

Energy Industries of Ohio
Manufacturing and Test Sequence (MTS) Serial Number C-2

1 OF 11 CO# 40851 Dated 3-9-05 Revision: Rev 4 Dated Issued: 4-18-05

| OPER. # | STATION | DESCRIPTION OF PROCESS | Name | Date |
|---------|---|--|-------------------|----------------|
| 10 | QUALITY RELEASE | REVIEW AND APPROVE MTS. RECEIVED APPROVAL FROM EIO ON <u>4/12/05</u> FROM <u>Rate D.</u> SIGNED QUALITY MANAGER | <u>chr</u> | <u>4/12/05</u> |
| 15 | PATTERN NPAT SOP 0100REV2 | APPLY APPROPRIATE PART NUMBER, SERIAL NUMBER, AND FOUNDRY MARK, TO THE PATTERN. CAST ON BARS REQUIRED. Place numbers on the bars as to their location. | <u>By</u> | <u>4-14</u> |
| 20 | COREMAKE CORE SOP 0100 REV 6 CALIBRATION PER CORE SOP 0200R4/0300R6 | MAKE CORES IN SAND MIXTURES AS DESCRIBED BY METALTEK ENGINEERING AND VERIFIED IN MODELING TRIALS. METALTEK CORE SOP 0100 REV 6) CORE WASH WITH ZIRCONIUM CORE WASH. (CALIBRATION OF EQUIPMENT REQUIRED PER CORE SOP 0200,R4 / 0300,R6) VERIFY COUNT AND INSPECT. | <u>By</u> | <u>4-14</u> |
| 30 | MOLD MOLD SOP 0400 REV 8 CALIBRATION PER MOLD SOP 0900 REV 5 PREPARATION PER MOLD SOP 1100R2/1200R2/1300R1 SAND TESTING PER MOLD SOP 1400R2/1500R3/1600R2 | MOLD PER WORK INSTRUCTIONS IN MAPICS ROUTING AND SOPS REFERENCED. ENGINEER OF RECORD - ROGER BROMAN, CONSULT ON MOLD-RELATED CONCERNS. MOLD MATERIALS REQUIRED PER MAPICS BOM. NOTIFY ENGINEER OF ANY SUBSTITUTIONS. | <u>By</u> | <u>4-14</u> |
| 40 | POUR MELT SOP 0100R5 MELT SOP 0700R2 MELT SOP 0600R2 | METAL MUST BE AOD REFINED OR AOD INGOT. VIRGIN METAL ADDITIONS ALLOWED. RECORD POURING TEMPERATURE: <u>2730</u> CASTING POURED AT: <u>2730°F</u> DATE: <u>4/15/2005</u> HEAT #'s: <u>29060, 29061, 29062, 29063</u> ELAPSED POUR TIME <u>1:20</u> KEEL BLOCKS POURED: <u>cast-on 3 Laddles</u> Sample from ladle to be analyzed for final chemical analysis and reported on material certifications. Sample Taken by: <u>SR</u> Analyzed: <u>G. Itoit</u> Date: <u>4/15/2005</u> | <u>J. Golabek</u> | <u>4-15-05</u> |
| 50 | MELT SOP 0800R2 | SHAKEOUT | <u>CH</u> | <u>4/18/05</u> |

