



Workorder Part ID Qty Drawing ID / Rev **Engineer** 64880/2.0 BLUE/DOUG MCCORKLE Panel Segment Forming Dies Part ID Drawing ID / Rev Sub ID Panel Segment Forming Dies 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 0 / Seq: 10 700-BLUE TEAM, ENGINEERING 1.00 1.00 1.00 (R) ENGINEERING / DIE DESIGN PLANNING / TECHNICAL SUPPORT IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 10 30.0 (C) BUSHING L-48-16 CARR-LANE MTM RECEIVING NOTE: DELIVER TO DOUG McCORKLE UPON RECEIPT. QAP Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 20 E71T-1_045_FCAW-WELD WIRE,FCAW .045 DIA 0.0 Vendor Part ID: E71T-1_045_FCAW (C) QAP Count: 1 StartQty Operation Resource **QtyPer** EndQt Drawing ID / Rev Sub: 0 / Seq: 15 1.00 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 (R) N/C PROGRAMMING AND CAD: DIE SETS 1 THROUGH 5. Dwg Count: 0 Pgm Count: 0 QAP Count: 0 WPS Count: 0 Drw N/A IDC Count: 0 NDT Count: 0 EndQt Drawing ID / Rev Operation Resource **QtyPer** StartQty Sub: 0 / Seq: 20 1.00 1.00 1.00 825-FINAL INSPECTION - PLANTS 1 (R) FINAL INSPECTION VISUAL INSPECT AND PHOTOGRAPH EACH DIE SET ENSURE EACH DIE SET IS PERMANENTLY IDENTIFIED IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Service ID Sub: 0 / Seq: 9999 1.00 TESTNG/MISC 601-AUTOMATED SCHEDULING BU 1.00 1.00



Operation

Resource

Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 0 Dwg Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Drw N/A IDC N/A Pgm Count: 0 Sub ID Drawing ID / Rev Part ID Qty DIE SET # 1 MTMFX-2884, MTMFX Parent Sub:0 Op:20 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 1 / Seq: 5 820-RECEIVING INSPECTION 1.00 1.00 1.00 SE121-001P / A (C) INSPECT BLANK SIZE PER DRAWING VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED. INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY RECORD IDC DATA Specification: ASTM A800 Rev: 01 Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL Customer: PPPL Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95 IDC Count: 3 Dwg Count: 1 OAP Count: 6 NDT Count: 0 WPS Count: 0 Pgm Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** SE120-002-2 PANEL 1-PANEL BLANK .375" THK INCONEL 625 SE121 / --1810 10 Vendor Part ID: SE120-002-2 PANEL 1 (C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE (SE120-002-2 PANEL # 1.DXF, REV. --) MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800). SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT. APPROXIMATE OVERALL SIZE: 68 X 82 Material Certification: Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95 QAP Count: 6

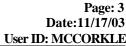
Sub: 1 / Seq: 10 340-VERSON 500 1.00 1.00 SE121 / A

EndQt Drawing ID / Rev

W:64880/2-0 /Inc Matl /Inc Legs

StartQty

QtyPer





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE (C) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS: LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2883 MTMFX-2884 INTO THE PRESS. ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL. INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET. HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903. NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED. ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING). Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 1 / Seq: 12 260-SANDBLAST 1.00 1.00 1.00 SE121-001P / A (U) BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS. IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Service ID Resource Sub: 1 / Seq: 15 1.00 SE121-001P / A 520-SUBLET, EXOTIC HEAT TREAT 1.00 1.00 THRML TR/NA SA (U) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F. HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES) RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP. Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 1 / Seq: 17 340-VERSON 500 1.00 1.00 SE121-001P / A (U) RELOAD THE PREFORMED PANEL INTO THE DIE SET. "RE-STRIKE" HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903. PANEL TO GAGE GAP TOLERANCE: .094" MAX.



Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE NOTIFY Q/A FOR VERIFICATION PRIOR TO MOVING THE PART TO THE NEXT WORK CENTER LAYOUT TRIM-LINES ON THE PANEL ESTABLISHED FROM THE MACHINED PERIMETER OF THE INSPECTION GAGE. IDC Count: 0 Dwg Count: 1 QAP Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 1 / Seq: 20 805-INPROCESS INSPECTION - PLA 1.00 1.00 1.00 SE121-001P / A (R) VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2903. GAP TOLERANCE: .094" MAX. RECORD IDC DATA FORWARD THIS PANEL TO SANDBLAST WITH A MOVE TICKET FROM 64880-26/1 SEO. 50 IDC Count: 1 Dwg Count: 1 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Drawing ID / Rev Part ID Qty CORE # 1 MTMFX-2884 MTMFX-2884 / A Parent Sub:1 Op:10 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 6 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 6 / Seq: 10 800-RECEIVING 1.00 1.00 SE121 / A 1.00 (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. IDC Count: 0 Dwg Count: 5 QAP Count: 0 NDT Count: 0 WPS Count: 0 IDC N/A Pgm Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 10 1.0 (C) PUNCH #1: KIRKSITE BLOCK: 24*66*70 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource QtyPer Sub: 6 / Seq: 20 1.00 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) (C) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0

