PHENIX

PHENIX MuTr STATION 1 INSTALLATION PROCEDURE

procedure name

PHENIX Procedure No. PP-2.5.5.4-14

Revision: A **Date: ~~5-11-00~~** 6-30-00 ABB

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approvals

7/10/00
PHENIX S E & I Date

Cognizant Scientist/Engineer Date
/Activity Manager

7/10/00
PHENIX Safety Date

7/20/00
CA-D ES&H / SAFETY Date

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	CURRENT OVERSIGHT
A	First Issue	6/30/2000	n/a	P. Kroon, W. Sondheim, W. Lenz, C. Pearson	n/a
RETIRED	Installation Completed	3/20/2007	n/a	D. Lynch, P. Giannotti, R. Pisani for PHENIX	D. Lynch

Station 1 South Installation Procedure, PP-2.5.5.4-14

1.0 Purpose and Scope

1.1 The purpose of this procedure is to provide direction for the rigging of the Station 1 south quadrants. This procedure will provide detailed instructions for the safe installation of the quadrants onto their mounting locations on the front of the magnet. Note that the weight for each quadrant is 125 lbs.

2.0 Responsibilities

2.1 All operations shall be performed under the direction of the PHENIX experimental hall "person-in-charge", or their designee.

2.2 Due to the delicacy of this structure, and the critical alignment of its assembly in the magnet, this procedure and all relevant BNL safety guidelines must be strictly adhered to. In accordance with BNL policy, any individual may cease operations if they in any way feel unsafe or if they believe unsafe procedures are being followed, such a complaint shall be reviewed by the cognizant engineer, and if necessary, BNL ES&H Services.

2.3 A member of the muon tracking mechanical team should be present for all lifts, to consult on procedures and answer any questions as they may arise.

2.4 A member of the muon tracking mechanical team will attach the kinematic mounts to the split ring and quadrants as shown in drawings 002-0212-007-D1D2, 002-0212-003-D2, 002-0212-004-D2, 002-0212-005-D2, and 002-0212-006-D2. The muon tracking mechanical team will also attach all light source mounts to quadrants as shown in drawing 002-0212-007-D1D2.

2.5 Station 1 quadrants labeled 1:00, 4:00, 7:00, and 10:00 o'clock.

3.0 Prerequisites

3.1 Training: All personnel involved in this procedure shall have reviewed this procedure, and be fully knowledgeable about the way in which the quadrant is mounted in the South magnet. A meeting will take place with all participants involved with this installation to review all aspects and answer any questions that any of the personnel may have.

3.2 All personnel involved in this procedure shall wear hardhats and safety shoes.

4.0 Precautions

4.1 The area where rigging operations will be performed shall be cordoned-off to all personnel except the "person in charge" and the technicians assigned to perform this procedure.

4.2 Some operations will require personnel to work in close proximity to suspended loads. Do not permit anyone to be positioned under the load.

4.3 Lift the quadrants with the commercial lifting fixture only and only with the protective covers in place on the quadrant.

5.0 Equipment List

5.1 Appropriate ANVER vacuum lifting fixture, model number ET-100M8-MR-SP, serial number 974808, rated load capacity 1000 pounds.

5.2 Guide ropes.

5.3 Shackles rated for a minimum of 1000-pound load.

5.4 Two swivel hoist rings rated for a minimum of 800-pound load.

5.5 Nylon slings rated for a minimum of 1000-pound load.

6.0 Preparation

6.1 Magnet holes drilled for split ring and FEE plate drawing numbers 002-0212-002-D1 and 002-0212-002-D3.

6.2 A hole tapped into each half of the FEE plate into which a swivel hoist ring is inserted.

7.0 Procedure

7.1 To install split ring adapters:

- 7.1.1 Insert two threaded rods into the split-ring-to-magnet bolt holes numbered 2 and 15 on drawing number 002-0212-002-D1. These will support each split ring adapter.
- 7.1.2 Rig the right split ring adapter (part number 002-0212-073-D1) with straps so that the kinematic mounts face away from the magnet. (Note the right split ring adapter is marked part number 002-0212-074-D1 in drawing number 002-0212-007-D1.)
- 7.1.3 Raise it onto the threaded rod in hole #2.
- 7.1.4 Remove slings. Insert bolts into holes 16, 1, 3-7.
- 7.1.5 Remove threaded rod and insert remaining bolt.
- 7.1.6 Rig the left split ring adapter (part number 002-0212-071-D1) with straps so that the kinematic mounts face away from the magnet.
- 7.1.7 Raise it onto the threaded rod in hole #15.
- 7.1.8 Remove straps. Insert bolts into holes 8-14.
- 7.1.9 Remove threaded rod and insert remaining bolt.

7.2 Assemble split ring according to drawing number 002-0212-007-D1D2.

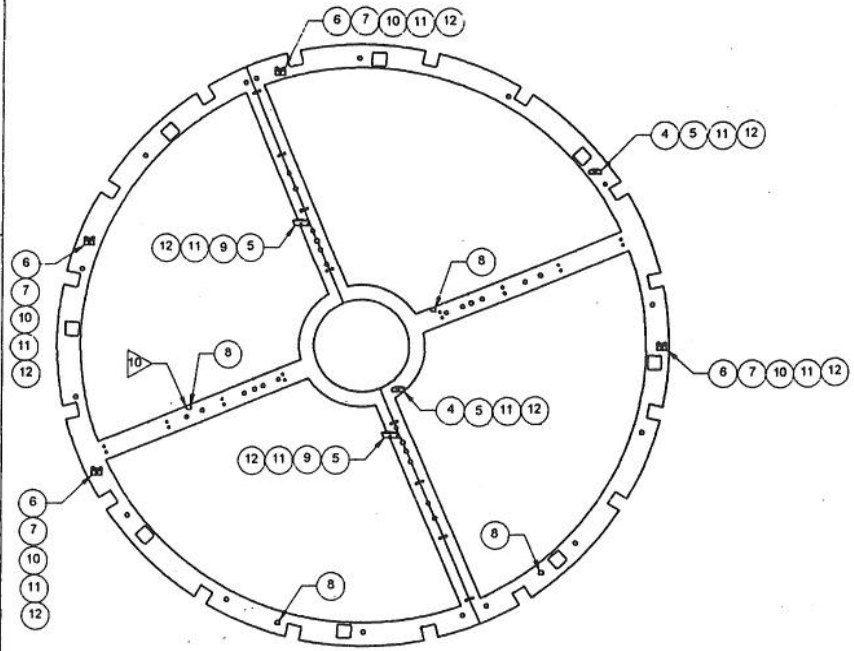
7.3 To install chambers:

- 7.3.1 Attach the ANVER lifting fixture to a quadrant in the horizontal position with the kinematic mounts facing away from the lifting fixture. Lift the quadrant only after the vacuum pump has turned off. Tilt the quadrant to a vertical position.
- 7.3.2 Rotate the quadrant to the orientation on the split ring.
- 7.3.3 Attach guide ropes to the quadrant as needed.
- 7.3.4 Lift and lower the quadrant into place on the kinematic mounts. Use guide ropes to stabilize the quadrant during installation.