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| | | | | |
|--------|---|--|---------------------------|----------------------|
| 60 | ARC RISE SOP 0100R1 | REMOVE RISERS AS DIRECTED BY SUPERVISOR. | RLC | 4-21-05 |
| 70 | HEAT TREAT HEAT SOP 0103R5 | SOLUTION ANNEAL. MAKE SURE TO BLOCK ALL FLANGES OF FORM AND RACETRACK TO MINIMIZE CREEP DISTORTION. Soak Temp: 2050F, Soak Time: 4HR + 1/2 HR/IN, Quench Type: Air Cool | DLS | 4-27-05 |
| 75 | PHYSICAL TESTING | OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 510. | Chl | 4/28/05 |
| NOTE | | THE ORDER OF CLEANING PROCESSES MAY BE ALTERED DUE TO CAPACITY CONSTRAINTS. HOLD POINTS AND COMPLIANCE WILL NOT BE COMPROMISED. EIO WILL BE ADVISED OF ALL CHANGES THAT MAY RESULT IN A REQUEST FOR DEVIATION FROM REQUIREMENTS. | . | |
| 80 | GRIND GSAW SOP 0100R3 | SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED. | TJ | 5-4 |
| 85 | GRIND GCHI SOP 0100R2 | CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED FOR CONTOUR. | 1ST. SHIFT MIKE Tom | (5-5-05) (5-6-05) |
| 90 | SAND BLAST BLAS SOP 0100R6 | SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE. | 1/3 | 5-6-05 |
| NOTICE | WITNESS NOTIFICATION HOLD FOR EIO APPROVAL | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LAYOUT. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____ APPROVAL RECEIVED ON _____ | Q ENG OR QA MGR | |
| 100 | LAYOUT SOP LAYOUT XX, TBD | INSPECT CASTING TO VERIFY DIMENSIONS. THIS STEP MAY BE DELAYED. DIMENSIONED _____ DATE _____ RELEASED _____ (ENGINEER ONLY) | | |
| 110 | VISUAL INSPECTION CQP-500 REV 4 | VISUALLY INSPECT 100% of COMPONENT ACCORDING TO ASTM A802 LEVEL 3 ALL CONDITIONS. IF OK CHECK HERE _____ IF REJECTED CHECK HERE _____. MARK AND REPAIR AT STEP 120. | VT- LEVEL II | |

90 Rev
5 issued
5/10/05
Chl

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Dated Issued: 5-10-05

| | | | | |
|--------|---|--|-------------------------|-------------|
| 60 | ARC RISE SOP 0100R1 | REMOVE RISERS AS DIRECTED BY SUPERVISOR. | | |
| 70 | HEAT TREAT HEAT SOP 0103R5 | SOLUTION ANNEAL. MAKE SURE TO BLOCK ALL FLANGES OF FORM AND RACETRACK TO MINIMIZE CREEP DISTORTION. Soak Temp: 2050F, Soak Time: 4HR + 1/2 HR/IN, Quench Type: Air Cool | | |
| 75 | PHYSICAL TESTING | OBTAIN TEST SPECIMENS AND SUBMIT FOR PHYSICAL TESTING. REPORT RESULTS AS PART OF STEP 510. | | |
| NOTE | | THE ORDER OF CLEANING PROCESSES MAY BE ALTERED DUE TO CAPACITY CONSTRAINTS. HOLD POINTS AND COMPLIANCE WILL NOT BE COMPROMISED. EIO WILL BE ADVISED OF ALL CHANGES THAT MAY RESULT IN A REQUEST FOR DEVIATION FROM REQUIREMENTS. | | |
| 80 | GRIND GWA SOP 0100R3 | SWING GRIND TO REMOVE RISER REMAINS AND FLASH IF REQUIRED. | | |
| 85 | GRIND GCHI SOP 0100R2 | CHIP AND HAD GRIND SURFACE OF PART AS REQUIRED FOR CONTOUR. | | |
| 90 | SAND BLAST BLAS SOP 0100R6 | SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE. | | |
| NOTICE | WITNESS NOTIFICATION HOLD FOR EIO APPROVAL | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LAYOUT. EIO NOTIFIED ON <u>5/4/05</u> DCMA NOTIFIED ON <u>5/4/05</u> APPROVAL RECEIVED ON <u>5/10/05</u> <u>CTR</u> <i>as long as length check performed ✓</i> | Q ENG OR QA MGR | <i>CTR</i> |
| 100 | LAYOUT SOP LAYOUT 0100 | INSPECT CASTING TO VERIFY DIMENSIONS. THIS STEP MAY BE DELAYED. DIMENSIONED _____ DATE _____ RELEASED _____ (ENGINEER ONLY) NOTE: THE FIRST PART PRODUCED OF EACH TYPE A, B AND C WILL BE DIMENSIONED BY LAWTON PATTERN. IF DIMENSIONED BY LAWTON IT WILL BE DOCUMENTED HERE. Subsequent casting done internally per Romer Arm. | JRS | 5/11/05 |
| 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 <u>✓</u> . MARK AND REPAIR AT STEP 120. | VT - LEVEL II KRA | 5/12/05 |

