Princeton University **Plasma Physics Laboratory**
James Forrestal Campus
P.O. Box CN17
Princeton, N.J. 08543

7 February 2006

Ms. Nancy Horton
Energy Industries of Ohio
6100 Oak Tree Boulevard, Suite 200
Independence, Ohio 44131

SUBJECT: Subcontract S005242-F
Dispositioned PPPL Major Tool & Machine Non-Conformance Report (NCR) 18812

Dear Ms. Horton:

Attached is Major Tool & Machine Non-Conformance Report 18812 with the disposition "Use as is" assigned by the Princeton Technical Representative Phil Heitzenroeder and approved by the Responsible Line Manager Brad Nelson on 12/14/05.

NCR 18812 is now Closed but it is recommended that MTM be requested to add Visual Manufacturing references on data lists.

Regards,

Larry L. Sutton
Senior Subcontract Administrator

Attachment

cc: M. Tyrrell
F. Malinowski
P. Heitzenroeder

Customer: ENERGY INDUSTRIES OF OHIO
Contact: NANCY HORTON
E-Mail: NKHFlowen@aol.com

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

Part: /
Drawing ID: SE141-116 Revision: 7

Customer P.O.: S005242-F/Ln:2
Serial No./Qty: C2

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

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

Problem: Workorder: 65707/2.0 Sub:1 Op:134
Inspection Test #: 140 rejected: P TO M: {g|.1|R|S|T}: REFERENCE IGES DATA
Inspection Test #: 180 rejected: M TO N: {g|.02|R|S|T}: REFERENCE IGES DATA
Inspection Test #: 190 rejected: 96X
Ø.375-16 UNC .188 DEEP
C'BORE Ø.625 AS SHOWN: {#|.01|R|S|T}: .077 POSITION / ACCEPT THREAD / .624 CBORE
Inspection Test #: 210 rejected: 8X Ø1-8 UNC THRU: {#|.01|A|B|C}: .038
Inspection Test #: 230 rejected: : {f|.01}: 0.020
Inspection Test #: 250 rejected: : {f|.01}: 0.016
Inspection Test #: 260 rejected: : R76.00: 75.750 - 75.925
Inspection Test #: 270 rejected: : R73.70: 73.723
Inspection Test #: 280 rejected: 8X
Ø1.13 THRU
BACK SPOT FACE Ø2.38
MIN DEPTH FOR C'UP: {#|.01|A|B|C}: .027 / 1.12 - 1.13 / ACCEPT SPOT
Inspection Test #: 290 rejected: 3X Ø1.88 THRU
Ø3.00 BACK SPOTFACE
MIN TO CLEANUP: {#|.010|D|A|N}: .027 / 1.87 - 1.88 / ACCEPT CLEAN UP
Inspection Test #: 295 rejected: 3 X SPHERICAL R.750 +.002 / -.003
TOLERANCE CHANGE PER
RFD 14-009 ITEM 5.
DATUM -D- FLANGE.: : .753 / .764 / .763
Inspection Test #: 300 rejected: 3X SPH R.75 TO .75 DEEP: {#|d.01|D|A|N}: TP .020 / .74 DEEP
Inspection Test #: 310 rejected: 17X Ø1.88 THRU
Ø3.00 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|D|A|N}: 0.102 / 1.87 - 1.88 / 3.00 CLEAN UP
Inspection Test #: 320 rejected: 3X Ø1.13
Ø2.38 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|D|A|N}: 0.041 / 1.12 - 1.13 / 3.2 CLEAN UP
Inspection Test #: 340 rejected: 3X Ø1.375-6 UNC THRU: {#|d.01|D|A|N}: .038 / ACCEPT THREADS
Inspection Test #: 350 rejected: 5X Ø1.88 THRU
Ø3.00 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|D|A|N}: .0182 / 1.87 - 1.88 / 2.98 - 2.99
Inspection Test #: 360 rejected: Ø1.88 THRU
Ø3.00 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|D|A|N}: .0184 / 1.88 / 2.99
Inspection Test #: 370 rejected: 3X Ø1.13
Ø2.38 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|D|A|N}: .028 / 1.13 - 1.27 / 3.2 CLEAN UP
Inspection Test #: 380 rejected: Ø1.88 THRU
Ø3.00 BACK SPOTFACE
MIN TO CLEANUP: {#|d.01|E|A|J}: .015
Inspection Test #: 410 rejected: 3X SPH R.75 TO .75 DEEP
: {#|d.01|E|A|J}: TP .0172
Inspection Test #: 430 rejected: 24X Ø1.88 THRU
Ø3.00 BACK SPOTFACE