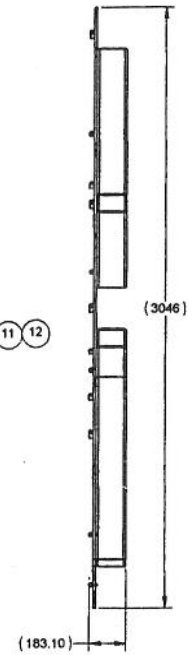
7.4 To Install FEE plate:

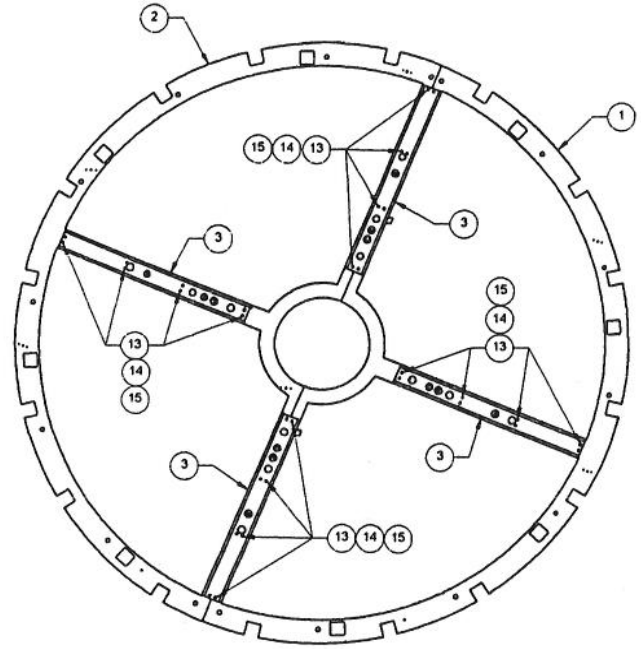
- 7.4.1 A swivel hook is inserted into front of each half of the FEE plate.
- 7.4.2 The plate halves are raised using these hooks. Attach guide ropes as needed.

7.5 The plate is assembled according to drawing number 002-0212-040-D1.



FRONT VIEW
(LOOKING FROM VERTEX)





BACK VIEW
(LOOKING AT VERTEX)

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
1	1	002-0212-071-1	LEFT SPLIT RING ADAPTER	ALUMINUM 6061 T651
2	1	002-0212-074-1	RIGHT SPLIT RING ADAPTER	ALUMINUM 6061 T651
3	4	002-0212-072	SPLIT RING ADAPTER BOX STIFFENER	ALUMINUM 6061 T651
4	2	002-0212-022-1	V-GROOVE MAG-SIDE BLOCK	304 STAINLESS STEEL
5	4	002-0212-027-1	V-GROOVE / DIAGONAL V-GROOVE INTERMEDIATE BLOCK	304 STAINLESS STEEL
6	4	002-0212-025-1	CONE MAG-SIDE BLOCK	304 STAINLESS STEEL
7	4	002-0212-026-1	CONE INTERMEDIATE BLOCK	304 STAINLESS STEEL
8	4	002-0212-020-1	Z BALL MOUNT	304 STAINLESS STEEL
9	2	002-0212-030-1	DIAGONAL V-GROOVE MAG SIDE BLOCK	304 STAINLESS STEEL
10	8		#10-32 UNF-2A X 1IN LG SKT-HD	STAINLESS STEEL
11	10		1/4-20 X 1IN LG SKT-HD	STAINLESS STEEL
12	16		1/8 X 3/4IN LG STD DOWEL PIN	STAINLESS STEEL
13	32		3/8-16 UNC-2B X 7 1/2IN LG SKT-HD	STAINLESS STEEL
14	64		3/8 FLAT WASHER	STAINLESS STEEL
15	32		3/8-16 UNC-2A NUT	STAINLESS STEEL

PARTS LIST

NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.
10. 1/2IN HOLE TO BE DRILLED IN BOX STIFFENER AT ASSEMBLY TO PROVIDE CLEARANCE FOR Z-BALL.

W.S. OCT 16 1999

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE METRIC
-TOLERANCES-
DECIMALS X = ±.2 54 XX = ±.25
ANGULAR = ±.25°
SURFACE FINISH = 3.2

CAD GENERATED DRAWING
DO NOT MANUALLY UPDATE
DO NOT SCALE DRAWING

HYTEC, INC

TITLE
PHENIX STATION 1
SPLIT RING ASSEMBLY

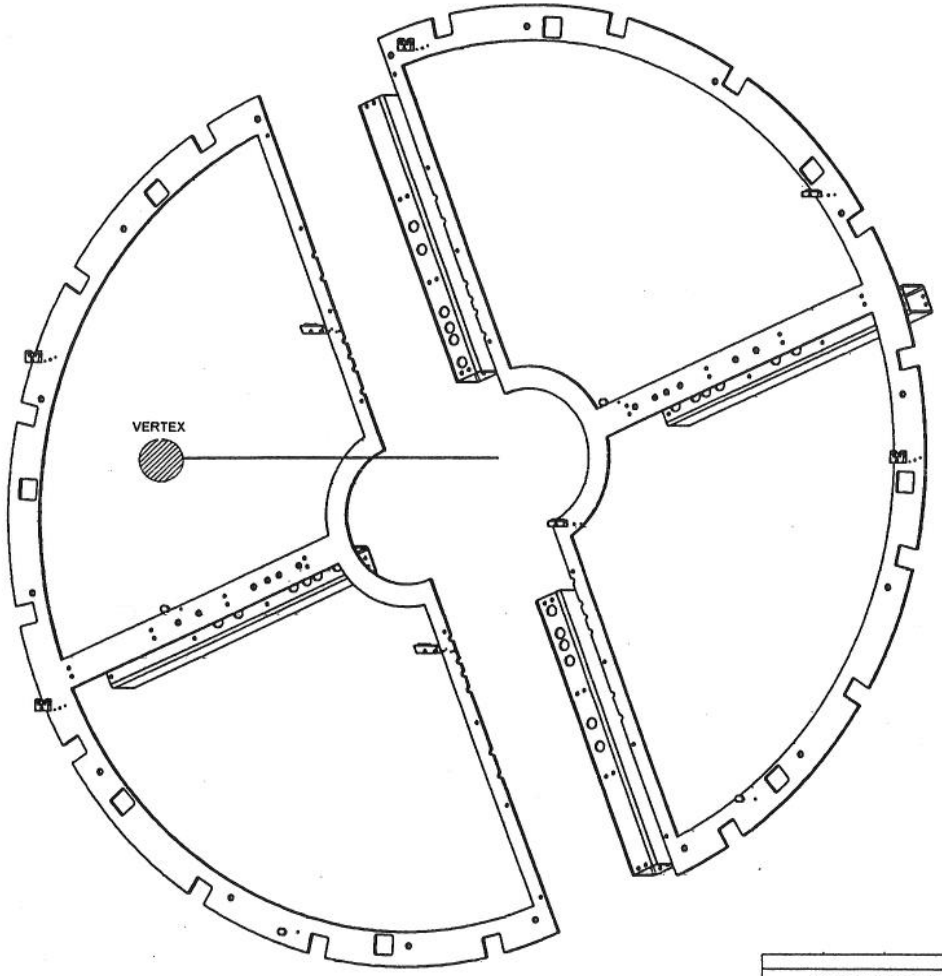
	SIGNATURE	DATE
DESIGNED	E. ROMERO	7/30/99
DRAWN	E. ROMERO	7/30/99
CHECKED	H. SALAZAR	8/3/99
TECH	T. THOMPSON	7/30/99
APPROVED	D. FIELDS	8/3/99