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| | | | | |
|--------|---|--|-----------------------|---|
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF LP STEP. EIO NOTIFIED ON <u>5/10/05</u> DCMA NOTIFIED ON <u>5/10/05</u> | Q ENG OR QA MGR | <i>ChR</i> |
| 115 | 100% L.P. CQP 0300 REV 10 | L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA- LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ IF REJECTED CHECK HERE <u>✓</u> MARK AND REPAIR AT STEP 120. | LP - LEVEL II | <i>KRA</i> <i>5-12-05</i> |
| 120 | WELD SOP 0100 REV 7 | EXCAVATE ANY DEFECTS FOUND DURING 100% VISUAL AND LP INSPECTION. | | <i>10</i> <i>5-12-05</i> |
| 125 | GRIND GCHI SOP 0100R2 | CHIP AND HAND GRIND EXCAVATION AS REQUIRED. | | <i>5-12-05</i> <i>5-12-05</i> |
| 130 | L.P. EXCAVATION CQP-300 REV 10 | L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ IF REJECTED SEND BACK TO STEP 125. | LP - LEVEL II | |
| 165 | SAND BLAST BLAS SOP 0100R6 | SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE. | | <i>CA</i> <i>5-13</i> |
| 170 | HOLD POINT WELD MAP | MAP ALL WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. USE YELLOW MARKER. MUST 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. MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED. | | <i>Delayed</i> <i>trd after</i> <i>xray</i> <i>ChR</i> |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF X-RAY AND DIMENSIONAL STEPS. EIO NOTIFIED ON <u>5/12/05</u> DCMA NOTIFIED ON <u>5/12/05</u> | Q ENG OR QA MGR | <i>ChR</i> <i>5/12</i> |
| 190 | X-RAY AT MQS MQS PROCEDURE 20.H.010 REV 0 | X-RAY PER TECHNIQUE # 12726 USE CALIBRATED DENSITOMETER FOR DENSITY VERIFICATION. WHEN MARKING USE BLACK MARKERS. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. | RT - LEVEL II | <i>compleat</i> <i>5/24/05</i> <i>RT</i> |

Held
Pending
RT
ChR

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|--------|---|---|---|---------------------|
| 210 | X-RAY CQP 401 REV 5 | X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE _____ 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 Completed 5/24/05 at MGS | <i>lent</i> |
| 220 | WELD SOP 0100 REV 7 | EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY. | <i>NC</i> | <i>6-7-05</i> |
| 225 | GRIND GCHI SOP 0100R2 | CHIP AND HAND GRIND EXCAVATION AS REQUIRED. | <i>DWP</i> | <i>6-8-05</i> |
| 230 | L.P. EXCAVATION CQP-300 REV 10 | L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ IF REJECTED SEND BACK TO STEP 225. | LP - LEVEL II | |
| 240 | HOLD POINT WELD MAP | MAP ALL WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES <u>X</u> , REPORT SENT BY <u>R Surin</u> DATE <u>6/1/05</u> DEFECTS < 10 % _____ SIGN BY QA ENG. MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER PRIOR TO REPAIR. ONCE THE REPORT IS SENT, WELDING MAY START. | <i>lent</i> | <i>6/1/05</i> |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON <u>5/25/05</u> DCMA NOTIFIED ON <u>5/25/05</u> <i>for June 1 start</i> | Q ENG OR QA MGR | <i>QEC</i> |
| 260 | QA APPROVAL HOLD POINT | QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: <u>15-GMAW CF8MN MOD</u> MATERIAL USED: <u>ENM 4455 / Heat 52743</u> <u>20-SMAW CF8MN MOD</u> Metrode <u>13816 NF</u> Lot <u>W019711</u> QUALITY ENG. Name: <u>R. M. F.</u> Date: <u>6/1/05</u> | | <i>Go to Rev 6.</i> |
| 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 ADD WPS FOR VERTICAL WELDS. | | <i>NA</i> |
| 280 | GRIND GCHI SOP 0100R2 | HAND GRIND WELDS. | | |

*Review
films
6/7/05*




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CO# 40851 Dated 3-9-05 Revision: Rev 6

