
232	79	1	1 ¹ / ₂	1 ¹ / ₈	No	OK
233	79	4 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₈	No	OK
234	79	1 ³ / ₄	1 ¹ / ₂	3 ¹ / ₈	Yes	OK
235	79	3	2	1	Yes	OK
236	79	2	1 ¹ / ₂	1	Yes	OK
237	80	2	1	3 ¹ / ₈	No	OK
238	81	2	1	3 ¹ / ₈	No	OK
239	82	3	1 ¹ / ₂	1 ¹ / ₈	Yes	OK
240	82	5 ¹ / ₂	1 ³ / ₄	1 ¹ / ₈	No	OK
241	83	2 ¹ / ₂	1 ¹ / ₂	3 ¹ / ₈	No	OK
242	85	1	1	1 ¹ / ₈	No	OK
243	84	2	1 ³ / ₄	3 ¹ / ₈	Yes	OK
244	84	1	1	1 ¹ / ₈	No	OK
245	86	1	1 ¹ / ₂	1 ¹ / ₈	No	OK
246	86	1	1	3 ¹ / ₈	No	OK
247	87	1 ³ / ₄	1	3 ¹ / ₈	No	OK
248	87	2 ³ / ₄	1 ¹ / ₂	1	Yes	OK
249	87	1 ¹ / ₂	1	3 ¹ / ₈	Yes	OK
250	88	1 ¹ / ₂	1	3 ¹ / ₈	No	OK
251	88	1 ¹ / ₂	1	3 ¹ / ₈	No	OK

87

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
253	1	1	1	1/8	NO	OK
254	1	1	1	1/8	NO	OK
255	1	2	1 5/8	1/8	NO	OK
256	1	1 1/2	1	3/8	NO	OK
257	2	2 1/2	1 1/2	3/8	NO	OK
258	2	1	1	5/8	NO	OK
259	2	4	1	3/8	NO	OK
260	3	2	1 1/2	1/2	YES	OK
261	3	4	2	3/4	YES	OK
262	4	1	1/2	3/8	NO	OK
263	5	1	1	3/8	NO	OK
264	5	1 1/2	1 1/2	1/2	YES	OK
265	6	1	1	5/8	NO	OK
266	6	9 1/4	2	3/8	NO	OK
267	7	1 1/2	1/2	1/4	NO	OK
268	7	2	1 1/2	1/4	NO	OK
269	7	3	2	1/4	NO	OK
270	7	5	2	1/8	NO	OK
271	7	4	2	1/8	NO	OK
272	7	1 1/2	1 1/2	1/4	NO	OK
273	7	1 1/2	1	1/4	NO	OK
274	7	1	1	3/8	NO	OK
275	8	2	1	1	YES	OK
276	8	1	1	3/8	NO	OK
277	8	1 1/2	1	1/2	NO	OK
278	8	1	1	1/2	NO	OK
279	8	2 1/2	2	5/8	NO	OK
280	9	2 1/2	2	5/8	NO	OK
281	9	2	2	1/2	YES	OK
282	10	1	1	1/8	NO	OK
283	11	4	1 1/2	1/2	YES	OK
284	11	3	1	1/2	YES	OK
285	12	2	1/2	1/4	NO	OK

1. Weld maps submitted to EIO/PPPL on 3/23/05 By: RS
 2. Weld maps approved by EIO/PPPL on NA By: _____

49

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
286	12	2	2	1	YES	OK
287	12	2	2	1/2	YES	OK
288	12	1	1	1/4	NO	OK
289	12	2 1/2	2	3/8	NO	OK
290	12	4	2	1/4	NO	OK
291	12	1 1/2	1	3/8	NO	OK
292	12	1 1/2	1	1/8	NO	OK
293	12	2	1	3/8	NO	OK
294	12	3	1	5/8	NO	OK
295	12	2	1	3/8	NO	OK
296	13	1	1	1/4	NO	OK
297	13	2	1	1/4	NO	OK
298	13	1	1	1/8	NO	OK
299	13	1 1/2	1 1/2	1/2	NO	OK
300	13	2	1	3/8	NO	OK
301	13	3	2 1/2	1 1/4	YES	OK
302	13	6 1/2	3 1/2	1 1/2	YES	OK
303	13	3 1/2	3 1/2	1	YES	OK
304	14	2 1/2	2 1/2	1	YES	OK
305	14	4	3	1	YES	OK
306	14	1 1/2	1 1/2	3/8	NO	OK
307	15	4	2	3/8	NO	OK
308	15	4	2	3/8	NO	OK
309	15	2 1/2	2 1/2	5/8	NO	OK
310	16	2 1/2	2 1/2	1/2	YES	OK
311	17	3 1/2	3	3/8	NO	OK
312	17	1	1	1/8	NO	OK
313	17	3	1 1/2	1/8	NO	OK
314	17	3	1 1/2	1/8	NO	OK
315	17	2 1/2	2 1/2	3/8	NO	OK
316	17	2 1/2	2	3/8	NO	OK
317	17	1 1/2	1	1/8	NO	OK
318	18	1	1	1/8	NO	OK

1. Weld maps submitted to EIO/PPPL on
2. Weld maps approved by EIO/PPPL on

3/23 By: RS
NA By: _____

A10

C COIL RT1 WELD MAP

Defect Number	Photo Number	Length Inches	Width Inches	Depth Inches	Over 10% Wall Yes/No	Weld Permeability Result
319	18	3	2	5/8	NO	OK
320	19	5	2 1/2	5/8	NO	OK
321	20	3 1/2	2 1/2	3/8	NO	OK
322	1	1 1/2	1 1/2	1/4	NO	OK
323	2	2	2	3/4	NO	OK
324	2	2 1/2	2	3/8	NO	OK
325	3	1 1/2	1	3/8	NO	OK
326	4	4	1	1/4	NO	OK
327	5	1 1/2	1 1/2	1/4	NO	OK
328	6	3	2 1/2	1/4	NO	OK
329	7	2 1/2	2	3/8	NO	OK

1. Weld maps submitted to EIO/PPPL on 3/23/05 By: RS
 2. Weld maps approved by EIO/PPPL on NA By: /

#1



C-1 Doc Package
Document # 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-C1

Order Number: PPPL-FP-LTS-2

Revised 7/26/05

ASTM Metal CF8MNMN MOD

Date 7/26/2005

Type Description	Cert Number	Procedure	Acceptance Criteria	Actual
Radiographic	S73140-1	Technique # 12726	MSS SP 54	Acceptable
Liquid Penetrant	S73140-1	CQP - 300 Rev 9	SEE NOTE	Acceptable
Notes Acceptance per ASTM A903. Acceptance criteria - level 1 for high stressed areas, level 2 for all other areas.				
Mag Perm	S73140-1	SOP Mag Perm 100 Rev 1	<1.02	Acceptable
Visual	S73140-1	CQP - 500 REV 4	ASTM A802 LEVEL 2	Acceptable

Liquid Penetrant

Technician: Kevin Anderson
ASNT Level II

Respectfully Submitted,
Charles A. Ruud
Quality Assurance Manager

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER Energy Industries of OHIO		PURCHASE ORDER NUMBER 28030003			DATE 1-19-05		CONTROL NO. 40851		PAGE 1 of 6		
PART NO. MCWF-C1		SPECIFICATION MSS-SP-54		CLASS See Spec		TOTAL PIECES 1		PIECES ACCEPTED 1			
RADIOGRAPHED BY: Cooperheat/MRS				INTERPRETED BY: Kelley/Suria			ASNT LEVEL II				
FILM TYPE Kodak		MATERIAL CF8M		ISOTOPE IRIDIUM 192				CODE ASTM E94 / ASME		MIL-STD-453	
				COBALT 60						COMMENTS	
		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			
CRT, 1											
Inside Rail		1-2		60 120		/				/	
		2-3		60 120		/				/	
		3-4		60 120		/		2		/	
		4-5		/		/		3		/	
		5-6		/		/				/	
		6-7		60 120		/				/	
		7-8		60 80		/				/	
		8-9		60 120		/				/	
		9-10		/		/				/	
		10-11		/		/				/	
		11-12		/		/				/	
		12-13		/		/		2		/	
		13-14		/		/		X		/	
		14-15		/		/				/	
		15-16		/		/				/	
		16-17		/		/				/	
		17-18		/		/				/	
		18-19		/		/				/	
		19-20		/		/				/	
		20-21		/		/				/	