FINISH

PART NO.
002-0212-007-1

DWG NO. 002-0212-007 SIZE D SHEET 1 of 2

SCALE 1/12



NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

W.S. OCT 16 1999

PARTS LIST

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS .X = +/- 2.54 .XX = +/- .25
ANGULAR = +/- .25°
SURFACE FINISH = 2.2

CAD GENERATED DRAWING.
DO NOT MANUALLY UPDATE
DO NOT SCALE DRAWING

HYTEC, INC

PHENIX STATION 1
SPLIT RING ASSEMBLY

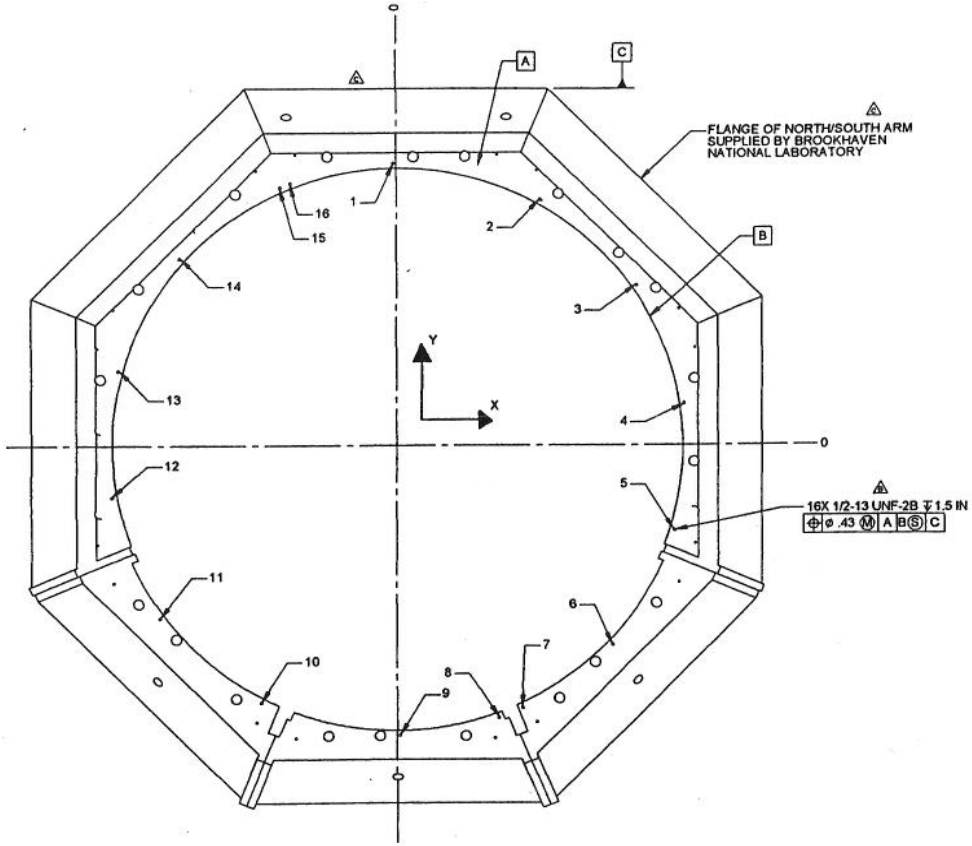
FINISH		
	E. ROMERO	7/30/99
	E. ROMERO	7/30/99
	H. SALAZAR	8/3/99
	T. THOMPSON	7/30/99
	D. FIELDS	8/3/99

PART NO. 002-0212-007-1

002-0212-007 D 2 of 2

SCALE 1/8

REV	DESCRIPTION	DATE	APPROVED
A	SEE ECN #002-0212-002(C) AFTER DETAILS	[illegible]	T. THOMPSON
B	SEE ECN #002-0212-002(D) AFTER DETAILS	[illegible]	T. THOMPSON
C	SEE ECN #002-0212-002(E) AFTER DETAILS	[illegible]	T. THOMPSON



FLANGE OF SOUTH ARM SHOWN

NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF 0.1mm
5. ALL INSIDE CORNERS TO BE 0.4mm RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY 0.4mm DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

X/Y HOLE LOCATIONS ALL DIMENSIONS ARE BASIC					
NAME	1	2	3	4	5
X/Y	12.99/1451.94	715.00/1263.76	1198.63/922.42	1436.051/214.62	1384.80/436.63
NAME	6	7	8	9	10
X/Y	1075.00/1020.14	826.47/1343.06	508.72/1392.69	13.25/1491.94	664.31/1314.55
NAME	11	12	13	14	15
X/Y	1191.33/991.53	1427.80/264.61	1399.19/398.03	1087.48/982.12	583.25/1329.71
NAME	16	17	18		
X/Y	532.11/1350.90	803.11/1150.17	415.10/1405.29		

W.S FEB 0 4 2000

2/3/2000 W.S.