Dated Issued: 5-29-05

| | | | | |
|--------|---|---|--------------------------------|---|
| 210 | X-RAY CQP 401 REV 5 | X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE _____ AND SEND TO STEP 340. REJECTED CHECK HERE _____ MARK UP DEFECTS AND SEND THE CASTING TO STEP 220. | RT - LEVEL II | |
| 220 | WELD SOP 0100 REV 7 | EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY. | <i>AB</i> | |
| 225 | GRIND GCHI SOP 0100R2 | CHIP AND HAND GRIND EXCAVATION AS REQUIRED. | <i>AB</i> | |
| 230 | L.P. EXCAVATION CQP-300 REV 10 | L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE <input checked="" type="checkbox"/> IF REJECTED SEND BACK TO STEP 225. | LP - LEVEL II | |
| 240 | HOLD POINT WELD MAP | MAP ALL WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION . SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS>10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10 % _____ SIGN BY QA ENG. MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER PRIOR TO REPAIR. ONCE THE REPORT IS SENT, WELDING MAY START. | | |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON _____ DCMA NOTIFIED ON _____ | Q ENG OR QA MGR | |
| 260 | QA APPROVAL HOLD POINT | QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED: _____ QUALITY ENG. Name: _____ Date: _____ | | |
| 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 ADD WPS FOR VERTICAL WELDS. | <i>LP</i> <i>see 6/7/05</i> |  |
| 280 | GRIND GCHI SOP 0100R2 | HAND GRIND WELDS. | <i>AB</i> | <i>6-8-05</i> |

should be doc on S220
AB
Start 6/7/05

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|-------|--|---|---|--|
| 290 | L.P. WELD CQP 0300 REV 10 | L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ WASH AND SEND TO STEP 300. IF REJECTED CHECK HERE <input checked="" type="checkbox"/> | LP - LEVEL II <i>ALC</i> 6-8-05 | |
| | REPEAT | REPEAT STEPS 220 TO 290 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON STEPS S220 TO S290 ON LAST PAGE OF MTS. IF OK CHECK HERE _____ AND PROCEED TO STEP 295. | <i>See S220</i> | |
| 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 300. IF REJECTED CHECK HERE _____ | CA | |
| 296 | GRIND GCHI SOP 0100R2 | GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 295. REPEAT UNTIL COMPLIANCE IS ACHIEVED. | CA | |
| 300 | X-RAY (NOTE) | IF RADIO GRAPHED AREAS ARE GREATER THAN FOUR TO FIVE INCHES THE CASTING WILL BE SENT TO MQS. SEND TO MQS CHECK HERE <input checked="" type="checkbox"/> RADIOGRAPH AT CAF CHECK HERE _____ | QA ENGINE ER <i>RS</i> | |
| 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 <i>R. Quinn</i> <i>RT</i> 6/15/05 | |
| 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 <i>[Signature]</i> | |
| 320 | X-RAY CQP 401 REV 5 | X-RAY INTERPRETATION. ACCEPTANCE MSS SP 54. ATTACH TECHNIQUE, READER SHEET FOR ALL RADIOGRAPHS. MUST INDICATE RADIOGRAPHER AND ASNT CERTIFICATION LEVEL ON READER SHEET. IF OK CHECK HERE _____ AND SEND TO STEP 340. REJECTED CHECK HERE <input checked="" type="checkbox"/> MARK UP DEFECTS AND SEND THE CASTING TO STEP 220. <i>OK on Reshore 4/14</i> | RT - LEVEL II <i>Ronk</i> <i>RK</i> 6/15/05 <i>6/16</i> | |
| | REPEAT | REPEAT STEPS 220 TO 320 AS REQUIRED TILL WELDS CLEAR X-RAY. DOCUMENT REWORK ON A SUPPLEMENTAL MTS <i>1st loop repair #1</i> <i>Doc Repeats on last page</i> <i>CA</i> | QA ENG. <i>CA</i> 6/15/05 | |