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <i>Energy Industries of OHIO</i>		PURCHASE ORDER NUMBER <i>28030003</i>			DATE <i>1-19-05</i>		CONTROL NO. <i>40851</i>		PAGE <i>2 of 6</i>			
PART NO. <i>MCWF-C1</i>		SPECIFICATION <i>MSS-SP-54</i>		CLASS <i>See Spec</i>		TOTAL PIECES <i>1</i>		PIECES ACCEPTED <i>1</i>				
RADIOGRAPHED BY: <i>Cooperheat/MQS</i>				INTERPRETED BY: <i>Kelley/Suria</i>			ASNT LEVEL <i>#</i>					
FILM TYPE <i>Kodak</i>		MATERIAL <i>CF8M W/M Mod</i>		ISOTOPE <i>Varian model 6200</i>				CODE				
				IRIDIUM 192		COBALT 60		ASTM E94 <input checked="" type="checkbox"/> ASME		MIL-STD-453		
				REJECT		SUSPENSION		SURFACE		LOF/LOOP		
				ACCEPT		CORROSION		FACILITY		COMMENTS		
<i>CRT.1</i>												
<i>Inside Rail</i>		<i>21-22</i>		<i>60</i>		<i>120</i>		<i>X X</i>				
<i>↓</i>		<i>22-23</i>								<i>1 excavations Processor Marks</i>		
		<i>23-24</i>								<i>excavations</i>		
		<i>24-25</i>								<i>excavation Processor Marks</i>		
		<i>25-26</i>								<i>"</i>		
		<i>26-27</i>						<i>2</i>		<i>Processor Marks</i>		
		<i>V28</i>						<i>2</i>		<i>excavation</i>		
		<i>29-30</i>						<i>2</i>		<i>excavations</i>		
		<i>30-1</i>		<i>↓</i>				<i>2</i>		<i>excavations Processor Marks</i>		
		<i>Body</i>		<i>1-2</i>		<i>50</i>				<i>2</i>		<i>Excavations</i>
		<i>↓</i>		<i>2-3</i>								<i>Excavations</i>
<i>3-4</i>										<i>Excavations, Processor Mark</i>		
<i>4-5</i>										<i>Excavations</i>		
<i>5-6</i>										<i>Excavations</i>		
<i>7-8</i>								<i>2</i>		<i>Excavation</i>		
<i>8-9</i>						<i>X</i>		<i>X</i>		<i>Excavation</i>		
<i>9-10</i>								<i>2</i>		<i>Excavations</i>		
<i>11-12</i>										<i>Excavation</i>		
<i>12-13</i>				<i>↓</i>								

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER Energy Industries of OHIO		PURCHASE ORDER NUMBER 28030003			DATE 1-19-05		CONTROL NO. 40851		PAGE 3 of 6												
PART NO. MCWF-C1		SPECIFICATION MSS-SP-54		CLASS SeeSpec		TOTAL PIECES 1		PIECES ACCEPTED 1													
RADIOGRAPHED BY: Cooperheat/MQS			INTERPRETED BY: Kelley/Suria			ASNT LEVEL II															
FILM TYPE Kodak		MATERIAL CF8M/MV Mod			ISOTOPE Varian model 6200 IRIDIUM 192 COBALT 60			CODE ASTM E94 ✓ ASME MIL-STD-453													
		VIEW		ACCEPT		REJECT		SHRINK		INCLUSION		POROSITY		LINEAR		SURFACE		LOF/LOP		COMMENTS	
CRT.1																					
Body		13-14		50		/															
		15-16				/														Excavations Processor Marks	
		16-17				/															
		18-19				/														Excavations	
		19-20				/														Excavations	
		20-21				/														Excavations	
		21-22				/														Excavations	
		23-24				/		X X												Excavations	
		24-25				/														Excavations	
		26-27				/														Excavations	
		27-28		↓		/		X X												Excavations	
		29-30		30		/		X X													
		30-31				/														excavation-Processor Marks	
		32-33				/															
		33-34				/														Processing Marks	
		35-36				/														excavations, Film Scratch	
		36-37				/		X X													
		38-39				/														excavations	
		39-40		↓		/		X X													
↓		41-42		30 40		/		X X													

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER Energy Industries of Ohio		PURCHASE ORDER NUMBER 28030003			DATE 1-19-05		CONTROL NO. 40851		PAGE 4 of 6			
PART NO. MCWF-C1		SPECIFICATION MSS-SP-54		CLASS SeeSpec		TOTAL PIECES 1		PIECES ACCEPTED 1				
RADIOGRAPHED BY: Cooperheat/MDS				INTERPRETED BY: Kelley/Suria				ASNT LEVEL II				
FILM TYPE Kodak		MATERIAL CF8M N/Mu Mpd			ISOTOPE Varian model 6200 IRIDIUM 192 COBALT 60			CODE ASTM E94 / ASME MIL-STD-453				
		V I E W	P E N E T	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 P / L O P	COMMENTS
CRT.1												
Body		42-43	30 40	/								excavation-Processor Mark
		44-45	/	/								Processor Marks
		45-46	/	/			1					excavation-Processor Mark
		47-48	/	/			2					excavation-Processor Mark
		48-49	↓		X	X						
		50-51	↓	/								excavation-Processor Mark
		52-53	30/100 40/140		X	X						
		53-54	↓	/								excavation-Film Scratch
		54-55	30 40/100	/								excavation-Film scratches
		55-56	↓	/								
		56-57	↓	/								excavation-Processor Marks
		57-58	60 140		X	X						
		58-59	30 40	/		1	1					excavation-Light Leak
		59-60	/	/								excavations
		60-61	↓	/								
		62-63	↓	/			1	1				excavations
		63-64	30	/			1					excavations
		65-66	60/180 140/200	/								excavations
		67-68	30 40/60 40		X	X						
		68-69	40 30	/		1						excavations

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <i>Energy Industries of OHIO</i>	PURCHASE ORDER NUMBER <i>28030003</i>	DATE <i>1-19-05</i>	CONTROL NO. <i>40851</i>	PAGE <i>5 of 6</i>							
PART NO. <i>MCWF-C1</i>	SPECIFICATION <i>MSS-SP-54</i>	CLASS <i>See Spec</i>	TOTAL PIECES <i>1</i>	PIECES ACCEPTED <i>1</i>							
RADIOGRAPHED BY: <i>Cooperheat/MRS</i>		INTERPRETED BY: <i>Kelley/Suria</i>		ASNT LEVEL <i>H</i>							
FILM TYPE <i>Kodak</i>	MATERIAL <i>CF8Mw/Mod</i>	ISOTOPE <i>Varian model 62000</i>	CODE <i>ASTM E94 / ASME MIL-STD-453</i>								
		<i>IRIDIUM 192 COBALT 60</i>									
	V I E W	P E N E	A C C E P T	R E J E C T	S H 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
<i>CET.1</i>											
<i>Body</i>	<i>69-70</i>	<i>30 100 40 120</i>		<i>X</i>	<i>X</i>						
	<i>71-72</i>	<i>30 80 50 100 60 100</i>	/								<i>Processor Marks</i>
	<i>72-73</i>	<i>↓</i>	/						/		<i>excavation - Film scratch</i>
	<i>73-74</i>	<i>30 80 40</i>	/			<i>1</i>			/		<i>excavation Film scratch</i>
	<i>74-75</i>	<i>↓</i>	/						/		<i>Excavations, crimp</i>
	<i>75-76</i>	<i>30 40</i>	/						/		
	<i>76-77</i>	<i>↓</i>	/						/		<i>Excavations</i>
	<i>78-79</i>	<i>30 40 60</i>	/						/		<i>Processor marks</i>
	<i>79-80</i>	<i>30 40</i>	/						/		
	<i>80-81</i>	<i>↓</i>	/						/		
	<i>81-82</i>	<i>↓</i>	/			<i>1</i>			/		
	<i>83-84</i>	<i>30 40 60</i>	/						/		
	<i>85-86</i>	<i>30 40</i>	/						/		
	<i>86-87</i>	<i>30 40 60</i>	/						/		
	<i>87-88</i>	<i>30 40</i>	/						/		
	<i>88-89</i>	<i>30 60 40</i>	/	<i>X</i>	<i>X</i>				/		
	<i>90-91</i>	<i>30 40</i>	/						/		
	<i>92-93</i>	<i>↓</i>	/						/		<i>Excavation</i>
	<i>v94</i>	<i>50</i>	/	<i>X</i>	<i>X</i>				/		
<i>↓</i>	<i>v95</i>	<i>↓</i>	/						/		<i>Processor Mark</i>