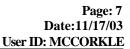


Part ID Qty Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE QtyPer Operation Resource StartQty EndQt Drawing ID / Rev Sub: 6 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM Dwg Count: 5 NDT Count: 0 WPS Count: 0 IDC Count: 0 Pgm Count: 32 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 6 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS (C) SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 6 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. (C) RECORD IDC DATA Part Number: PUNCH # 1 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 QAP Count: 2 NDT Count: 0 WPS Count: 0 Pgm Count: 1 Sub ID Part ID Drawing ID / Rev CAVITY # 1 MTMFX-2883 MTMFX-2883 / A Parent Sub:1 Op:10 **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource Sub: 7 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Pgm Count: 0 WPS Count: 0 Dwg Count: 0 OAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 7 / Seq: 10 800-RECEIVING 1.00 SE121 / A 1.00 (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. Dwg Count: 5 QAP Count: 0 NDT Count: 0 IDC Count: 0 Pgm Count: 0 WPS Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) DIE #1: KIRKSITE BLOCK: 26*66*70 QAP Count: 0





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE QtyPer StartQty EndQt Drawing ID / Rev Operation Resource Sub: 7 / Seq: 20 152-TC-5000 1.00 1.00 1.00 SE121 / A (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM WPS Count: 0 IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 7 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 7 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 Dwg Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 7 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. (C) RECORD IDC DATA Part Number: DIE # 1 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 NDT Count: 0 WPS Count: 0 Pgm Count: 1 QAP Count: 2 Sub ID Part ID Drawing ID / Rev 23 PANEL ANNEAL (ADDED DURING DE Parent Sub:1 Op:10 Operation Resource OtvPer StartOtv EndQt Drawing ID / Rev Service ID Sub: 23 / Seq: 10 1.00 1.00 SE121-001P / A THRML TR/NA SA 520-SUBLET, EXOTIC HEAT TREAT (C) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL



WPS Count: 0

WPS Count: 0

Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE120-002-2 PANEL 1

Part Description: DIE DEVELOPMENT PANEL

Customer: PPPL

Furnace charts: FURNACE CHART

IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

QAP Count: 0

NDT Count: 0

Sub ID Part ID Qty Drawing ID / Rev 16 MTMFX-2903 INSPECTION GAGE FO

Parent Sub:1 Op:20

Pgm Count: 0

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Service ID Sub: 16 / Seq: 10 MISC/SUBLET 450-SUBLET 1.00 1.00 1.00

(C) PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 1) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS)

Dwg Count: 0

REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. IDC Count: 0

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource

Sub: 16 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --

INSPECT / VERIFY GAGE MTMFX-2903 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY.

RECORD IDC DATA

(C)

(C)

INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM.

PLACE GAGE SECURELY INTO IT'S STORAGE BOX.

ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM.

IDC Count: 1 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0

Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer**

Sub: 16 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING

(DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM.

SETNCIL THE FIXTURE NUMBER ON THE OUTER SURFACE.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

Sub ID Part ID Qty Drawing ID / Rev

DIE SET # 2 MTMFX-2886, MTMFX

Parent Sub:0 Op:20



Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevSub: 2 / Seq: 5820-RECEIVING INSPECTION1.001.001.00\$E121-001P / A

(C) INSPECT BLANK SIZE PER DRAWING

VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED.

INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 01 Part Number: SE121-001P-2 PANEL 2D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

IDC Count: 3 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

Piece # Part ID

Oty Drawing ID / Rev Vendor Dimensions

Piece # Part ID Qty Drawing ID / Rev Vendor Dimensions
10 SE120-002-2 PANEL 2-PANEL BLANK .375" THK INCONEL 625 1.0 SE121 / -- 1810

Vendor Part ID: SE120-002-2 PANEL 2

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 2.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 35 X 53

QAP Count: 6

Operation	Resource	QtyPer	StartQty	EndQt	Drawing ID / Rev
Sub: 2 / Seq: 10	341-PACIFIC 750	1.00	1.00	1.00	SE121 / A

(R) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2886, MTMFX-2885 INTO THE PRESS.

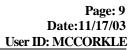
ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).