MIN TO CLEANUP: {#|d.01|E|A|J}: .070 / 3.00 CLEANUP
Inspection Test #: 440 rejected: 3X Ø1.5 TO 2.00 DEEP
Ø3.00 TO 1.00 DEEP: {#|d.01|E|A|J}: .051 / 2.99 / 1.00 DEEP
Inspection Test #: 630 rejected: : R4.00 ~ .010: 3.90
Inspection Test #: 650 rejected: : 4.00 ~ .010: 3.97
Inspection Test #: 670 rejected: : R4.00 ~ .010: 3.98
Inspection Test #: 710 rejected: : d8.00 ~ .010: 7.990-8.265 (0.275 OOR)
Inspection Test #: 760 rejected: : 13.6 `: 13.20
Inspection Test #: 770 rejected: : 5.88 ~ .010: PAD BLENDS INTO CAST SUFACE
Inspection Test #: 780 rejected: : 2.19 ~ .010: 2.1
Inspection Test #: 790 rejected: : 2.19 ~ .010: 2.17
Inspection Test #: 800 rejected: : 4X R.50: BOTTOM RADII BLEND INTO CAST SURFACE
Inspection Test #: 880 rejected: : d8.00 ~ .010: 7.980-8.265 0.075 OOR
Inspection Test #: 990 rejected: : {g|.5|A|B|C}: REFERENCE IGES DATA
Inspection Test #: 1000 rejected: : {g|.02|R|T|S}: REFERENCE IGES DATA
Inspection Test #: 1020 rejected: : {g|.02|R|T|S}: REFERENCE IGES DATA
Inspection Test #: 1030 rejected: : {g|.5|A|B|C}: REFERENCE IGES DATA
Inspection Test #: 1070 rejected: : 47.79 ~ .010: 47.776
Inspection Test #: 1100 rejected: : 80.49: 80.469
Inspection Test #: 1110 rejected: : 87.87 ~ .010: 87.838
Inspection Test #: 1120 rejected: : 89.64 ~ .010: 89.584
Inspection Test #: 1150 rejected: : 11.48 ~ .010: 11.463
Inspection Test #: 1290 rejected: : 88.39 ~ .010: 88.371
Inspection Test #: 1320 rejected: : 28.71 ~ .010: 28.721
Inspection Test #: 1340 rejected: : 22.117 ~ .005: 22.109
Inspection Test #: 1350 rejected: : 38.14 ~ .010: 38.152
Inspection Test #: 1380 rejected: : 7.53 ~ .010: 7.555
Inspection Test #: 1390 rejected: : 4.91 ~ .010: 4.879

Proposed Disposition:
CUSTOMER TO ADVISE ON ACCEPTABILITY OF DIMENSIONAL INSPECTION.

Number of additional pages:_____

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

Dimensional discrepancies were evaluated per attached list and found to be acceptable.