PARTS LIST

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS -TOLERANCES-
DECIMALS .X = +/- 2.5 .XX = +/- .75 .XXX = +/- .250
ANGULAR = +/- 30'
SURFACE FINISH = 250 (IN MICRO INCHES)

CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

FINISH

PART NO. 002-0212-002-1

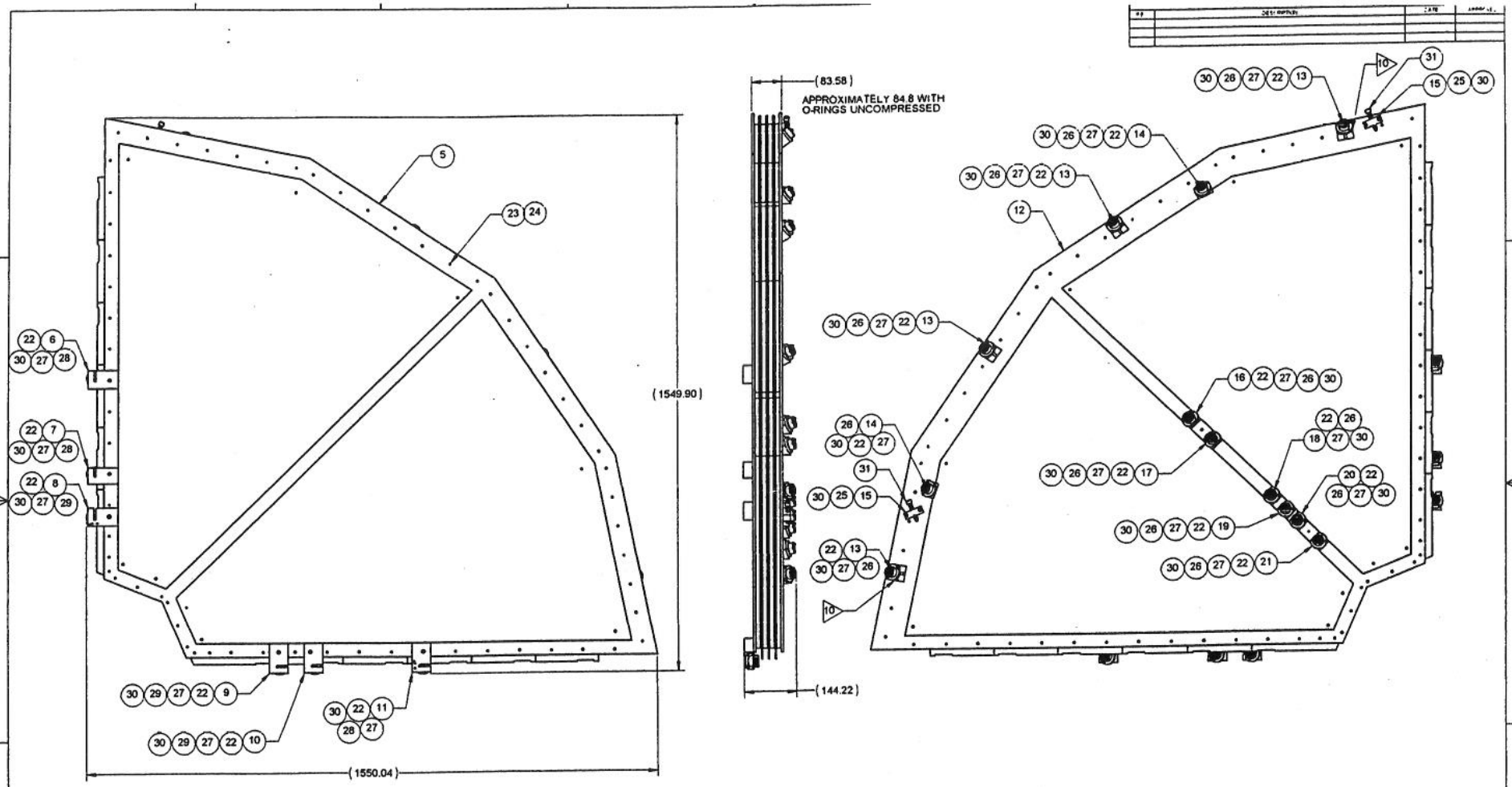
	SIGNATURE	DATE
DESIGNED	E. PIOTROWICZ	06/05/97
DRAWN	E. ROMERO	2/21/99
CHECKED	H. SALAZAR	2/24/99
ENGR	T. THOMPSON	2/23/99
APPROVED	D. FIELDS	3/17/99

HYTEC, INC

TITLE: PHENIX STATION #1 NORTH/SOUTH TEACUP TO SPLIT RING MOUNTING HOLE LOCATIONS

DWG NO 002-0212-002 SIZE D SHEET NO 1

SCALE 1/12 REVISION C



NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.
10. THE FASTENER FOR THE HOLE THAT IS COVERED BY THE MOUNTING BLOCK WILL HAVE TO BE CUT TO 3 5/16IN TO AVOID INTERFERENCE WITH MOUNTING BLOCK.

W.S. OCT 16 1999

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS .X = +/- 2.54 .XX = +/- .25
ANGULAR = +/- 25°
SURFACE FINISH = N/A