Part ID Workorder Drawing ID / Rev Engineer 64880/2.0

BLUE/DOUG MCCORKLE

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

QtyPer Operation Resource StartQty EndQt Drawing ID / Rev SE121-001P / A Sub: 2 / Seq: 12 260-SANDBLAST 1.00 1.00 1.00

(U) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

REFER TO PP478 FOR HANDLING REQUIREMENTS

Specification: PP478 Rev: A

IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 1 NDT Count: 0 WPS Count: 0

Operation StartOty Service ID Resource OtvPer EndQt Drawing ID / Rev Sub: 2 / Seq: 15 1.00 SE121-001P / A THRML TR/NA SA 520-SUBLET, EXOTIC HEAT TREAT 1.00

SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: (U)

ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL

CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS

SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 2D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Furnace charts: FURNACE CHART

IDC Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0 Dwg Count: 1 Pgm Count: 0

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Sub: 2 / Seq: 17 1.00 SE121-001P / A 340-VERSON 500 1.00 1.00

(U) RELOAD THE PREFORMED PANEL INTO THE DIE SET.

"RE-STRIKE" HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

PANEL TO GAGE GAP TOLERANCE: .094" MAX.

NOTIFY Q/A FOR VERIFICATION PRIOR TO MOVING THE PART TO THE NEXT WORK CENTER

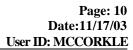
LAYOUT TRIM-LINES ON THE PANEL ESTABLISHED FROM THE MACHINED PERIMETER OF THE INSPECTION GAGE.

IDC Count: 0 Dwg Count: 1 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0

Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource SE121-001P / A Sub: 2 / Seq: 20 805-INPROCESS INSPECTION - PLA 1.00

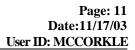
VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2904. GAP TOLERANCE: .094" MAX. (R)

RECORD IDC DATA



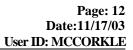


Workorder 64880/2.0	Part ID		Qty 1	Drawing ID / Rev			ineer JE/DOUG MCCORKLE
	FORWARD PANEL TO STORES	IDC Count : 1	Dwg Count: 1	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Sub ID 8	Part ID CORE # 2 MTMFX-2886		Qty 1	Drawing ID / Rev MTMFX-2886 / A Parent Sub:2 Op:10			
Operation Sub: 8 / Seq: 5 (C)	Resource 751-CAD/CAM - MEDIUM MILLING N/C PROGRAMMING	QtyPer 1.00	StartQty EndQ 1.00 1.00	t Drawing ID / Rev			
(=)		IDC Count: 0	Dwg Count: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 8 / Seq: 10 (C)	Resource 800-RECEIVING RECEIVE AND INSPECT THE CAST I	QtyPer 1.00 KIRKSITE BLOCK (TAI IDC Count : 0	1.00 1.00	t Drawing ID / Rev SE121 / A MTM P.O. Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Piece # 10	Part ID		Qty 1.0	•	Vendor	Dimensions	W13 Count. 0
(C)	PUNCH #2: KIRKSITE BLOCK: 19*27	*49			QAP Count: 0		
Operation Sub: 8 / Seq: 20 (C)	Resource 160-30FT MITSU SETUP AND FACE ONE SIDE FLAT (I SETUP ON FLAT SURFACE AND BOR MACHINE KEYING / ALIGMENT FEA N/C MACHINE (SCRIBE) DIE SET NU (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PRO	E HOLES IN SIDES FOI TURES PER DRAWING MBER ON THE FRONT	1.00 1.00 OVAL) R LIFTING PROVIS G. INSTALL LIFTIN				
		IDC Count: 0	Dwg Count: 5	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 8 / Seq: 30 (C)	Resource 160-30FT MITSU REPOSITION WITH 3D PROFILE FAC FINISH MACHINE PROFILE PER PRO		1.00 1.00	t Drawing ID / Rev SE121 / A CONSTRUCTION FEAT	TURES		
		IDC Count: 0	Dwg Count: 5	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation	Resource	QtyPer	StartQty EndQ	t Drawing ID / Rev			





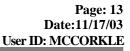
Workorder 64880/2.0	Part ID			Qty 1	Drawing ID / Rev			ineer JE/DOUG MCCORKLE			
Sub: 8 / Seq: 40 (C)	105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS).										
	ID	C Count : 0	Dwg Cou	nt: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0			
Operation Sub: 8 / Seq: 50 (C)	Resource 815-CMM - GANTRY - PLANT 2 INSPECT PROFILE (CMM) PER PROGRAM RECORD IDC DATA Part Number: PUNCH # 2 Dimensional Report: CMM DATA SHEET	QtyPer 1.00 1/3D MODEL GEO	StartQty 1.00 DMETRY.		Drawing ID / Rev SE121 / A						
	-	C Count : 1	Dwg Cou	nt: 5	Pgm Count: 1	QAP Count: 2	NDT Count: 0	WPS Count: 0			
Sub ID	Part ID CAVITY # 2 MTMFX-2885			Qty 1	Drawing ID / Rev MTMFX-2885 / A Parent Sub:2 Op:10						
Operation Sub: 9 / Seq: 5 (C)	Resource 751-CAD/CAM - MEDIUM MILLING N/C PROGRAMMING	QtyPer 1.00	StartQty 1.00	EndQ (Drawing ID / Rev						
	ID	C Count : 0	Dwg Cou	nt: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0			
Operation Sub: 9 / Seq: 10 (C)	Resource 800-RECEIVING RECEIVE AND INSPECT THE CAST KIRKS			1.00 E) PER			NDT 0	WDG G			
Piece # 10 (C)	Part ID DIE #2: KIRKSITE BLOCK: 22*28*50	C Count : 0	Dwg Cou	Qty 1.0	Pgm Count: 0 Drawing ID / Rev	QAP Count: 0 Vendor	NDT Count: 0 Dimensions	WPS Count: 0			
						QAP Count: 0					
Operation Sub: 9 / Seq: 20 (C)	Resource 162-DORRIES SCHARMANN GANTR SETUP AND FACE ONE SIDE FLAT (MINIT SETUP ON FLAT SURFACE AND BORE HO MACHINE KEYING / ALIGMENT FEATUR! N/C MACHINE (SCRIBE) DIE SET NUMBEI (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRA	LES IN SIDES FOI ES PER DRAWINC R ON THE FRONT	R LIFTING P G. INSTALL	1.00 PROVISION							