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER Energy Industries of Ohio		PURCHASE ORDER NUMBER 28030003			DATE 1-19-05		CONTROL NO. 40851		PAGE 6 of 6			
PART NO. MCWF-C1		SPECIFICATION MSS-SP-54		CLASS See Spec		TOTAL PIECES 1		PIECES ACCEPTED 1				
RADIOGRAPHED BY: Cooperheat/MAS			INTERPRETED BY: Kelly/Suria			ASNT LEVEL II						
FILM TYPE Kodak		MATERIAL CF8M		ISOTOPE VARIAN model 6200 IRIDIUM 192 COBALT 60				CODE ASTM E94 / ASME MIL-STD-453				
		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
C.R.T.I Body		96-97	50	/								Excavations
		97-98		/								Excavations
		98-99		/								
		100-101			X	X						
		101-102		/								Excavations
		102-103		/								Excavations
		103-104			X	X						Excavations
		104-105			X	X				/		excavations
		106-107			X				X	/		excavations
		107-108		/						/		
		108-109		/						/		excavations
		109-110			X	X				/		excavations
		111-112		/						/		excavations - Processor marks
		112-113		/						/		Film scratch: excavations
		114-115			X				X			
		115-116		/						/		excavations Processor Marks
↓		116-117	↓		X				X			
↓		V64	20 30		X	X						

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <i>Energy Industries of OHIO</i>		PURCHASE ORDER NUMBER <i>2803 0003</i>			DATE <i>3-19-05</i>		CONTROL NO. <i>40851</i>		PAGE <i>1 of 2</i>						
PART NO. <i>MCWF-C1</i>		SPECIFICATION <i>ASS-SP-54</i>		CLASS <i>See Spec</i>		TOTAL PIECES <i>1</i>		PIECES ACCEPTED <i>1</i>							
RADIOGRAPHED BY: <i>Cooperheat/MRS</i>				INTERPRETED BY: <i>Cooperheat/MRS/Kella</i>			ASNT LEVEL <i>II</i>								
FILM TYPE <i>Kodak</i>		MATERIAL <i>CF8M WW Mod</i>		ISOTOPE <i>varian model 2600</i>				CODE <i>ASTM E94 / ASME MIL-STD-453</i>							
<i>Repair views</i>		VIEW		ACCEPT		IRIDIUM 192		COBALT 60		SURFACE		LOF/LOP		COMMENTS	
<i>CRT-1</i>															
<i>Body</i>		<i>8-9</i>		<i>50</i>										<i>Film Mark</i>	
		<i>23-24</i>		<i>↓</i>											
		<i>27-28</i>		<i>↓</i>											
		<i>29-30</i>		<i>30</i>		<i>X</i>				<i>FBK</i>		<i>X</i>			
		<i>36-37</i>		<i>↓</i>		<i>1</i>		<i>1</i>							
		<i>39-40</i>		<i>↓</i>											
		<i>41-42</i>		<i>30/40</i>		<i>1</i>									
		<i>48-49</i>		<i>↓</i>				<i>1</i>		<i>1</i>					
		<i>52-53</i>		<i>30/40 100/140</i>				<i>2</i>		<i>1</i>					
		<i>57-58</i>		<i>60/40</i>											
		<i>67-68</i>		<i>30/40 60/40</i>											
		<i>69-70</i>		<i>30/100 40/20</i>		<i>1</i>									
		<i>88-89</i>		<i>30/40 60/40</i>		<i>FBK</i>		<i>2</i>						<i>OK R.S</i>	
		<i>V94</i>		<i>50</i>											
		<i>100-101</i>		<i>↓</i>		<i>3</i>									
		<i>101-102</i>		<i>↓</i>		<i>3</i>									
		<i>103-104</i>		<i>↓</i>		<i>3</i>									
		<i>104-105</i>		<i>↓</i>		<i>1</i>									
		<i>106-107</i>		<i>↓</i>		<i>FBK</i>		<i>2</i>		<i>FBK</i>					
		<i>109-110</i>		<i>↓</i>		<i>2</i>									

RADIOGRAPHIC INTERPRETATION REPORT

CUSTOMER <i>Energy Industries of Ohio</i>		PURCHASE ORDER NUMBER <i>28030003</i>			DATE <i>3-19-05</i>		CONTROL NO. <i>40851</i>		PAGE <i>2 of 2</i>			
PART NO. <i>MCWF-C1</i>		SPECIFICATION <i>M55-SP-54</i>		CLASS <i>sec spec</i>		TOTAL PIECES <i>1</i>		PIECES ACCEPTED <i>1</i>				
RADIOGRAPHED BY: <i>Cooper Heat/MQS</i>				INTERPRETED BY: <i>M. J. [Signature]</i>			ASNT LEVEL <i>II</i>					
FILM TYPE <i>Kodak</i>		MATERIAL <i>LF8MNMN mod</i>		ISOTOPE <i>Varian Model 2600</i>				CODE <i>ASTM E94 7 ASME MIL-STD-453</i>				
				IRIDIUM 192				COBALT 60				
Repair views		VIEW	PENE	ACCEPT	REJECT	SHRINK	INCLUSION	POROSITY	LINEAR	SURFACE	LOF/LOP	COMMENTS
<i>CRT-1</i>												
<i>Body</i>		<i>114-115</i>	<i>50</i>	<i>/</i>			<i>1</i>	<i>1</i>	<i>/</i>			
<i>↓</i>		<i>116-117</i>	<i>↓</i>	<i>/</i>		<i>2</i>						<i>Processing mark</i>
<i>↓</i>		<i>V64</i>	<i>30</i>	<i>/</i>			<i>1</i>	<i>1</i>				
<i>Inside Rail</i>		<i>13-14</i>	<i>60/120</i>	<i>/</i>								
<i>↓</i>		<i>21-22</i>	<i>↓</i>	<i>/</i>		<i>2</i>						
<i>Body</i>		<i>29-30</i>	<i>30</i>	<i>/</i>		<i>1</i>	<i>1</i>	<i>1</i>				

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

CUSTOMER RSS NO.: _____ SHEET: _____ REV: _____ MQS TECH. NO.: 12970
 MQS RSS NO.: _____

CUSTOMER METALTEK INTERNATIONAL DATE: 1-18-2005

PART NO. MCWF-C12103989 DESCRIPTION C1 COIL CASTING MATERIAL CF8MNM

TOTAL NUMBER OF VIEWS 121 NUMBER X-RAY VIEWS 121 NUMBER GAMMA RAY VIEWS 0

MACH(s) MAKE(s) VARIAN MODEL(s) L2000 S/N(s) 20 MAX KV(s) 7500

SOURCE(s) N/A

PROCEDURE SPECIFICATION MSS-SP-54 ACCEPTANCE CRITERIA MSS-SP-54

MQS PROCEDURE NO. 20.H.010 REV. 0 PENETRAMETER SPEC. ASTM E142-86

PROCESSING: AUTOMATIC PROCESSOR B2000 MANUAL TEMPERATURE 27.2°

TECHNICIAN J.P., S.S. NDT LEVEL II APPROVED BY Chris Rudolph NDT LEVEL III

VIEW IDENTIFICATION		*				
SOURCE/X-RAY MACH USED		VARIAN				
CURIES OR KV		7500				
MA OR PULSES		N/A				
SOURCE TO FILM DISTANCE		*				
EXPOSURE TIME OR RADS		*				
MATERIAL THICKNESS		1				
MATERIAL GROUP		1				
PENETRATER SIZE/(AMT)	GP. <input type="checkbox"/>	*		SEE ATTACHED	INFORMATION	
SHIM BLOCK SIZE	GP. <input type="checkbox"/>	N/A				
FILM SIZE		*				
FILM TYPE/BRAND		*				
PB SCREEN, FRONT		.010				
PB SCREEN, BACK		.010				
SENSITIVITY		2-2T				
FILTER TYPE/LOCATION		N/A				
MASKING TYPE/LOCATION		N/A				
ANGLE		*				
NO. OF FILMS IN CASSETTE		*				
VIEWING: SING./DOUB./BOTH		S-B				
FOCAL SPOT SIZE		2 MM				
SKETCH AND/OR REMARKS		SEE ATTACHED				
GEOMETRIC UNSHARPNESS						