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

FINISH

PART NO 002-0212-003-1 -3

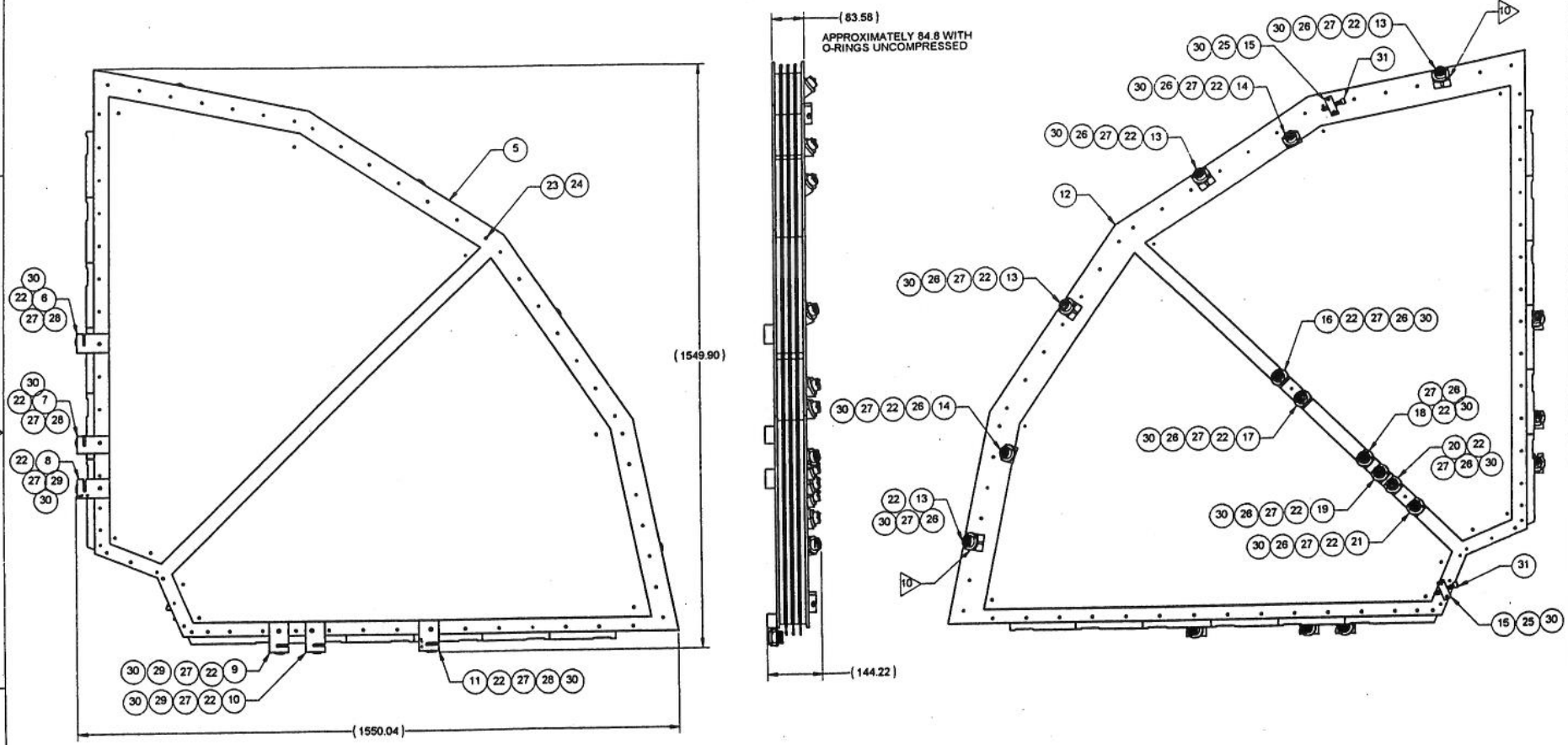
	SIGNATURE	DATE
DESIGNED	E. ROMERO	7/13/99
DRAWN	E. ROMERO	7/13/99
CHECKED	H. SALAZAR	7/14/99
APPROVED	T. THOMPSON	7/13/99
MANUFACTURED	D. FIELDS	7/14/99

HYTEC, INC

TITLE: PHENIX STATION 1 1 O'CLOCK QUAD ASSEMBLY

DWG NO 002-0212-003 SIZE D SHEET 2

SCALE 3/16



NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

10 THE FASTENER FOR THE HOLE THAT IS COVERED BY THE MOUNTING BLOCK WILL HAVE TO BE CUT TO 3 5/16IN TO AVOID INTERFERENCE WITH MOUNTING BLOCK.

W.S. OCT 16 1999

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS X = +/- 2.54 XX = +/- .25
ANGULAR = +/- 25°
SURFACE FINISH = N/A