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 0 QAP Count: 0 WPS Count: 0 Dwg Count: 5 Pgm Count: 32 NDT Count: 0 Operation EndQt Drawing ID / Rev Resource **QtyPer** StartQty Sub: 9 / Seq: 30 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 REPOSITION WITH 3D PROFILE FACING SPINDLE. INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 9 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 (C) APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 Operation Resource OtvPer StartOtv EndQt Drawing ID / Rev Sub: 9 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: DIE # 2 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 OAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty 17 MTMFX-2904 INSPECTION GAGE FO Parent Sub:2 Op:20 Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Service ID Sub: 17 / Seq: 10 450-SUBLET 1.00 1.00 MISC/SUBLET 1.00 PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 2) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. NDT Count: 0 WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource OtvPer Sub: 17 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --(R) INSPECT / VERIFY GAGE MTMFX-2904 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX.

W:64880/2-0 /Inc Matl /Inc Legs



WPS Count: 0



(C)

Part ID Workorder Qty Drawing ID / Rev Engineer

64880/2.0 BLUE/DOUG MCCORKLE

ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM.

IDC Count: 1 NDT Count: 0 WPS Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev

Sub: 17 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

(R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING

(DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0

Sub ID Part ID Drawing ID / Rev

3 DIE SET #3 MTMFX-2892, MTMFX 1

Parent Sub:0 Op:20

OAP Count: 0

NDT Count: 0

Operation StartQty EndQt Drawing ID / Rev Resource QtyPer

Sub: 3 / Seq: 5 1.00 1.00 1.00 SE121-001P / A 820-RECEIVING INSPECTION

> INSPECT BLANK SIZE PER DRAWING INSPECT MATERIAL THICKNESS

VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 01 Part Number: SE121-001P-2 PANEL 3D

Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

IDC Count: 3 Dwg Count: 1 Pgm Count: 0 OAP Count: 6 NDT Count: 0 WPS Count: 0

Piece # Part ID Drawing ID / Rev Vendor Dimensions

10 SE120-002-2 PANEL 3-PANEL BLANK .375" THK INCONEL 625 SE121 / --1810

Vendor Part ID: SE120-002-2 PANEL 3

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 3.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 65 X 84.4

Material Certification:

Part Number: SE121-001P-2 PANEL 3D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01



Date:11/17/03 **User ID: MCCORKLE**

Workorder 64880/2.0

(C)

Operation

Part ID Drawing ID / Rev Engineer BLUE/DOUG MCCORKLE

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

OAP Count: 6

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 3 / Seq: 10 340-VERSON 500 1.00 1.00 SE121 / A 1.00

(R) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2892, MTMFX-2887 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES

CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL. INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

IDC Count: 0 WPS Count: 0 Drw N/A Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0

Operation Resource OtvPer StartOty EndQt Drawing ID / Rev Sub: 3 / Seq: 12 1.00 SE121-001P / A 260-SANDBLAST 1.00 1.00

SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

IDC Count: 0

Dwg Count: 1

StartQty

Pgm Count: 0

OAP Count: 0

NDT Count: 0

WPS Count: 0

Service ID

THRML TR/NA SA

Sub: 3 / Seq: 15 SE121-001P / A 520-SUBLET, EXOTIC HEAT TREAT 1.00 1.00 1.00 (C)

SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL

CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

OtvPer

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS

EndQt Drawing ID / Rev

SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 3D Part Description: DEVELOPMENT PANEL