VIEW	SFD	EXP. TIME	FILM TYPE	FILM SIZE	THK. RANGE	IQI
1-2	65"	25 KR	T	14 X 17	2-3/4"	50(2)
2-3	65"	25 KR	T	14 X 17	2-3/4"	50(2)
3-4	65"	25 KR	T	14 X 17	2-3/4"	50(2)
4-5	65"	25 KR	T	14 X 17	2-3/4"	50(2)
5-6	65"	25 KR	T	14 X 17	2-3/4"	50(2)
7-8	65"	25 KR	T	14 X 17	2-3/4"	50(2)
8-9	65"	25 KR	T	14 X 17	2-3/4"	50(2)
9-10	65"	25 KR	T	14 X 17	2-3/4"	50(2)
10-11	65"	25 KR	T	14 X 17	2-3/4"	50(2)
11-12	65"	25 KR	T	14 X 17	2-3/4"	50(2)
12-13	65"	25 KR	T	14 X 17	2-3/4"	50(2)
13-14	65"	25 KR	T	14 X 17	2-3/4"	50(2)
14-15	65"	25 KR	T	14 X 17	2-3/4"	50(2)
15-16	65"	25 KR	T	14 X 17	2-3/4"	50(2)
16-17	65"	25 KR	T	14 X 17	2-3/4"	50(2)
17-18	65"	25 KR	T	14 X 17	2-3/4"	50(2)
18-19	65"	25 KR	T	14 X 17	2-3/4"	50(2)
19-20	65"	25 KR	T	14 X 17	2-3/4"	50(2)
20-21	65"	25 KR	T	14 X 17	2-3/4"	50(2)
21-22	65"	25 KR	T	14 X 17	2-3/4"	50(2)
23-24	65"	25 KR	T	7 x 17	2-3/4"	50(2)
24-25	65"	25 KR	T	7 x 17	2-3/4"	50(2)
26-27	65"	25 KR	T	7 x 17	2-3/4"	50(2)
27-28	65"	25 KR	T	7 x 17	2-3/4"	50(2)
29-30	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
30-31	70"	25 KR	M125	11 x 17	1-1/2"	30(2)
32-33	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
33-34	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
35-36	70"	25 KR	M125	11 x 14	1-1/2"	30(2)
36-37	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
38-39	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
39-40	70"	25 KR	M125	14 x 17	1-1/2"	30(2)
41-42	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
42-43	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
44-45	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
45-46	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
47-48	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
48-49	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
50-51	85"	35 KR	T/M125	14 X 17	1-1/2" - 2"	30, 40
52-53	90"	40 KR	D8/T/AA/Dumb	14 x 17	1-1/2" - 7"	30,40,100,140
53-54	90"	40 KR	D8/T/AA/Dumb	14 x 17	1-1/2" - 7"	30,40,100,140
54-55	90"	40 KR	D8/T/AA/Dumb	14 x 17	1-1/2" - 5"	30,40,100

CUSTOMER Metaltek

RSS # _____

PART NO. MCWF-C1

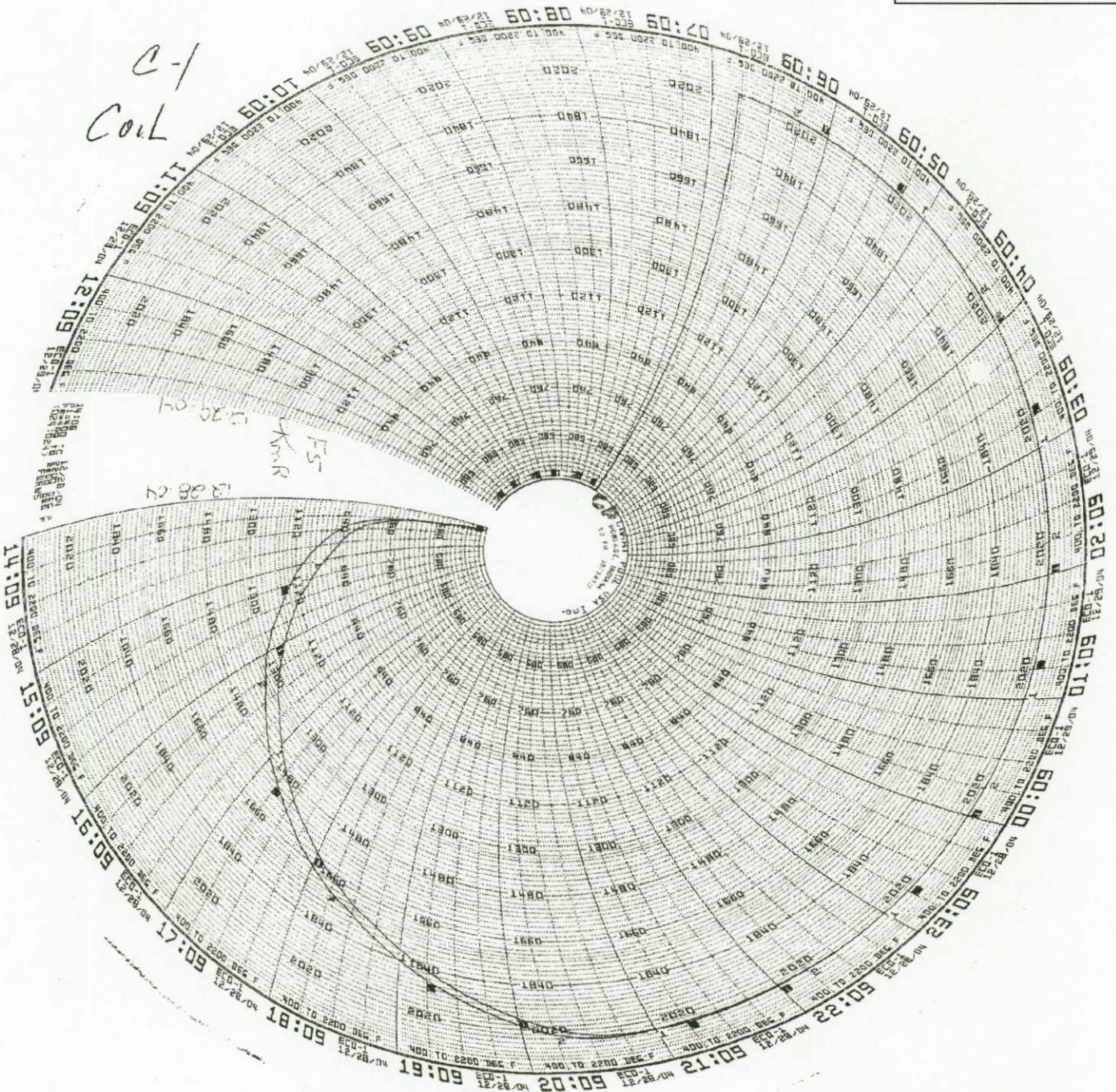
VIEW	SFD	EXP. TIME	FILM TYPE	FILM SIZE	THK. RANGE	IQI
55-56	90"	40 KR	D8/T/AA/Dumb	14 x 17	1-1/2" - 5"	30,40,100
56-57	90"	40 KR	D8/T/AA/Dumb	14 x 17	1-1/2" - 5"	30,40,100
57-58	93"	65 KR	D8/AA/T/D8	14 x 17	3" - 7"	60,140
58-59	90"	40 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
59-60	90"	40 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
60-61	90"	40 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
62-63	90"	40 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
63-64	90"	35 KR	T/M125	14 x 17	1-1/2"	30(2)
65-66	90"	150 KR	D8/AA/T/D8	14 x 17	3" - 10"	60,140,180,200
67-68	90"	40 KR	T/M125	14 x 17	1-1/2" - 3"	30,40,60
68-69	90"	40 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
69-70	90"	55 KR	D8/M125/AA	14 x 17	1-1/2" - 6"	30,40,100,120
V64	90"	40 KR	M125/M100	11 X 14	1" - 1-1/2"	20,30
71-72	80"	50 KR	AA/M125/T	14 x 17	1-1/2" - 5"	30,50,60,80,100
72-73	80"	90 KR	AA/M125/M100/T	14 x 17	1-1/2" - 5"	30,50,60,80,100
73-74	80"	35 KR	T/M125	14 x 17	1-1/2" - 4"	30,40,80
74-75	80"	35 KR	T/M125	14 x 17	1-1/2" - 4"	30,40,80
75-76	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
76-77	80"	30 KR	T/M125	11 x 14	1-1/2" - 2"	30,40
78-79	80"	35 KR	T/M125	14 x 17	1-1/2" - 3"	30,40,60
79-80	80"	35 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
80-81	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
81-82	80"	30 KR	T/M125	7 x 17	1-1/2" - 2"	30,40
83-84	80"	35 KR	T/M125	14 x 17	1-1/2" - 3"	30,40,60
85-86	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
86-87	80"	60 KR	D8/M125/T	14 x 17	1-1/2" - 6"	30,40,120(2)
87-88	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
88-89	80"	40 KR	AA/M125/T	14 x 17	1-1/2" - 3"	30,40,60
90-91	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
92-93	80"	30 KR	T/M125	14 x 17	1-1/2" - 2"	30,40
V94	72"	25 KR	T	14 x 17	2-3/4"	50
V95	72"	25 KR	T	8 x 10	2-3/4"	50
96-97	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
97-98	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
98-99	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
100-101	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
101-102	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
102-103	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
103-104	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
104-105	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)
105-107	65"	25 KR	T/T	14 x 17	2-3/4"	50(2)