Technical Rep. Approval: Phil Heitzenroeder
Digitally signed by Phil Heitzenroeder
DN: CN = Phil Heitzenroeder, C = US, O = PPPL, OU = Mech. Eng. Division
Reason: I agree to the terms defined by the placement of my signature on this document
Date: 2005.12.13 14:36:51 -05'00'

RLM Approval: Brad Nelson
Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL, ou=FED, email=nelsonbe@ornl.gov
Date: 2005.12.14 09:24:26 -05'00'

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

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Inspection Test #: 140 rejected: P TO M: {g|.1|R|S|T}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 180 rejected: M TO N: {g|.02|R|S|T}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 190 rejected: 96X Ø.375-16 UNC .188 DEEP C'BORE Ø.625 AS SHOWN: {#|.01|R|S|T}: .077 POSITION / ACCEPT THREAD / .624 CBORE
OK, C2 TEE HOLE POSITION IS OUT .077 MAX , BETTER THAN C1 (.165 MAX)
Inspection Test #: 210 rejected: 8X Ø1-8 UNC THRU: {#|.01|A|B|C}: .038
OK, POSITION TOLERANCE SIMILAR TO C1, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 230 rejected: : {f|.01}: 0.020
OK, FLATNESS TOL FOR FLANGE DATUM-E SIMILAR TO C1
Inspection Test #: 250 rejected: : {f|.01}: 0.016
OK, FLATNESS TOL FOR FLANGE DATUM-D SIMILAR TO C1
Inspection Test #: 260 rejected: : R76.00: 75.750 - 75.925
OK, INNER RADIUS OF OUTER TF SHELF, INTERFACE NOT CRITICAL
Inspection Test #: 270 rejected: : R73.70: 73.723
OK, OUTER RADIUS OF OUTER TF SHELF, INTERFACE NOT CRITICAL
Inspection Test #: 280 rejected: 8X Ø1.13 THRU BACK SPOT FACE Ø2.38 MIN DEPTH FOR C'UP: {#|.01|A|B|C}: .027 / 1.12 - 1.13 / ACCEPT SPOT
OK, C2 HOLE POSITION IS OUT .027 MAX, BETTER THAN C1 (.054 MAX)
Inspection Test #: 290 rejected: 3X Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|.010|D|A|N}: .027 / 1.87 - 1.88 / ACCEPT CLEAN UP
OK, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 295 rejected: 3 X SPHERICAL R.750 +.002 / -.003 TOLERANCE CHANGE PER RFD 14-009 ITEM 5. DATUM -D- FLANGE.: : .753 / .764 / .763
DISCUSS WITH PPPL, NUMBERS ARE DIFFERENT ON CHECKLIST (.758/.752/.750)
Inspection Test #: 300 rejected: 3X SPH R.75 TO .75 DEEP: {#|d.01|D|A|N}: TP .020 / .74 DEEP
DISCUSS WITH PPPL
Inspection Test #: 310 rejected: 17X Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|D|A|N}: 0.102 / 1.87 - 1.88 / 3.00 CLEAN UP
LARGEST POSITIONAL ERROR, CHECK IGES DATA FOR LOCATION, NUMBER, DISCUSS
Inspection Test #: 320 rejected: 3X Ø1.13 Ø2.38 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|D|A|N}: 0.041 / 1.12 - 1.13 / 3.2 CLEAN UP
OK, C2 HOLE POSITION IS OUT .041 MAX, BETTER THAN C1 (.054 MAX)
Inspection Test #: 340 rejected: 3X Ø1.375-6 UNC THRU: {#|d.01|D|A|N}: .038 / ACCEPT THREADS
OK, SAME POSITION ERROR AS THRU HOLES, MATES CLEARANCE HOLE W/ BUSHING
Inspection Test #: 350 rejected: 5X Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|D|A|N}: .0182 / 1.87 - 1.88 / 2.98 - 2.99
OK, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 360 rejected: Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|D|A|N}: .0184 / 1.88 / 2.99
OK, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 370 rejected: 3X Ø1.13 Ø2.38 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|D|A|N}: .028 / 1.13 - 1.27 / 3.2 CLEAN UP
OK, C2 HOLE POSITION IS OUT .028 MAX, BETTER THAN C1 (.054 MAX)
Inspection Test #: 380 rejected: Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|E|A|J}: .015 (positional error)
OK, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 410 rejected: 3X SPH R.75 TO .75 DEEP : {#|d.01|E|A|J}: TP .0172
OK, FEATURE LOCATION ESTABLISHED BY ROMER PRIOR TO ASSEMBLY
Inspection Test #: 430 rejected: 24X Ø1.88 THRU Ø3.00 BACK SPOTFACE MIN TO CLEANUP: {#|d.01|E|A|J}: .070 / 3.00 CLEANUP
OK, THIS IS A CLEARANCE HOLE W/ BUSHING
Inspection Test #: 440 rejected: 3X Ø1.5 TO 2.00 DEEP Ø3.00 TO 1.00 DEEP: {#|d.01|E|A|J}: .051 / 2.99 / 1.00 DEEP
OK, FEATURE LOCATION ESTABLISHED BY ROMER PRIOR TO ASSEMBLY
Inspection Test #: 630 rejected: : R4.00 ~ .010: 3.90
OK, DIM REFERENCES PORT OPENING, LARGE CLEARANCE
Inspection Test #: 650 rejected: : 4.00 ~ .010: 3.97
OK, DIM REFERENCES PORT OPENING, LARGE CLEARANCE
Inspection Test #: 670 rejected: : R4.00 ~ .010: 3.98
OK, DIM REFERENCES PORT OPENING, LARGE CLEARANCE
Inspection Test #: 710 rejected: : d8.00 ~ .010: 7.990-8.265 (0.275 OOR)
OK, DIM REFERENCES PORT OPENING, LARGE CLEARANCE