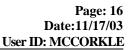
Customer: PPPL

Resource



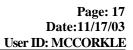


Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Furnace charts: FURNACE CHART IDC Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 3 / Seq: 20 1.00 SE121-001P / A 805-INPROCESS INSPECTION - PLA 1.00 1.00 (C) VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2905. GAP TOLERANCE: .094" MAX. RECORD IDC DATA FORWARD PANEL TO STORES IDC Count: 1 Dwg Count: 1 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev 10 MTMFX-2892 / A CORE # 3 MTMFX-2892 Parent Sub:3 Op:10 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 10 / Seq: 5 1.00 1.00 1.00 751-CAD/CAM - MEDIUM MILLING (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 10 / Seq: 10 800-RECEIVING 1.00 SE121 / A 1.00 1.00 RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) Dwg Count: 5 QAP Count: 0 NDT Count: 0 IDC Count: 0 Pgm Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** Qty 10 1.0 (C) PUNCH #3: KIRKSITE BLOCK: 29*57*76 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 10 / Seq: 20 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0





Part ID Qty Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE QtyPer StartQty EndQt Drawing ID / Rev Operation Resource Sub: 10 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 10 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS (C) SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 10 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: PUNCH # 3 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 OAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev 11 CAVITY #3 MTMFX-2887 MTMFX-2887 / A Parent Sub:3 Op:10 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 11 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 N/C PROGRAMMING (C) IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource QtyPer 1.00 SE121 / A Sub: 11 / Seq: 10 800-RECEIVING 1.00 1.00 RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) DIE #3: KIRKSITE BLOCK: 26*58*78 QAP Count: 0 Resource QtyPer StartQty EndQt Drawing ID / Rev Operation





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Sub: 11 / Seq: 20 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 11 / Seq: 30 1.00 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 WPS Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 Operation StartOtv EndQt Drawing ID / Rev Resource OtvPer Sub: 11 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 (C) APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Operation StartOty EndOt Drawing ID / Rev Resource OtvPer Sub: 11 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 SE121 / A 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: DIE # 3 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 QAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty 18 MTMFX-2905 INSPECTION GAGE FO Parent Sub:3 Op:20 QtyPer StartQty EndQt Drawing ID / Rev Service ID Operation Resource Sub: 18 / Seq: 10 450-SUBLET 1.00 1.00 1.00 MISC/SUBLET PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 3) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. Dwg Count: 0 WPS Count: 0 IDC Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0





Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 18 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --INSPECT / VERIFY GAGE MTMFX-2905 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. (R) RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation EndQt Drawing ID / Rev Resource OtvPer StartOtv Sub: 18 / Seq: 30 1.00 1.00 105-DEBURR PLT 1 LOW BAY 1.00 (R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING (DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Drawing ID / Rev Part ID Qty DIE SET # 4 MTMFX-2889, MTMFX Parent Sub:0 Op:20 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 4 / Seq: 5 1.00 1.00 SE121-001P / A 820-RECEIVING INSPECTION 1.00 (C) INSPECT BLANK SIZE PER DRAWING INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY RECORD IDC DATA Specification: ASTM A800 Rev: 01 Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL Customer: PPPL Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95 NDT Count: 0 WPS Count: 0 IDC Count: 3 Dwg Count: 1 Pgm Count: 0 OAP Count: 6 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 10 SE120-002-2 PANEL 4-PANEL BLANK .375" THK INCONEL 625 SE121 / --1810 Vendor Part ID: SE120-002-2 PANEL 4 (C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE (SE120-002-2 PANEL # 4.DXF, REV. --)

MTTRAVLR.qrp W:64880/2-0 /Inc Matl /Inc Legs

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).





Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 26.75 X 71

Material Certification:

Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

QAP Count: 6

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevSub: 4 / Seq: 10341-PACIFIC 7501.001.001.00SE121 / A

(R) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2889, MTMFX-2888 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

 Operation
 Resource
 QtyPer
 StartQty
 EndQt
 Drawing ID / Rev

 Sub: 4 / Seq: 12
 260-SANDBLAST
 1.00
 1.00
 1.00
 \$E121-001P / A

(U) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

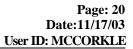
OperationResourceQtyPerStartQtyEndQtDrawing ID / RevService IDSub: 4 / Seq: 15520-SUBLET, EXOTIC HEAT TREAT1.001.001.00\$\text{SE}(121-001P / A)\$\$\text{THRML TR/NA SA}\$

(U) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING:

ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

W:64880/2-0 /Inc Matl /Inc Legs



WPS Count: 0



WorkorderPart IDQtyDrawing ID / RevEngineer64880/2.01/BLUE/DOUG MCCORKLE

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS

SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE.