CUSTOMER Metalttek RSS # 12970 PART NO. MCWF-C1

VIEW	SFD	EXP. TIME	FILM TYPE	FILM SIZE	THK. RANGE	IQI
1-2	72"	100 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
2-3	72"	100 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
3-4	72"	100 KR	AA-AA-M100	14 X 17	3" - 8"	60(2), 120(2), 140
4-5	72"	100 KR	AA-AA-M100	14 X 17	3" - 8"	60(2), 120(2), 140
5-6	72"	100 KR	AA-AA-M100	14 X 17	3" - 8"	60(2), 120(2), 140
6-7	76"	100 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
7-8	60"	67 KR	AA-M125-M100	14 X 17	3" - 6"	60(2), 80,120(2)
8-9	72"	105 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
9-10	72"	105 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
10-11	60"	67 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
11-12	60"	67 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
12-13	60"	67 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
13-14	74"	95 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
14-15	70"	90 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
15-16	64"	80 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
16-17	62"	74 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
17-18	60"	67 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
18-19	53"	55 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
19-20	48"	50 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
20-21	54"	55 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
21-22	65"	80 KR	AA-M100	11 X 14	3" - 6"	60(2), 120(2)
22-23	74"	110 KR	AA-M100 *	14 X 17	3" - 6"	60(2), 120(2)
23-24	74"	110 KR	AA-M100 *	14 X 17	3" - 6"	60(2), 120(2)
24-25	72"	100 KR	AA-M100	11 X 14	3" - 6"	60(2), 120(2)
25-26	72"	100 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
26-27	72"	95 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
V28	72"	100 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
29-30	65"	70 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)
30-1	65"	70 KR	AA-M100	14 X 17	3" - 6"	60(2), 120(2)

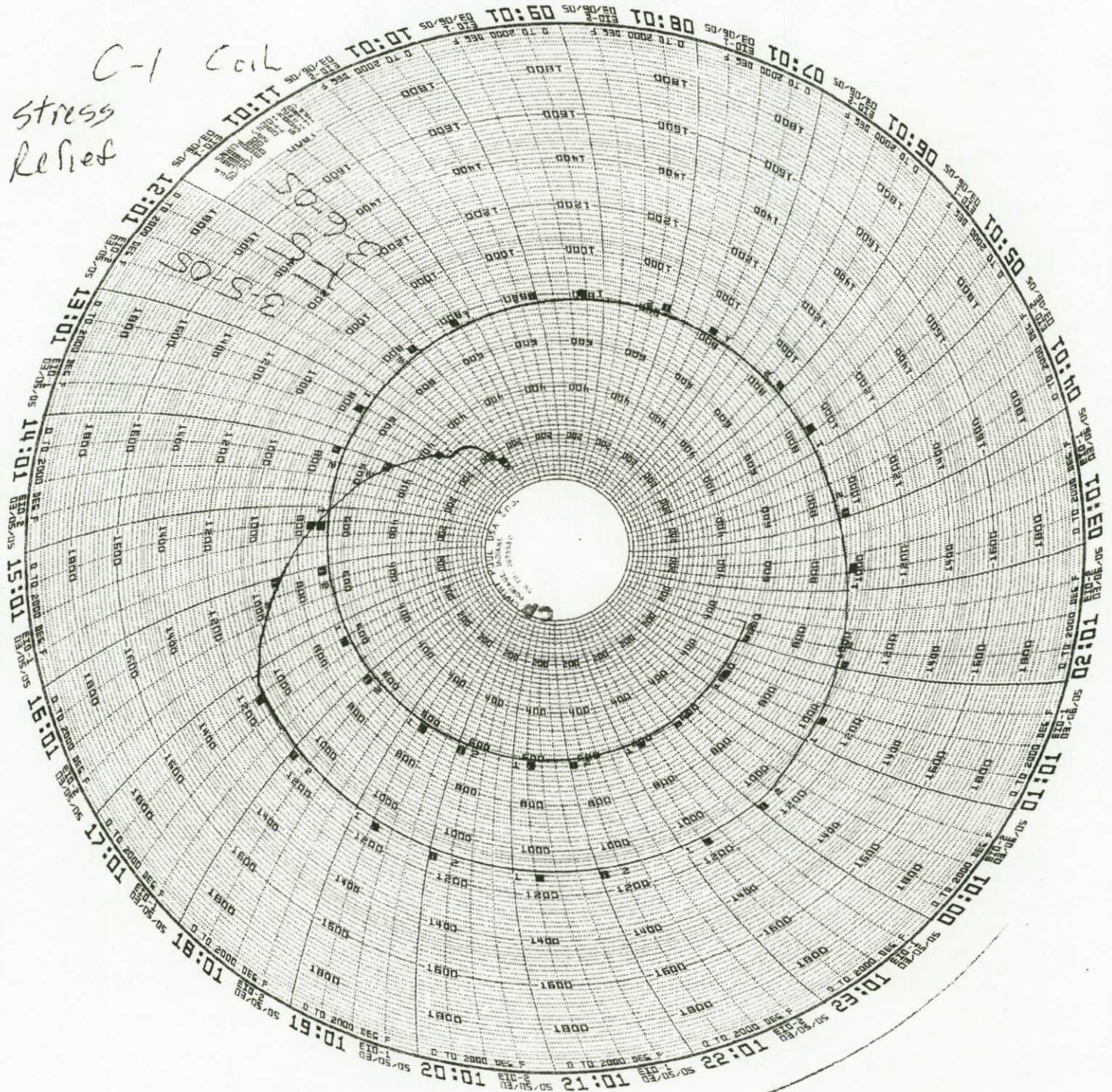
C-1 Doc Package
Document #19

C-1
Coil



C-1 coil
stress
relief

50
55
60
65
70
75
80
85
90
95
100



MetalTek

Carondelet Division - CA / PA / RGA Database

Corrective Action

1219

Corrective Action Type FOR CASTING DISCONTINUITIES

Date 2/18/2005

CA Originator Ruud

Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

96 major weld defects found in the C-1 RT1 coil casting. Two defects were on opposite sides of a wall and after excavation resulted in a through wall defect requiring repair. See CA 1226.

Root Cause : Incorrect parameter used during solidification modeling at ESI Group. They used 75% fraction solid cutoff as a feeding criterion. This made the simulation result look like the casting fed correctly with the rigging that was used.

Corrective Action: Weld upgrade C1 casting. Welding will be performed following the approved procedure FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1. FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2.

Verification of Corrective Action: All repairs will be verified by the inspection method used to discover the original defect.

Preventive Action: We used the xray information from the C1 casting to re-simulate the solidification using different fraction solid cutoff numbers. A good correlation between the C1 xray results and a 50% fraction solid cutoff number was found. As of 2-18-05, we are revising the rigging to give good simulated results with a 50%fraction solid cutoff.

Verification Of Preventative Action: Radiograph C-2 coil and compare results.