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|--------|---|--|------------------------------------|----------------|
| 340 | SAND BLAST BLAS SOP 0100R6 | SANDBLAST (REMOVE ALL BLAST MATERIAL FROM CASTING) SANDBLASTING WILL BE DONE USING RECYCLED SHARP ANGULAR AGGREGATE. | | NTW 6/16/05 |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON <u>6/20</u> DCMA NOTIFIED ON <u>6/20</u> | Q ENG OR QA MGR | GBR |
| 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 _____ IF REJECTED CHECK HERE <u>✓</u> . MARK AND REPAIR AT STEP 385. MUST BE PERFORMED BY LEVEL II in VT. | VT - LEVEL II H/A 6-24-05 | |
| 360 | FINAL L.P. CQP 0300 REV 10 | FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE _____ WASH AND SEND TO STEP 455. IF REJECTED CHECK HERE <u>X</u> | LP - LEVEL II JPS 6-23 | |
| 380 | WELD SOP 0100 REV 7 | EXCAVATE ANY DEFECTS FOUND DURING FINAL PENETRANT INSPECTION. | N/A | |
| 385 | GRIND GCHI SOP 0100R2 | CHIP AND HAD GRIND EXCAVATION AS REQUIRED. | AB 5/5/06/28-05 | |
| 390 | L.P. EXCAVATION CQP-300 REV 10 | L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. IF OK CHECK HERE <u>✓</u> IF REJECTED SEND BACK TO STEP 385. | LP - LEVEL II DDR 6-23-05 | |
| 400 | HOLD POINT WELD MAP | MAP ALL WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE. FILE WITH QA. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS >10% YES _____, REPORT SENT BY _____ DATE _____ DEFECTS < 10 % _____ SIGN BY QA ENG. MAJOR WELD REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER PRIOR TO REPAIR. ONCE THE REPORT IS SENT, WELDING MAY START. | N/A | |





6/23/05



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|--------|--|--|--|---|
| 420 | QA APPROVAL HOLD POINT | QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: _____ MATERIAL/LOT USED: _____ N/A QUALITY ENG. Name: _____ Date: _____ | | |
| 430 | WELD SOP 0100 REV 7 | WELD REPAIR DEFECTS AS MARKED. FOR WELDS <2" - WPS 10-SMAW-CF8MNMN MOD REV 1 FOR WELDS <8" - WPS 15-GMAW-CF8MNMN MOD REV 2 ADD WPS FOR VERTICAL WELDS. | N/A | |
| 440 | GRIND GCHI SOP 0100 REV 2 | HAND GRIND WELDS. | | |
| 450 | L.P. WELDS CQP 0300 REV 10 | L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. IF OK CHECK HERE _____ WASH AND SEND TO STEP 460. IF REJECTED CHECK HERE _____ AND RETURN TO STEP 440. | LP LEVEL II | |
| | REPEAT | REPEAT STEPS 350 TO 450 AS REQUIRED TILL WELDS CLEAR FINAL LIQUID PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS | QA ENG. | |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF VISUAL AND LP STEPS. EIO NOTIFIED ON <u>6/20/05</u> DCMA NOTIFIED ON <u>6/20/05</u> | Q ENG OR QA MGR | <i>[Signature]</i> |
| 460 | 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 <u>✓</u> MARK AND REPAIR AT STEP 390. MUST BE PERFORMED BY LEVEL II in VT. | VT - LEVEL II <i>KRA 6-24-05</i> |  |
| 470 | FINAL L.P. CQP 0300 REV 10 | FINAL L.P. 100% OF COMPONENT. ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE <u>✓</u> WASH AND SEND TO STEP 455. IF REJECTED CHECK HERE _____ | LP - LEVEL II <i>JDR 6-23-05</i> | |
| 480 | 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 <u>✓</u> AND GO TO STEP 430. IF REJECTED CHECK HERE _____ <i>Performed on entire part 100% Pictures provided to DCMA</i> | <i>RG 6-23-05</i> |  |
| 490 | GRIND GCHI SOP 0100R2 | GRIND AREAS OF NON COMPLIANCE AND RETURN TO STEP 451. REPEAT UNTIL COMPLIANCE IS ACHIEVED. | N/A | |