IDC Count: 0

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Furnace charts: FURNACE CHART

IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

QAP Count: 0

NDT Count: 0

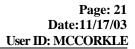
Operation Sub: 4 / Seq: 20	Resource 805-INPROCESS INSPECTION - PLA	QtyPer 1.00	StartQty 1.00	EndQt 1.00	Drawing ID / Rev SE121-001P / A			
(R)	VERIFY PROFILE TO INSPECTION GAR	AGE #MTMFX-2906. (GAP TOLERA	ANCE: .	094" MAX.			
	FORWARD PANEL TO STORES							
		IDC Count: 1	Dwg Cour	nt: 1	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Sub ID	Part ID			Qty	Drawing ID / Rev			
2	CORE # 4 MTMFX-2889			1	MTMFX-2889 / A			
					Parent Sub:4 Op:10			
Operation Sub: 12 / Seq: 5	Resource 751-CAD/CAM - MEDIUM MILLING	QtyPer 1.00	StartQty	EndQt 1.00	Drawing ID / Rev			

Operation	Resource	QtyPer	StartQty	EndQt	Drawing ID / Rev			
Sub: 12 / Seq: 10	800-RECEIVING	1.00	1.00	1.00	SE121 / A			
(C)	RECEIVE AND INSPECT THE CAST KIRKSIT	E BLOCK (TAP	PE MEASURI	E) PER I	MTM P.O.			
	IDC C	Count: 0	Dwg Cour	nt: 5	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Piece #	Part ID			Qty	Drawing ID / Rev	Vendor	Dimensions	
10				1.0				
(C)	PUNCH #4: KIRKSITE BLOCK: 13*29*76							
						QAP Count: 0		

Pgm Count: 0

Dwg Count: 0

Operation	Resource	QtyPer	StartQty	EndQt	Drawing ID / Rev
Sub: 12 / Seq: 20	160-30FT MITSU	1.00	1.00	1.00	SE121 / A
(C)	SETUP AND FACE ONE SIDE FLAT (MINI	MAL STOCK REMO	OVAL)		
	SETUP ON FLAT SURFACE AND BORE HO	DLES IN SIDES FOR	R LIFTING P	PROVISIO	ONS PER DRAWING

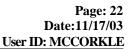




Qty Drawing ID / Rev Workorder Part ID Engineer 64880/2.0

BLUE/DOUG MCCORKLE

	MACHINE KEYING / ALIGMENT FEATURING MACHINE (SCRIBE) DIE SET NUMI (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROG	BER ON THE FRON		LIFTINO	G PINS.			
		IDC Count : 0	Dwg Cou	int: 5	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 12 / Seq: 30 (C)	Resource 160-30FT MITSU REPOSITION WITH 3D PROFILE FACIN FINISH MACHINE PROFILE PER PROGI	,	1.00	1.00	Drawing ID / Rev SE121 / A CONSTRUCTION FEAT	TURES		
		IDC Count : 0	Dwg Cou	ınt: 5	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 12 / Seq: 40 (C)	Resource 105-DEBURR PLT 1 LOW BAY APPLY LAYOUT DIE TO THE INTERIO		1.00 D PART OUT	1.00 TLINE (A				
	SMOOTH TO AN APROXIMATE AVERA	GE SURFACE FINI IDC Count : 0	SH OF 125 M Dwg Cou		CHES (REMOVING AP Pgm Count: 0	PROXIMATELY 1/2 O QAP Count: 0	F THE EXISTING SCA NDT Count: 0	LLOPS). WPS Count: 0
Operation Sub: 12 / Seq: 50 (C)	Resource 815-CMM - GANTRY - PLANT 2 INSPECT PROFILE (CMM) PER PROGRA RECORD IDC DATA Part Number: PUNCH # 4 Dimensional Report: CMM DATA SHEET	QtyPer 1.00 AM / 3D MODEL GE	1.00		Drawing ID / Rev SE121 / A			
	Dimensional Report. Canal Davin Still.	IDC Count : 1	Dwg Cou	ınt: 5	Pgm Count: 1	QAP Count: 2	NDT Count: 0	WPS Count: 0
Sub ID 13	Part ID CAVITY # 4 MTMFX-2888			Qty 1	Drawing ID / Rev MTMFX-2888 / A Parent Sub:4 Op:10			
Operation Sub: 13 / Seq: 5 (C)	Resource 751-CAD/CAM - MEDIUM MILLING N/C PROGRAMMING	QtyPer 1.00	1.00	1.00	Drawing ID / Rev			
		IDC Count : 0	Dwg Cou	ınt: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 13 / Seq: 10 (C)	Resource 800-RECEIVING RECEIVE AND INSPECT THE CAST KII	QtyPer 1.00 RKSITE BLOCK (TA	1.00	1.00	Drawing ID / Rev SE121 / A MTM P.O.			





Part ID Workorder Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) DIE #4: KIRKSITE BLOCK: 16*30*77 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 13 / Seq: 20 1.00 SE121 / A 160-30FT MITSU 1.00 1.00 (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 13 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 WPS Count: 0 OAP Count: 0 NDT Count: 0 StartQty EndQt Drawing ID / Rev Operation QtyPer Resource Sub: 13 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 (C) APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource OtvPer StartOty EndQt Drawing ID / Rev Sub: 13 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: DIE # 4 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 QAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev



(C)

Page: 23 Date:11/17/03 **User ID: MCCORKLE**

Drawing ID / Rev Part ID Workorder Engineer

64880/2.0

BLUE/DOUG MCCORKLE

WPS Count: 0

WPS Count: 0

19 MTMFX-2906 INSPECTION GAGE FO 1

Parent Sub:4 Op:20

Pgm Count: 0

QAP Count: 0

NDT Count: 0

QtyPer StartQty EndQt Drawing ID / Rev Service ID Operation Resource Sub: 19 / Seq: 10 MISC/SUBLET 450-SUBLET 1.00 1.00

Dwg Count: 0

PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 4) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS)

REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03.