Estimated Implementation Date: Prior to shipment.

Signed: CA Ruud

CC: EIO, Barry Craig, Joe Edwards, E.J. Kubick, Geoff Mergel, File

Corrective Action 1219

Concur:

P. Heitzenroeder, PPPL Tech. Rep.

B. Nelson, RLM

cc: F. Malinowski, PPPL QA

MetalTek

Carondelet Division - CA / PA / RGA Database

Corrective Action

1226

Corrective Action Type FOR CASTING DISCONTINUITIES

Date 2/18/2005

CA Originator Ruud

Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

Two defects were on opposite sides of a wall and after excavation resulted in a through wall defect requiring repair.

Root Cause : Incorrect parameter used during solidification modeling at ESI Group. They used 75% fraction solid cutoff as a feeding criterion. This made the simulation result look like the casting fed correctly with the rigging that was used.

Corrective Action: Weld upgrade C1 casting. Welding will be performed following the approved procedure FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1. FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2. Copper backing plates will used.

Verification of Corrective Action: All repairs will be verified by the inspection method used to discover the original defect.

Preventive Action: We used the xray information from the C1 casting to re-simulate the solidification using different fraction solid cutoff numbers. A good correlation between the C1 xray results and a 50% fraction solid cutoff number was found. As of 2-18-05, we are revising the rigging to give good simulated results with a 50%fraction solid cutoff.

Verification Of Preventative Action: Radiograph C-2 coil and compare results.

Estimated Implementation Date: Prior to shipment.

Signed: CA Ruud

CC: EIO, Barry Craig, Joe Edwards, E.J. Kubick, Geoff Mergel, File

Corrective Action 1226

C-1 Doc Package
Document # 21

Concur:

P. Heitzenroeder, PPPL Tech. Rep.

B. Nelson, RLM

cc: F. Malinowski, PPPL QA

MetalTek

Carondelet Division - CA / PA / RGA Database

Corrective Action

1251

Corrective Action Type FOR CASTING DISCONTINUITIES

Date 3/22/2005

CA Originator Ruud

Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

Two major weld defects found following verification of weld repairs. Lack of fusion was found. These are repairs of existing weld deposits.

Root Cause

Defective weld.

Corrective Action

Excavate and repair.

Verification of Corrective Action

Radiography indicated part was properly repaired.

Actual Completion and File Date: 3-22-05

Signed: CA Ruud



CC: Barry Craig, Dean Berger, E.J. Kubick, R Suria, File

CONCUR: 

 3/26/05

C-1 Doc Package
Document # 22a

MetalTek

Grandelet Division - CA / PA / RGA Database

Corrective Action

1252

Corrective Action Type FOR CASTING DISCONTINUITIES

Date 3/24/2005

CA Originator Ruud

Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

Major defects were observed during final Penetrant inspection.

Root Cause

Inherent casting discontinuities.

Corrective Action

Excavate discontinuities and weld repair.

Verification of Corrective Action


Penetrant Inspection of weld repairs.

Actual Completion and File Date: 3-24-05

Signed: CA Ruud



CC: Barry Craig, Dean Berger, E.J. Kubick, R Suria, File

APPROVED: 

25 MARCH 2005



28 March 05



C-1 Doc Package
Document # 22b

Corrective Action 1320
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 7/5/2005
CA Originator C. Ruud
Pattern Number: C 1, C2 and A1 Coil castings

Description of Defect / Non-Conformance

Lack of test material in violation of paragraph 4.2.2.4 Additional Test Material.

Root Cause

Specification was not communicated to Pattern shop personnel.

Corrective Action

Test coupons were added to pattern and will be cast on all future coils.

Verification of Corrective Action

Pattern was inspected prior to molding C-4 casting.

Preventive Action

Create Inspection and Test Plan summarizing all requirements.

Actual Completion Date

Complete.

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

Signed: C. Ruud

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

PPPL and EIO agree that additional test material is not available for the C1, C2, and A1 castings, but will be provided for the remaining castings.

This NCR is approved based on EIO's corrective action and the above agreement.

Brad Nelson, NCSX Core Systems Engineering Manager

Phil Heitzenroeder, NCSX MCWF Subcontract Tech. Rep.



Corrective Action 1300
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 5/29/2005
CA Originator C. Ruud
Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

Failed to differentiate test material on pattern/casting per the requirement of NCSX-CSPEC-141-03-07, SECTION 4.2.2.

Root Cause

Failed to communicate specification to Pattern Shop to add location identifiers to cast on test material specimens.

Corrective Action

Add location identifiers to pattern and track through testing.

Verification of Corrective Action

Verified on Coil C-2 those identifiers were present.

Preventive Action

Create Inspection and Test Plan summarizing all requirements.

Estimated Completion Date

Identifiers will be added prior to making C-2. Inspection plan by 6/15/05

Actual Completion Date

Identifiers were added 4-15-05.

Signed: C. Ruud

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

Accepted. CA for future castings. 6-6-05
Accept ~~the~~ as is for C1. Plan



Corrective Action 1301
Carondelet Division - CA / PA / RGA Database
Corrective Action Type NCR
Date 5/29/2005
CA Originator C. Ruud
Pattern Number: C-1 Coil

Description of Defect / Non-Conformance

Failed to differentiate two directions of test material on pattern/casting per the requirement of NCSX-CSPEC-141-03-07, SECTION 4.2.2.

Root Cause

Failed to communicate specification to Pattern Shop to add cast on test material specimens in the transverse direction.

Corrective Action

Will request a deviation to eliminate requirement.

Verification of Corrective Action

N/A

Preventive Action

Create Inspection and Test Plan summarizing all requirements.

Estimated Completion Date

6/15/05

Actual Completion Date

Signed: C. Ruud

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

*Accept As-Is. NCSX-CSPEC-141-03-07
is being revised to eliminate the requirement
to test in 2 directions. 6-6-05 PRM*

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

Description of Defect / Non-Conformance

Chemistry for 11 shim castings is out of specification.

Root Cause

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

Corrective Action

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

Verification of Corrective Action

Chemistries were checked on subsequent parts and are within specification.

Preventive Action

Create Inspection and Test Plan summarizing all requirements.

Estimated Completion Date

6/15/05

Actual Completion Date

Complete.



Signed: C. Ruud

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

Nonconformance Report: 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

COIK

RTG

Energy Industries of Ohio

Manufacturing and Test Sequence (MTS) Serial Number C-1

Dated December 14, 2004 Revision: Original Page 1 of 8

Dated Issued: 12-14-04

C-1 Doc Package Document #25 10 pages

OPER. #	STATION	DESCRIPTION OF PROCESS	Name	Date
10	QUALITY RELEASE	REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON 12/15/04 FROM <u>Pete</u> SIGNED QUALITY MANAGER.	<u>PHL</u>	12/15/04
15	PATTERN NPAT SOP 0100REV2	APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, FOUNDRY MARK, TO THE PATTERN. CAST ON BARS REQUIRED. <i>Cast on bars added - Marked "C1" - Part number, etc. with have to be stamped</i>	<u>[Signature]</u>	12/17/04
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>[Signature]</u>	12/17/04
30	MOLD MOLD SOP 0400 REV 8 CALIBRATION PER MOLD SOP 0900 REV 5 PREPARATION PER MOLD SOP 1100R2/1200R2/13 00R1 SAND TESTING PER MOLD SOP 1400R2/1500R3/16 00R2	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>[Signature]</u>	12/17/04
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>2750</u> CASTING POURED AT: <u>5:45</u> DATE: <u>12/21/04</u> HEAT #'S: <u>21128, 21729, 21730, 21731</u> ELAPSED POUR TIME: <u>105 SEC</u> KEEL BLOCKS POURED: <u>YES</u> Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Analyzed: <u>JG</u> Date: <u>12-19-04</u>	<u>[Signature]</u>	12/19/04
50	MELT SOP 0800R2	SHAKEOUT	<u>[Signature]</u>	12-26-04