CAD GENERATED DRAWING.
DO NOT MANUALLY UPDATE
DO NOT SCALE DRAWING

	E. ROMERO	1/13/99
	E. ROMERO	1/13/99
	H. SALAZAR	1/14/99
	T. THOMPSON	1/13/99
	D. FIELDS	1/14/99

FINISH

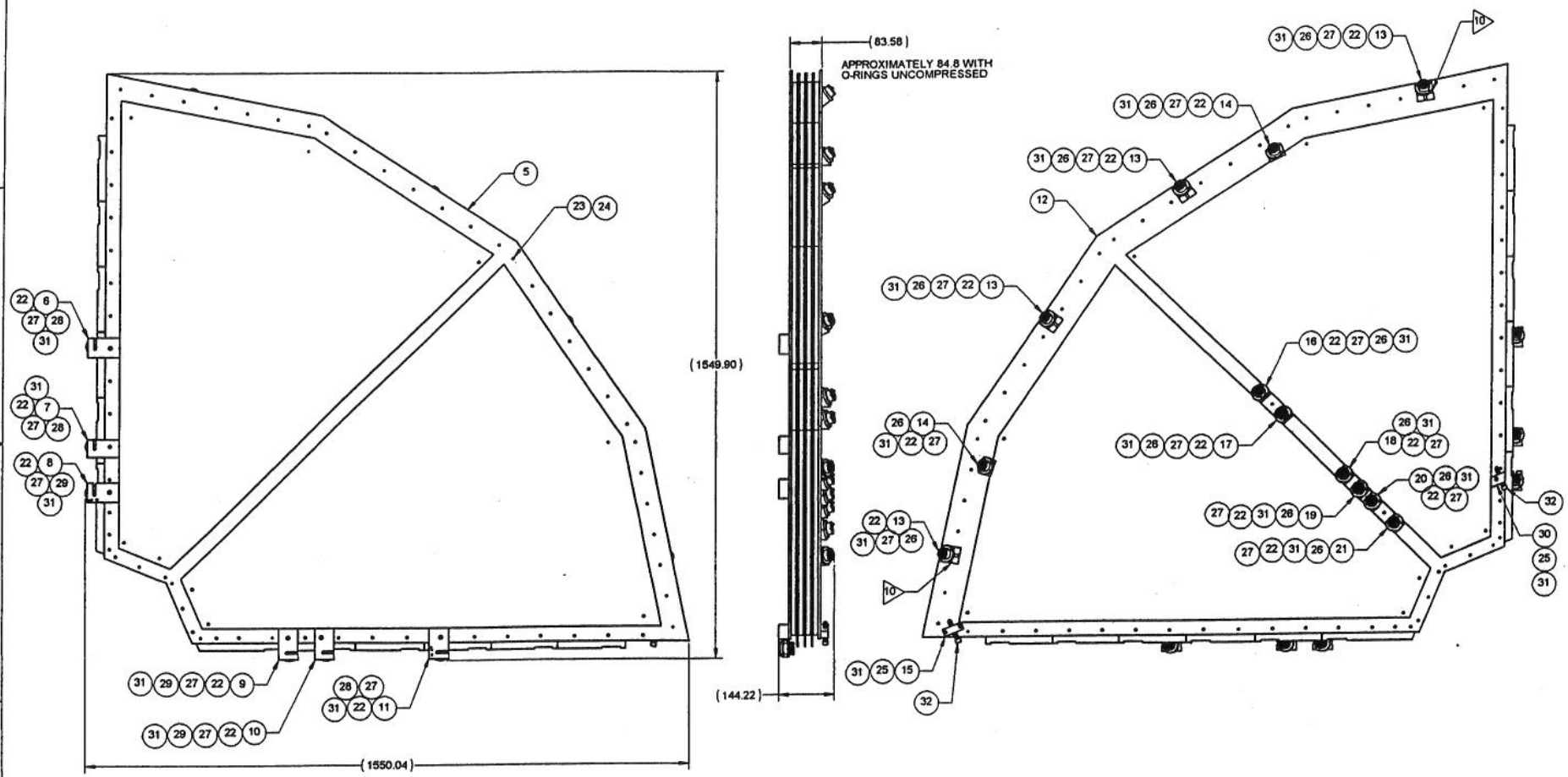
PART NO 002-0212-004-1 -3

HYTEC, INC

PHENIX STATION 1
4 O'CLOCK QUAD
ASSEMBLY

002-0212-004 D 2

3/10



NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.
10. THE FASTENER FOR THE HOLE THAT IS COVERED BY THE MOUNTING BLOCK WILL HAVE TO BE CUT TO 3 5/16IN TO AVOID INTERFERENCE WITH MOUNTING BLOCK

W.S. OCT 16 1999

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS X = ±0.2 XX = ±0.25 ANGULAR = ±0.25° SURFACE FINISH = N/A

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

FINISH

PART NO. 002-0212-005-1 -3

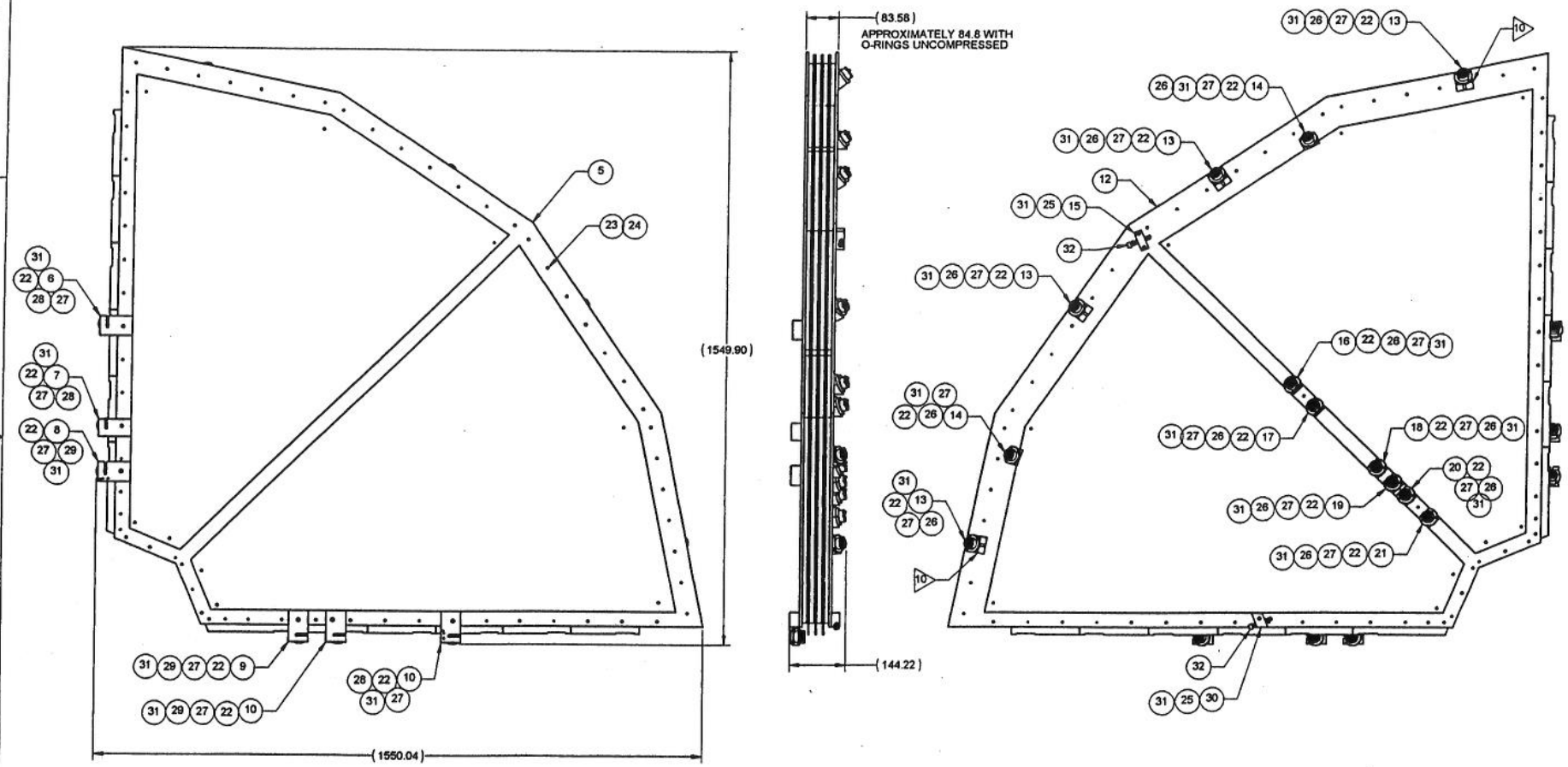
	E. ROMERO	7/13/99
	E. ROMERO	7/13/99
	H. SALAZAR	7/14/99
	T. THOMPSON	7/13/99
	D. FIELDS	7/14/99

HYTEC, INC

TITLE: PHENIX STATION 1 7 O'CLOCK QUAD ASSEMBLY

DWG NO. 002-0212-005 D 2

SCALE 3/16



NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.
10. THE FASTENER FOR THE HOLE THAT IS COVERED BY THE MOUNTING BLOCK WILL HAVE TO BE CUT TO 3 5/16IN TO AVOID INTERFERENCE WITH MOUNTING BLOCK.