IDC Count: 0

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev

1.00 SE121 / --Sub: 19 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00

(R) INSPECT / VERIFY GAGE MTMFX-2906 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY.

RECORD IDC DATA

INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM.

PLACE GAGE SECURELY INTO IT'S STORAGE BOX.

ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM.

NDT Count: 0 IDC Count: 1 Dwg Count: 0 Pgm Count: 0 QAP Count: 0

Operation Resource QtyPer StartQty EndQt Drawing ID / Rev

Sub: 19 / Seq: 30 1.00 1.00 1.00 105-DEBURR PLT 1 LOW BAY

(R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING

(DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0

Sub ID Part ID Drawing ID / Rev Qty 5

DIE SET # 5 MTMFX-2891, MTMFX Parent Sub:0 Op:20

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Sub: 5 / Seq: 5 820-RECEIVING INSPECTION 1.00 1.00 1.00 SE121-001P / A

(C) INSPECT BLANK SIZE PER DRAWING

VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED.

INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 01 Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00



Workorder Part ID Drawing ID / Rev Engineer 64880/2.0

BLUE/DOUG MCCORKLE

Specification: ASTM B46.1 Rev: 95

NDT Count: 0 IDC Count: 3 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 WPS Count: 0

Piece # Part ID Drawing ID / Rev Vendor **Dimensions**

SE121 / --SE120-002-2 PANEL 5-PANEL BLANK .375" THK INCONEL 625 Vendor Part ID: SE120-002-2 PANEL 5

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 5.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 50 X 75.72

Material Certification:

Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

Drw N/A

OAP Count: 6

OAP Count: 0

NDT Count: 0

WPS Count: 0

1810

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Sub: 5 / Seq: 10 1.00 SE121 / A 340-VERSON 500 1.00

"SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS: (R)

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2891, MTMFX-2890 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES

CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

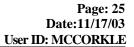
Pgm Count: 0

Operation StartQty EndQt Drawing ID / Rev Resource QtyPer Sub: 5 / Seq: 12 260-SANDBLAST 1.00 1.00 1.00 SE121-001P / A

IDC Count: 0

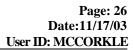
(U) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

Dwg Count: 5



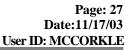


Part ID Workorder Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 1 Pgm Count: 0 Operation StartQty EndQt Drawing ID / Rev Service ID Resource **QtyPer** Sub: 5 / Seq: 15 520-SUBLET, EXOTIC HEAT TREAT SE121-001P / A THRML TR/NA SA 1.00 1.00 1.00 SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: (U) ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F. HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES) RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP. NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE. Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART IDC Count: 0 Dwg Count: 1 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 5 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121-001P / A VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2907. GAP TOLERANCE: .094" MAX. (R) RECORD IDC DATA FORWARD PANEL TO STORES IDC Count: 1 Dwg Count: 1 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev 14 CORE # 5 MTMFX-2891 MTMFX-2891 / A Parent Sub:5 Op:10 StartQty EndQt Drawing ID / Rev Operation Resource QtyPer Sub: 14 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 14 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Drawing ID / Rev Piece # Part ID Vendor **Dimensions**



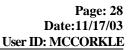


Workorder 64880/2.0	Part ID			Qty 1	Drawing ID / Rev			ineer E/DOUG MCCORKLE
10 (C)	PUNCH #5: KIRKSITE BLOCK: 26*40*5	3		1.0		QAP Count: 0		
Operation Sub: 14 / Seq: 20 (C)	Resource 162-DORRIES SCHARMANN GANTR SETUP AND FACE ONE SIDE FLAT (MI SETUP ON FLAT SURFACE AND BORE MACHINE KEYING / ALIGMENT FEATU N/C MACHINE (SCRIBE) DIE SET NUMI (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROG	HOLES IN SIDES FO URES PER DRAWING BER ON THE FRONT	R LIFTING P G. INSTALL	1.00 ROVISI				
		IDC Count: 0	Dwg Cour	nt: 5	Pgm Count: 32	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 14 / Seq: 30 (C)	Resource 162-DORRIES SCHARMANN GANTR REPOSITION WITH 3D PROFILE FACIN FINISH MACHINE PROFILE PER PROGI	,	StartQty 1.00 ATE ALIGNM	1.00	t Drawing ID / Rev SE121 / A CONSTRUCTION FEAT	URES		
		IDC Count: 0	Dwg Cour	nt: 5	Pgm Count: 32	QAP Count: 0	NDT Count: 0	WPS Count: 0
Operation Sub: 14 / Seq: 40 (C)	Resource 105-DEBURR PLT 1 LOW BAY APPLY LAYOUT DIE TO THE INTERIO SMOOTH TO AN APROXIMATE AVERA			1.00 LINE (<i>A</i> CRO-IN			*	
Operation Sub: 14 / Seq: 50 (C)	Resource 815-CMM - GANTRY - PLANT 2 INSPECT PROFILE (CMM) PER PROGR. RECORD IDC DATA Part Number: PUNCH # 5 Dimensional Report: CMM DATA SHEET			1.00	t Drawing ID / Rev SE121 / A	OAR Course 2	NDT Courte 0	WDS County 0
		IDC Count: 1	Dwg Cour	nt: 5	Pgm Count: 1	QAP Count: 2	NDT Count: 0	WPS Count: 0
Sub ID 15	Part ID CAVITY # 5 MTMFX-2890			Qty 1	Drawing ID / Rev MTMFX-2890 / A Parent Sub:5 Op:10			