12-26-04
SIGNED WRONG BY
CJA 12-26-04

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60	CO# 40851, MS73140	ARC	REMOVE RISERS AS DIRECTED BY SUPERVISOR.	MW 1-3-05
70	RISE SOP 0100R1	HEAT TREAT HEAT SOP 0103R5	SOLUTION ANNEAL. MAKE SURE TO BLOCK ALL FLANGES OF FORM AND RACETRACK TO MINIMIZE CREEP DISTORTION. <i>REC CUT OFF HIGH FOR HT 12-23-04</i>	MW DLS 12/28/04
75	PHYSICAL TESTING	PHYSICAL TESTING	OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 510.	WA 12/28/04
80	GRIND	GSWA SOP 0100R3 GCHI SOP 0100R2	SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED. CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED FOR CONTOUR.	SA 1-2-05 MG TV 1-6-05 1-6-05
90	SAND BLAST BLAS SOP 0100R6	SAND BLAST	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	WA 1-9-05
110	VISUAL INSPECTION CQP-500 REV 4	VISUAL INSPECTION	VISUALLY INSPECT 100% OF COMPONENT ACCORDING TO ASTM A802 LEVEL 3 ALL CONDITIONS. IF OK CHECK HERE <input checked="" type="checkbox"/> . MARK AND REPAIR AT STEP 120. IF REJECTED CHECK HERE <input type="checkbox"/> .	VT- LEVEL II 1-7-05
NOTICE	WITNESS NOTIFICATION	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LP STEP. EIO NOTIFIED ON 12/15/05 DCMA NOTIFIED ON 1/3/05 <i>+ on 1/4/05 for our early ca 1/7/05</i>	Q ENG OR QA MGR 1-7-05 ABC
115	100% I.P. CQP-300 REV 10	100% I.P. CQP-300 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 <input checked="" type="checkbox"/> . MARK AND REPAIR AT STEP 120. IF REJECTED CHECK HERE <input type="checkbox"/> .	LP- LEVEL II KRA 1-7-05 1-12-05
120	WELD SOP 0100 REV 7	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION.	LP- LEVEL II 1-12-05
130	L.P. EXCAVATION CQP-300 REV 10	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 I.P. DRAWING.	LP- LEVEL II deluged OK Penalty KRA
165	SAND BLAST BLAS SOP 0100R6	SAND BLAST	SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE.	LP- LEVEL II 1-12-05
170	WELD MAP	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 MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER.	LP- LEVEL II built out after RT OK

Alubink

 1/7/04

180	NOTICE	WITNESS NOTIFICATION	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.	WJA	
190	NOTICE	HOLD POINT	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF XRAY AND DIMENSIONAL STEPS. EIO NOTIFIED ON 1/14/05 DCMA NOTIFIED ON 1/14/05	Q ENG OR QA MGR CJH 1/13/05	
190	NOTICE	X-RAY AT MQS PROCEDURE 2011010 REV 0	HOLD FOR APPROVAL OF XRAY PROCEDURES. RECEIVE APPROVAL FROM EIO ON 1/11/05 from R.D	QA MGR CJH	
200	NOTICE	LAYOUT Lawton's procedure	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 CJH	out to MSS 1-12-05
210	NOTICE	X-RAY CQP 401 REV 5	INSPECT CASTING TO VERIFY DIMENSIONS. THIS MAY BE PERFORMED BEFORE OR AFTER STEP 190. DIMENSIONED 1/10-11/05 DATE BY 3DSCA RELEASED 505000 (ENGINEER ONLY)	RT - LEVEL II ABK	1-19-05
220	NOTICE	WELD SOP 0100 REV 7	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 370. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP 260. EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	RT - LEVEL II CJH	1-19-05
230	NOTICE	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 CJH	2-17-05
240	NOTICE	WELD MAP	MAP ALL WELDS WITH DIGITAL PHOTOGRAPHS. 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 R. Service DATE 2/18/05 DEFECTS < 10% _____ SIGN BY QA ENG.	Q ENG OR QA MGR CJH	2/18/05
260	NOTICE	QA APPROVAL HOLD POINT	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON 1/11/05 DCMA NOTIFIED ON 1/11/05 QA TO APPROVE ELECTRODE PRIOR TO USE. C.F. 8mm 1/11/05 PROCEDURE USED: 15-SWAG-11-1100 MATERIAL USED: _____ QUALITY ENG. Name: Rick Adams Date: 2/18/05	Q ENG OR QA MGR CJH	1/11/05

1/11/05
1/25/05
1/25/05



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270	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MMNMN MOD REV 1 FOR WELDS <8" - WPS 15-GMAW-CF8MMNMN MOD REV 2			
280	GRIND GCHH SOP 0100R2	HAND GRIND WELDS.			
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 <input checked="" type="checkbox"/> WASH AND SEND TO STEP 300. IF REJECTED CHECK HERE <input type="checkbox"/> AND RETURN TO STEP 220.	LP- LEVEL II Rlet 3/5/05		
295	REPEAT	REPEAT STEPS 220 TO 290 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA N/A		
295	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 <input checked="" type="checkbox"/> AND GO TO STEP 430. IF REJECTED CHECK HERE <input type="checkbox"/>	QA N/A 3/5/05		
296	GRIND GCHH SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 295. REPEAT UNTILL COMPLIANCE IS ACHIEVED.	N/A		
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 <input type="checkbox"/>	QA ENGINEER 3/7/05		
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 1.101 3/20/05		
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 U/A		
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 <input checked="" 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 RBK 3-21-05		

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REPEAT STEPS 220 TO 320 AS REQUIRED TILL WELDS CLEAR X-RAY. DOCUMENT REWORK ON A SUPPLEMENTAL MTS

SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE. *Supplemental supplied on 3/21/05*

340	SAND BLAST BLAS SOP 0100R6	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON <i>3/16/05</i> DCMA NOTIFIED ON <i>3/16/05</i>	Q ENG OR QA MGR <i>ChR</i>	<i>3-22</i>
350	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"/> <i>3/30/05 Final OK</i> IF REJECTED CHECK HERE <input type="checkbox"/> MARK AND REPAIR AT STEP 390. MUST BE PERFORMED BY LEVEL II in VT.	VT - LEVEL II <i>Wht</i>	<i>3/22/05</i>
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. <i>3/30/05 Final OK</i>	LP - LEVEL II <i>Wht</i>	<i>3/22/05</i>
380	WELD SOP 0100 REV 7	IF OK CHECK HERE <input checked="" type="checkbox"/> WASH AND SEND TO STEP 455. IF REJECTED CHECK HERE <input type="checkbox"/> EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION.	MC	<i>3/22/05</i>
390	L.P. EXCAVATION CQP-300 REV 10	LP. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903.	LP - LEVEL III <i>ChR</i>	<i>3/23/05</i>
400	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 <i>RS</i> DATE <i>3/23</i> DEFECTS < 10% <i>ChR</i> SIGN BY QA ENG.	<i>RS</i>	<i>3/24/05</i>
420	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 410. REPEAT UNTILL COMPLIANCE IS ACHIEVED.	<i>W/A</i>	
430	WELD SOP 0100 REV 7	WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MMN MOD REV 1 FOR WELDS <8" - WPS 15-GMAW-CF8MMN MOD REV 2	<i>W</i>	<i>3-28-05</i>



AL

440	GRIND GCH SOP 0100 REV 2	HAND GRIND WELDS.				CG	3/28/05
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 390.				LP- LEVEL II WBA	3/30/05
451	REPEAT	REPEAT STEPS 350 TO 450 AS REQUIRED TILL WELDS CLEAR FINAL LIQUID PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS				QA ENG NA	
452	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 _____				CJA	3/28/05
455	GRIND GCH SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 451. REPEAT UNTILL COMPLIANCE IS ACHIEVED.				N/A	
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LAYOUT AND MAG PERM STEPS. EIO NOTIFIED ON 3/23/05 DCMA NOTIFIED ON 3/23/05				Q ENG OR QA MGR	OK
460	LAYOUT	LAYOUT PRODUCTION PARTS PROCEDURE TO BE DETERMINED (PERFORMED AFTER FIRST ARTICLE APPROVAL) MAY BE PERFORMED BEFORE OR AFTER STEP 460-480. PERFORM MAG PERM TESTING WITH SEVRIN GAUGE. ACCEPTANCE 1.02. CHECK THE ENTIRE SURFACE ON A 6" BY 6" 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 490. IF REJECTED CHECK HERE _____				Deliberate	
470	FINAL MAG PERM INSPECTION SOP MAG PERM 100, REV 1	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. 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 470				OK	3/30/05
480	GRIND GCH SOP 0100 REV 2	RETEST MAG PERM				N/A	
490	RETEST MAG SOP MAG PERM 100, REV 1	PHOTOGRAPH II				↓	↓
	SAND Blast					RAM	3/28/05
						CAF	3/31/05

Handwritten notes and stamps at the top of the page, including a circular stamp with the number 0000 and the date 3/30/05.