W.S. OCT 16 1999

PARTS LIST

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS X = +/- 2.54 XX = +/- .25
ANGULAR = +/- .25°
SURFACE FINISH = N/A

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

HYTEC, INC

TITLE: PHENIX STATION 1 10 O'CLOCK QUAD ASSEMBLY

	SIGNATURE	DATE
DESIGNED	E. ROMERO	7/13/99
DRAWN	E. ROMERO	7/13/99
CHECKED	H. SALAZAR	7/14/99
ENGR	T. THOMPSON	7/13/99
APPROVED	D. FIELDS	7/14/99

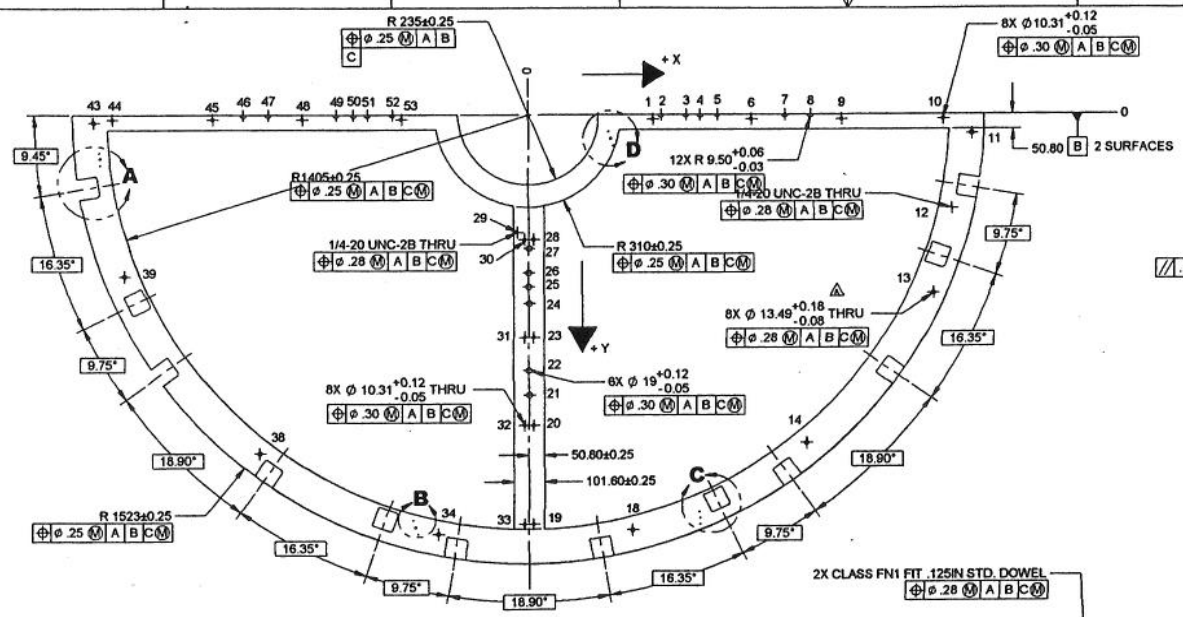
FINISH

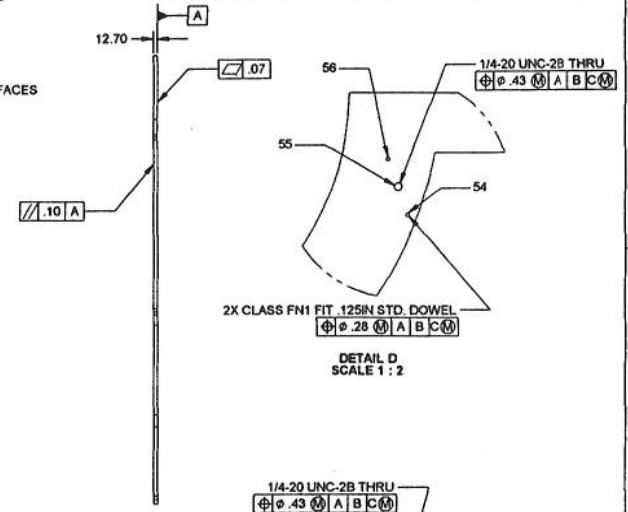
PART NO 002-0212-006-1 -3

DWG NO 002-0212-006 SIZE D SHEET 2

SCALE 3/16

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	SEE ECN #002-0312-07301-A FOR CHANGE LISTINGS	08/20/99	T. THOMPSON
B	SEE ECN #002-0312-07301-B FOR CHANGE LISTINGS	02/03/00	T. THOMPSON

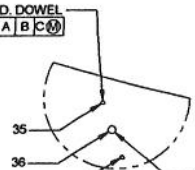


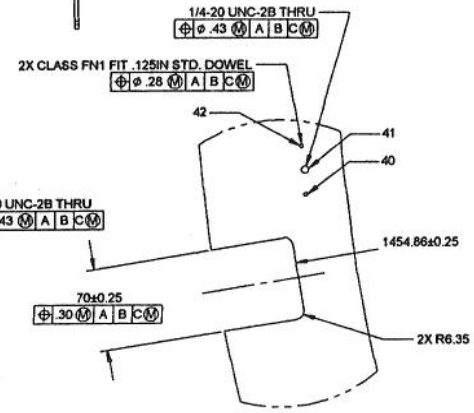


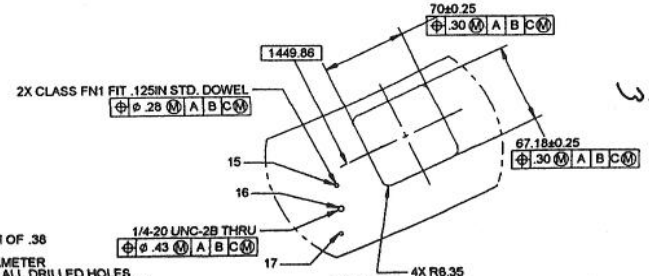
VERIFIED 8/2/99

X/Y HOLE LOCATION CHART ALL DIMENSIONS ARE BASIC

HOLE NAME	1	2	3	4	5	6	7	8	9	10
X/Y	420.00/15.00	449.50/0.00	532.20/0.00	579.00/0.00	635.50/0.00	749.85/15.00	863.50/0.00	947.30/0.00	1049.85/15.00	1387.00/15.00
HOLE NAME	11	12	13	14	15	16	17	18	19	20
X/Y	1460.56/84.81	1415.06/317.14	1353.88/602.78	933.33/1112.30	573.57/1348.13	576.86/1388.52	576.86/1390.06	351.27/1408.87	15.00/1387.09	15.00/1049.89
HOLE NAME	21	22	23	24	25	26	27	28	29	30
X/Y	0.00/947.30	0.00/863.50	15.00/749.85	0.00/635.50	0.00/579.00	0.00/532.20	0.00/449.50	15.00/420.00	-38.10/395.80	-15.00/420.00
HOLE NAME	31	32	33	34	35	36	37	38	39	40
X/Y	-15.00/749.85	-15.00/1049.89	-15.00/1387.09	-301.89/1420.27	-384.88/1373.37	-376.56/1396.99	-368.24/1420.60	-893.94/1144.19	-1348.39/543.64	-1429.37/168.09
HOLE NAME	41	42	43	44	45	46	47	48	49	50
X/Y	-1429.63/146.55	-1432.87/126.16	-1451.78/25.40	-1387.09/15.00	-1049.89/15.00	-947.30/0.00	-863.50/0.00	-749.85/15.00	-635.50/0.00	-579.00/0.00
HOLE NAME	51	52	53	54	55	56	57	58	59	60
X/Y	-532.20/0.00	-449.50/0.00	-420.00/15.00	283.97/103.21	275.65/79.59	267.33/55.98				