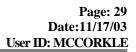


Part ID Workorder Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource Sub: 15 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 WPS Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) Dwg Count: 5 QAP Count: 0 NDT Count: 0 WPS Count: 0 IDC Count: 0 Pgm Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** Qty 1.0 10 (C) DIE #5: KIRKSITE BLOCK: 27*42*60 QAP Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 20 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 1.00 (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 30 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 1.00 REPOSITION WITH 3D PROFILE FACING SPINDLE. INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation OtvPer StartOty EndQt Drawing ID / Rev Resource Sub: 15 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Resource QtyPer StartQty EndQt Drawing ID / Rev Operation





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Sub: 15 / Seq: 50 1.00 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: DIE # 5 Dimensional Report: CMM DATA SHEET IDC Count: 1 WPS Count: 0 Dwg Count: 5 Pgm Count: 1 QAP Count: 2 NDT Count: 0 Sub ID Part ID Drawing ID / Rev Qty 20 MTMFX-2907 INSPECTION GAGE FO 1 Parent Sub:5 Op:20 QtyPer StartQty EndQt Drawing ID / Rev Service ID Operation Resource Sub: 20 / Seq: 10 1.00 1.00 1.00 MISC/SUBLET 450-SUBLET PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 5) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource QtyPer Sub: 20 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --INSPECT / VERIFY GAGE MTMFX-2907 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. (R) RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 QAP Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 0 Pgm Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 20 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING (R) (DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM. WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Sub ID Part ID Drawing ID / Rev Qty LIFTING PINS 22 Parent Sub:0 Op:20 **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource 1.00 1.00 Sub: 22 / Seq: 10 405-SAWS-PLANT 2 1.00 (C) SAW AND DEBURR ROUND STOCK PER MATERIAL CARDS. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0





Workorder 64880/2.0	Part ID			Qty 1	Drawing ID / Rev			Engineer BLUE/DOUG MCCORKLE
Piece # 10 (C)	Part ID 1018_32-BAR,ROUND,CR. 2.0" DIA Vendor Part ID: 1018_32 Mfg Part ID: 1018 MATERIAL BAR,ROUND,CR. 2.0" DIA 1018 MATERIAL CERTS AND MILL TEST REPORTS REQ'D WITH S STOCK SIZE 12 FT	HIPMENT	7.	Qty 440.0	Drawing ID / Rev	Vendor 5068 QAP Count: 2	Dimensions 11	
Piece # 20 (C)	Part ID 1018_713-BAR,ROUND,CR. 3.0" DIA Vendor Part ID: 1018_713 Mfg Part ID: 1018 MATERIAL 1018 MATERIAL BAR,ROUND,CR. 3.0" DIA CERTS AND MILL TEST REPORTS REQ'D WITH SI STOCK SIZE 12 FT	HIPMENT		Qty 20.0	Drawing ID / Rev	Vendor 5068	Dimensions .5	
						QAP Count: 1		
Operation Sub: 22 / Seq: 20 (C)	Resource 215-HGIH PROGRAM PREP AND WELD FLANGE TO PIN PER ENGINEER (3/16 to 1/4" FILLET WELD) 40 PIECES ARE REQUIRED. NOTIFY DOUG McCORKLE WHEN COMPLETE IDC Count: WPS190 Rev:1 FCAW SEMWPS192 Rev:2 GTAW GTAW - Manual Fillers: ER70S-2_035_GTAW / ER70 FCAW - Semi-automatic Fillers: E70T-1_045_FCAW Notes:	0 MAN 0S-2_045_0	Dwg Cou GMAW / ER	1.00 nt: 0 70S-2_0		QAP Count: 0 62_GTAW / ER70S-2_	NDT Count: 093_GMAW / EI	