Consider changing tolerance

Inspection Test #: 760 rejected: : 13.6 `: 13.20
OK, DIM REFERENCES LEADS AREA
Inspection Test #: 770 rejected: : 5.88 ~ .010: PAD BLENDS INTO CAST SUFACE
OK, DIM REFERENCES LEADS AREA
Inspection Test #: 780 rejected: : 2.19 ~ .010: 2.1
OK, DIM REFERENCES LEADS AREA
Inspection Test #: 790 rejected: : 2.19 ~ .010: 2.17
OK, DIM REFERENCES LEADS AREA
Inspection Test #: 800 rejected: : 4X R.50: BOTTOM RADII BLEND INTO CAST SURFACE
OK, DIM REFERENCES LEADS AREA
Inspection Test #: 880 rejected: : d8.00 ~ .010: 7.980-8.265 0.075 OOR
OK, DIM REFERENCES PORT OPENING, LARGE CLEARANCE
Inspection Test #: 990 rejected: : {g|.5|A|B|C}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 1000 rejected: : {g|.02|R|T|S}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 1020 rejected: : {g|.02|R|T|S}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 1030 rejected: : {g|.5|A|B|C}: REFERENCE IGES DATA
OK PER EVALUATION BY T. BROWN / S. RAFTOPOLOUS
Inspection Test #: 1070 rejected: : 47.79 ~ .010: 47.776
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1100 rejected: : 80.49: 80.469
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1110 rejected: : 87.87 ~ .010: 87.838
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1120 rejected: : 89.64 ~ .010: 89.584
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1150 rejected: : 11.48 ~ .010: 11.463
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1290 rejected: : 88.39 ~ .010: 88.371
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1320 rejected: : 28.71 ~ .010: 28.721
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1340 rejected: : 22.117 ~ .005: 22.109
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1350 rejected: : 38.14 ~ .010: 38.152
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1380 rejected: : 7.53 ~ .010: 7.555
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH
Inspection Test #: 1390 rejected: : 4.91 ~ .010: 4.879
OK, DIM REFERENCES ¼-20 HOLES FOR SHIM ATTACH

MTM is requsted to add Visual Manufacturing references on data lists.