Handwritten notes and stamps at the top of the page, including a circular stamp with the number 0000 and the date 3/30/05.

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PROCESS DOCUMENT TO PROGRAM MANAGER FOR COMPLIANCE AUDIT.

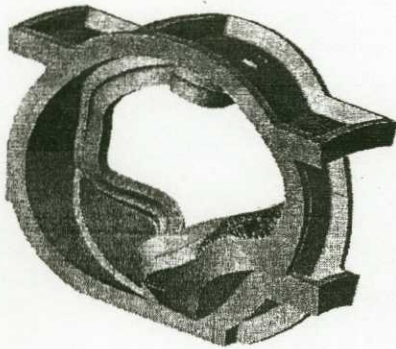
500	AUDIT REVIEW			3/31/05 <i>pat</i>
510	DOC. REVIEW	REVIEW DOCUMENTS AS REQUIRED IN CAF CHECKLIST, ALL DOCUMENTS NOTED TO BE ACCESSIBLE FOR AUDITING. (SHIPPER, C OF C, M.T.R., M.T.S., INSPECTION REPORT, X-RAY READER SHEETS AND HEAT TREAT CHARTS)		3/31/05 <i>pat</i>
NOTICE	RELEASE FROM EIO	PROVIDE DOCUMENTS TO EIO SENT ON 4/4/05 BY <i>pat</i> RECEIVED RELEASE FROM EIO ON 3/30/05		Q.ENG OR QA MGR
520	PACK AND SHIP	PACKAGE AND SHIP TO MAJOR TOOL.		3/31/05 CARUUD
1000	REVISION HISTORY	ORIGINAL 12-14-04. approved 12-14-04.		

Shipped



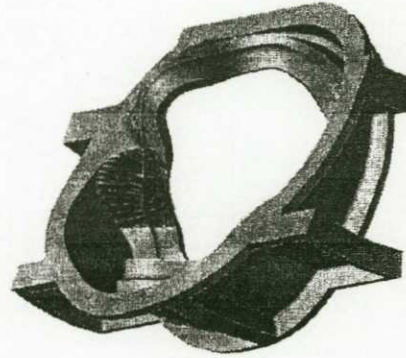
Page 8 of 8 Revised 1-26-05 to clarify and illustrate the critical areas (CLASS 1) of the C-1 Coil

CLASS 2 ALL OVER

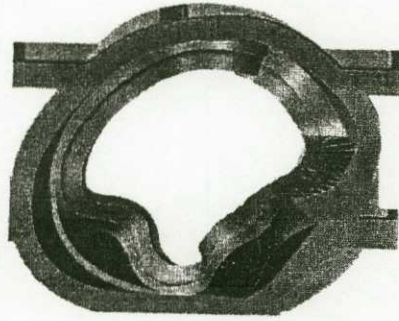


GENERAL ISOMETRIC
VIEW FROM TOP SIDE

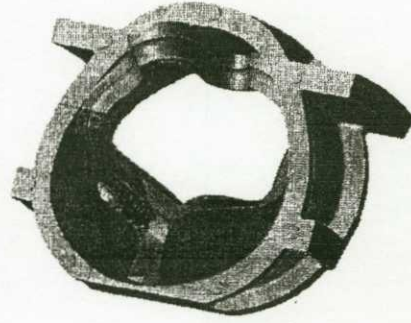
RED AREA INDICATES HIGH STRESSED AREA



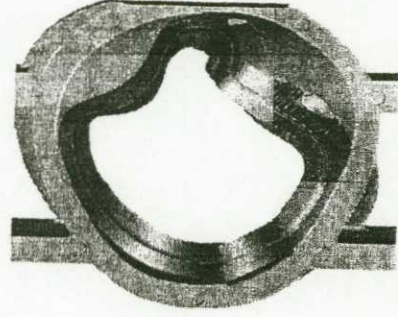
TOP SIDE ISOMETRIC



TOP SIDE VIEW



BOTTOM SIDE ISOMETRIC



BOTTOM SIDE VIEW

NOTES: Weld repair of C-1 Coil Casting

Date: 3-21-05

SUPPLEMENTAL ROUTING CARD

PART NUMBER: C-1 Coil		SERIAL NUMBER: C-1	AUTHORITY C Ruid
OPER NUMBER	STATION		OPERATOR SIGN/DATE
220	WELD SOP 0100 REV 7	EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY.	
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.	LP- LEVEL II JBB 3/21/05
240	WELD MAP	MAP ALL WELDS WITH DIGITAL PHOTOMAPS. 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>R. Suris</u> DATE <u>3/27/05</u> DEFECTS < 10% <input type="checkbox"/> SIGN BY QA ENG.	RS 3/22/05
NOTICE	WITNESS NOTIFICATION	PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. <u>WAVE & SURVE</u>	Q ENG OR QA MGR CRL
260	QA APPROVAL HOLD POINT	EIO NOTIFIED ON <u>3/21/05</u> DCMA NOTIFIED ON <u>3/21/05</u> QA TO APPROVE ELECTRODE PRIOR TO USE OF D PROCEDURE USED: <u>15-SMAW-CF8MNMN</u> MATERIAL USED: <u>Lincolb L AN 44/55</u> QUALITY ENG. Name: <u>Picardo Suris</u> Date: <u>3/21/05</u>	
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	
280	GRIND GCHI SOP 0100R2	HAND GRIND WELDS.	
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 <input checked="" type="checkbox"/> WASH AND SEND TO STEP 300. IF REJECTED CHECK HERE <input type="checkbox"/> AND RETURN TO STEP 220.	LP- LEVEL II JBB 3/21/05
	REPEAT	REPEAT STEPS 220 TO 290 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS	QA ENG N/A

295	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 <input checked="" type="checkbox"/> AND GO TO STEP 430. IF REJECTED CHECK HERE _____.	OK 5/21	
296	GRIND GCHI SOP 0100R2	GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 295. REPEAT UNTILL COMPLIANCE IS ACHIEVED.	N/A	
300	X-RAY (NOTE)	IF RADIO GRAPHED AREAS ARE GREATER THAN FOUR TO FIVE INCHES THE CASTING WILL BE SENT TO MQS. SEND TO MQS CHECK HERE _____ RADIOGRAPH AT CAF CHECK HERE <input checked="" type="checkbox"/> Y _____	QA ENGINEER Dunn 3-21-05	
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 N/A	
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	Dunn 3-21-05
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 <input checked="" type="checkbox"/> AND SEND TO STEP 340. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP 220.	RT - LEVEL II	16

EIO
Energy Industries of Ohio
SUPPLIER QUALITY RELEASE

C-1 Doc Package
Document #26

Date: 3/30/05

I. General Information:

Project Name	Modular Coil Winding Form C1	+ Shim Ctg.	Row
PO No	NCSX SOW 141 02 01		
Supplier	MetalTech		
Procurement Agent	EIO		
Shipment:	<input checked="" type="checkbox"/> Partial	<input type="checkbox"/> Final	

II. Material Description:

Casting C1 Coil

III. Release Checklist:

Plan Requirements Complete?	<input type="checkbox"/> Yes	<input checked="" 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 type="checkbox"/> Unconditional	Explain conditional releases in comments section.	

IV. Comments:

Metallurgical testing pending, unable to complete prior to shipment.
Final dimensional inspection waiver. (3D Scanner data utilized)
Conditional release (Casting may ship, but metallurgical data must be submitted in a reasonable time frame)
Casting has been accepted by EIO Quality with the above exceptions.

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

V. Supplier Quality Representative Sign Off:

+ Charles Rued	x <i>Ch Rued</i>	3/30/05
Supplier Quality Representative (SQR) Print/Type Name	Supplier Quality Representative (SQR) Signature	Date

VI. Supplier Approval For Shipment:

Procurement Agent Notified of Shipment	Date: 3/29/05
Required Vendor Data Ready for Shipment	Date: 3/30/05
Peter A. Djordjevic	<i>Peter A. Djordjevic</i>
Supplier's Representative Print/Type Name	Supplier's Signature
	3/30/05
	Date