Energy Industries of Ohio
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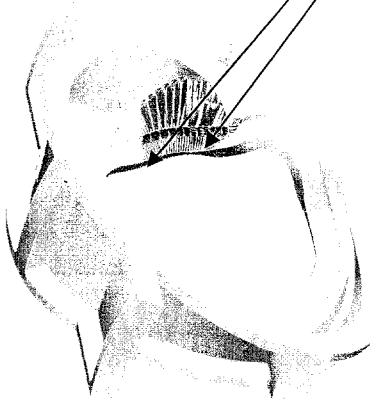
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF MAG PERM STEPS. EIO NOTIFIED ON <u>6/20</u> DCMA NOTIFIED ON <u>6/20</u> | Q ENG OR QA MGR | |
|--------|--|--|-----------------|----------------|
| 500 | FINAL MAG PERM INSPECTION SOP MAG PERM 100, REV 1 | PERFORM MAG PERM TESTING WITH SEVRIN GAUGE. ACCEPTANCE 1.02. CHECK THE ENTIRE SURFACE ON A 6"BY6" GRID. REPORT RESULTS. USE A 6" SQUARE BLOCK TO INDICATE TEST LOCATIONS AND RECORD RESULTS. COMPLIANT AREAS WILL NOT BE MARKED. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. OK CHECK HERE _____ AND GO TO STEP 530. IF REJECTED CHECK HERE _____. | <u>N/A</u> | |
| 510 | GRIND GCHI SOP 0100 REV 2 | HAND GRIND WITH SUITABLE CONE OR OTHER SIMILAR GRINDER AS REQUIRED TO ENSURE REMOVAL OF MATERIAL TO ACHIEVE MAG PERM REQUIREMENT. CIRCLE AREA REMEDIATE FOR RETEST. | | |
| 520 | RETEST MAG PERM SOP MAG PERM 100, REV 1 | RETEST MAG PERMEABILITY AT FAILED TEST POINTS. MARK NONCOMPLIANT AREAS WITH AN "X" FOR REPAIR. ACCEPTANCE 1.02. IF OK CHECK HERE _____. IF REJECTED CHECK HERE _____ RETURN TO STEP 510. | | |
| 530 | DOC. REVIEW | REVIEW DOCUMENTS AS REQUIRED IN CAF CHECKLIST, ALL DOCUMENTS NOTED TO BE ACCESSIBLE FOR AUDITING. (SHIPPER, C OF C, M.T.R., M.T.S., INSPECTION REPORT, X-RAY READER SHEETS AND HEAT TREAT CHARTS) | <u>cdn</u> | <u>6/24/05</u> |
| NOTICE | RELEASE FROM EIO | PROVIDE DOCUMENTS TO EIO. SENT ON <u>6/24/05</u> BY <u>cdn</u> . RECEIVED RELEASE FROM EIO ON _____. | Q ENG OR QA MGR | |
| 540 | PACK AND SHIP | PACKAGE AND SHIP TO MAJOR TOOL. | | |
| 1000 | REVISION HISTORY | ORIGINAL 12-14-04. Approved 12-14-04. Revision level 1- Revised 1-26-05 new page 8, correct High stress areas, Revision level 2 3-16-05, delete LO step 455. Revision 3 3-28-05 Added note regarding hold point at weld step 400. Revision level 4 written for C-2 casting 4-18-05. Rev 5 added Layout SOP# and note regarding first casting layout responsibility. 5-10-05 Rev 6 added step 420 and "LOT" to step 260 and 420.5-29-05 | CARUUD | |



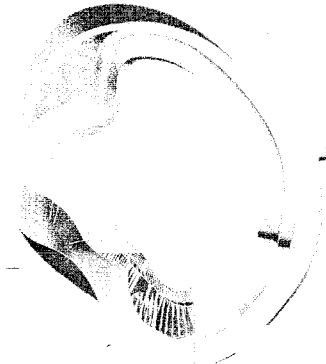
GENERAL ISOMETRIC
VIEW FROM TOP SIDE

**TABS DESIGNATE
CRITICAL AREA**

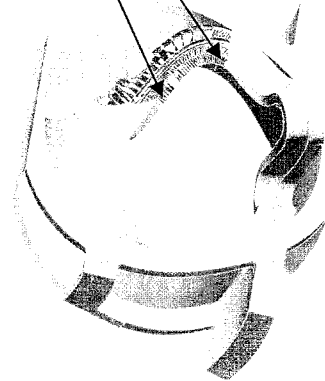
RED AREA INDICATES HIGH STRESSED AREA



TOP SIDE ISOMETRIC



TOP SIDE VIEW



BOTTOM SIDE ISOMETRIC



BOTTOM SIDE VIEW

| | REPEAT STEPS | SUPPLEMENTAL REPAIR STEPS | 1 ST H | 2 ^N D | 3 RD | 4 TH | 5 ^T H |
|--------|---|--|---|---------------------|--|-------------------------------------|---------------------|
| S220 | WELD SOP 0100 REV 7 | EXCAVATE ANY DEFECTS FOUND DURING RADIOGRAPHY. | <i>JC 4/15/05</i> | | | | |
| S230 | L.P. EXCAVATION CQP-300 REV 10 | L.P. ALL EXCAVATIONS PRIOR TO WELDING TO ENSURE REMOVAL OF DEFECT. ACCEPTANCE PER A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. | <i>LP - LEVE LP 5B 6/15/05</i> | | | | |
| S240 | WELD MAP | MAP ALL WELDS WITH DIGITAL PHOTO/MAPS INDICATING LOCATION. SERIALIZE DEFECTS ON CASTING, USE SCALE IN PHOTOS AND DOCUMENT SIZE. THIS IS TO BE PERFORMED BY SUPERVISOR, INSPECTION LEAD MAN OR THEIR DESIGNEE, FILE WITH QA. MUST SEND REPORT ON ALL WELDS OVER 10% OF NOMINAL WALL THICKNESS TO CUSTOMER. DEFECTS > 10% YES <i>X</i> , REPORT SENT BY <i>Ctn</i> DATE <i>6/15/05</i> DEFECTS < 10% _____ SIGN BY QA ENG. REPAIRS MAY NOT PROCEED UNTIL INFORMATION IS SUBMITTED. | <i>Ctn</i> | | | | |
| NOTICE | WITNESS NOTIFICATION | PROVIDE NOTICE TO EIO AND DCMA AT LEAST FIVE DAYS IN ADVANCE OF WELD STEP. EIO NOTIFIED ON <i>6/13/05</i> DCMA NOTIFIED ON <i>6/13/05</i> | Q ENG OR QA MGR | <i>Ctn 4/12</i> | | | |
| S260 | QA APPROVAL HOLD POINT | QA TO APPROVE ELECTRODE PRIOR TO USE. PROCEDURE USED: <i>WPS 10-SMAW-CF8MNMN MOD REV 1</i> MATERIAL <i>Lot 4455</i> USED: _____ QUALITY ENG. Name: <i>Ctn</i> Date: <i>6/15</i> <i>Heat. B2743</i> <i>316 NF</i> <i>Lot 40197M</i> | <i>Ctn 4/15</i> | | | | |
| S270 | 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 ADD WPS FOR VERTICAL WELDS. | <i>NC</i> | <i>6-15</i> | <i>6-23-05</i> | | |
| S280 | GRIND GCHI SOP 0100R2 | HAND GRIND WELDS. | <i>NC</i> | <i>6-15</i> | <i>6-23-05</i> | | |
| S290 | L.P. WELD CQP 0300 REV 10 | L.P. WELD REPAIRS ACCEPTANCE PER ASTM A903. ACCEPTANCE CRITERIA-LEVEL 1 FOR HIGH STRESSED AREAS, LEVEL 2 FOR ALL OTHER AREAS. SEE LP DRAWING. IF OK CHECK HERE <i>✓</i> WASH AND SEND TO STEP 300. IF REJECTED CHECK HERE _____ AND RETURN TO STEP 220. | LP - LEVE L II <i>gok 4/15</i> | OK REJ | OK <i>6-15</i> <i>gok 6/15</i> <i>REJ</i> | OK <i>gok 6/15</i> <i>REJ</i> | OK J |

*Added
lot of
welds nuclear
per Rev 1
Ctn*

*all grind
of LP ind
Ctn*

to XRAY 4/16

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Dated Issued: 5-29-05

| | | | | | | |
|--|--------|--|----|-----|-----------|--|
| | | | | | | |
| | REPEAT | REPEAT STEPS S220 TO S290 AS REQUIRED TILL CLEAR THROUGH VISUAL INSPECTION & PENETRANT INSPECTION. DOCUMENT REWORK ON A SUPPLEMENTAL MTS | QA | 423 | 90 to 460 | |

[illegible]

S:DRIVE MANUAL FORMS/SEI
SRC-01 REV. 0 10/28/03