W.S. FEB 0 4 2000

MATERIAL: ALUMINUM 6061 T651

NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

2/3/2000 W.S.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS .X = +/- 2.54 .XX = +/- .25 ANGULAR = +/- .25° SURFACE FINISH = 3.2

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

FINISH

PART NO. 002-0212-073-1

	SIGNATURE	DATE
DESIGNED	E. ROMERO	1/00/99
DRAWN	E. ROMERO	1/00/99
CHECKED	H. SALAZAR	8/0/99
ENGR	T. THOMPSON	7/00/99
APPROVED	D. FIELDS	8/0/99

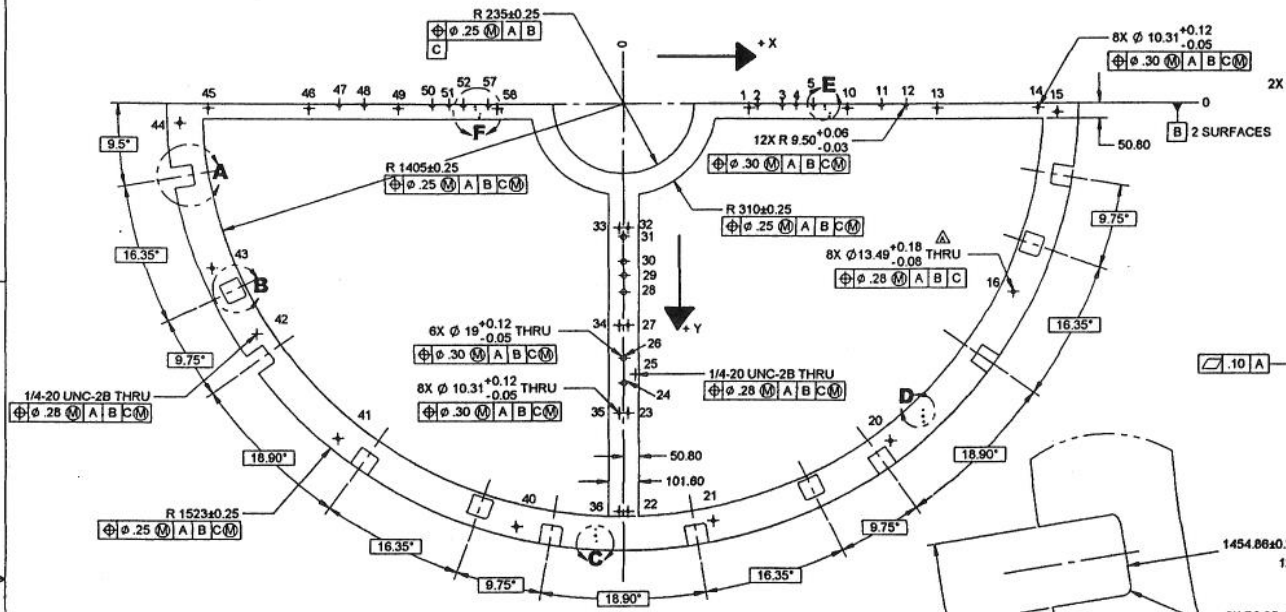
HYTEC, INC

TITLE: PHENIX STATION #1 SOUTH ARM RIGHT SPLIT RING

DWG NO: 002-0212-073 SIZE: D SHEET NO: 1 of 1

SCALE 1/4 REVISION B

REV	DESCRIPTION	DATE	APPROVED
A	SEE ECN #002-0212-071-A FOR CHANGE LISTINGS	05/20/99	T. THOMPSON
B	SEE ECN #002-0212-071-B FOR CHANGE LISTINGS	02/03/00	T. THOMPSON



X/Y HOLE LOCATION CHART ALL DIMENSIONS ARE BASIC										
HOLE NAME	1	2	3	4	5	6	7	8	9	10
X/Y	420.00/15.00	449.50/0.00	532.20/0.00	579.00/0.00	635.50/0.00	673.71/8.03	675.69/18.03	690.90/31.21	688.26/43.13	749.85/15.00
HOLE NAME	11	12	13	14	15	16	17	18	19	20
X/Y	863.50/0.00	947.30/0.00	1049.89/15.00	1387.09/15.00	1451.69/30.00	1305.05/636.51	1003.71/1040.07	1003.98/1061.60	1007.01/1082.00	893.94/1144.19
HOLE NAME	21	22	23	24	25	26	27	28	29	30
X/Y	301.89/1420.27	15.00/1387.09	15.00/1049.89	0.00/947.30	38.10/918.84	0.00/863.50	15.00/749.85	0.00/635.50	0.00/579.00	0.00/532.20
HOLE NAME	31	32	33	34	35	36	37	38	39	40
X/Y	0.00/449.50	15.00/420.00	-15.00/420.00	-15.00/749.85	-15.00/1049.89	-15.00/1387.09	-95.89/1446.85	-95.63/1470.39	-92.60/1490.78	-358.53/1437.98
HOLE NAME	41	42	43	44	45	46	47	48	49	50
X/Y	-952.61/1135.28	-1222.50/779.16	-1374.21/554.86	-1480.56/64.81	-1387.09/15.00	-1049.89/15.00	-947.30/0.00	-663.50/0.00	-749.85/15.00	-635.50/0.00
HOLE NAME	51	52	53	54	55	56	57	58	59	60
X/Y	-579.00/0.00	-532.20/0.00	-493.68/8.03	-491.70/18.03	-478.50/31.21	-479.14/43.13	-449.50/0.00	-420.00/15.00		

MATERIAL: ALUMINUM 6061 T651

VERIFIED 8/2/99

W.S. FEB 0 4 2000

2/3/2000 W.S.

NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN METRIC -TOLERANCES-
DECIMALS: .X = +/- 2.54, .XX = +/- .25, .XXX = +/- .250
ANGULAR = +/- .25°
SURFACE FINISH = 3.2
FINISH

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

	SIGNATURE	DATE
DESIGNED	S. ROMERO	7/20/99
DRAWN	S. ROMERO	7/20/99
CHECKED	H. SALAZAR	8/3/99
ENGR	T. THOMPSON	7/20/99
APPROVED	D. FIELDS	8/3/99

PART NO. 002-0212-071-1

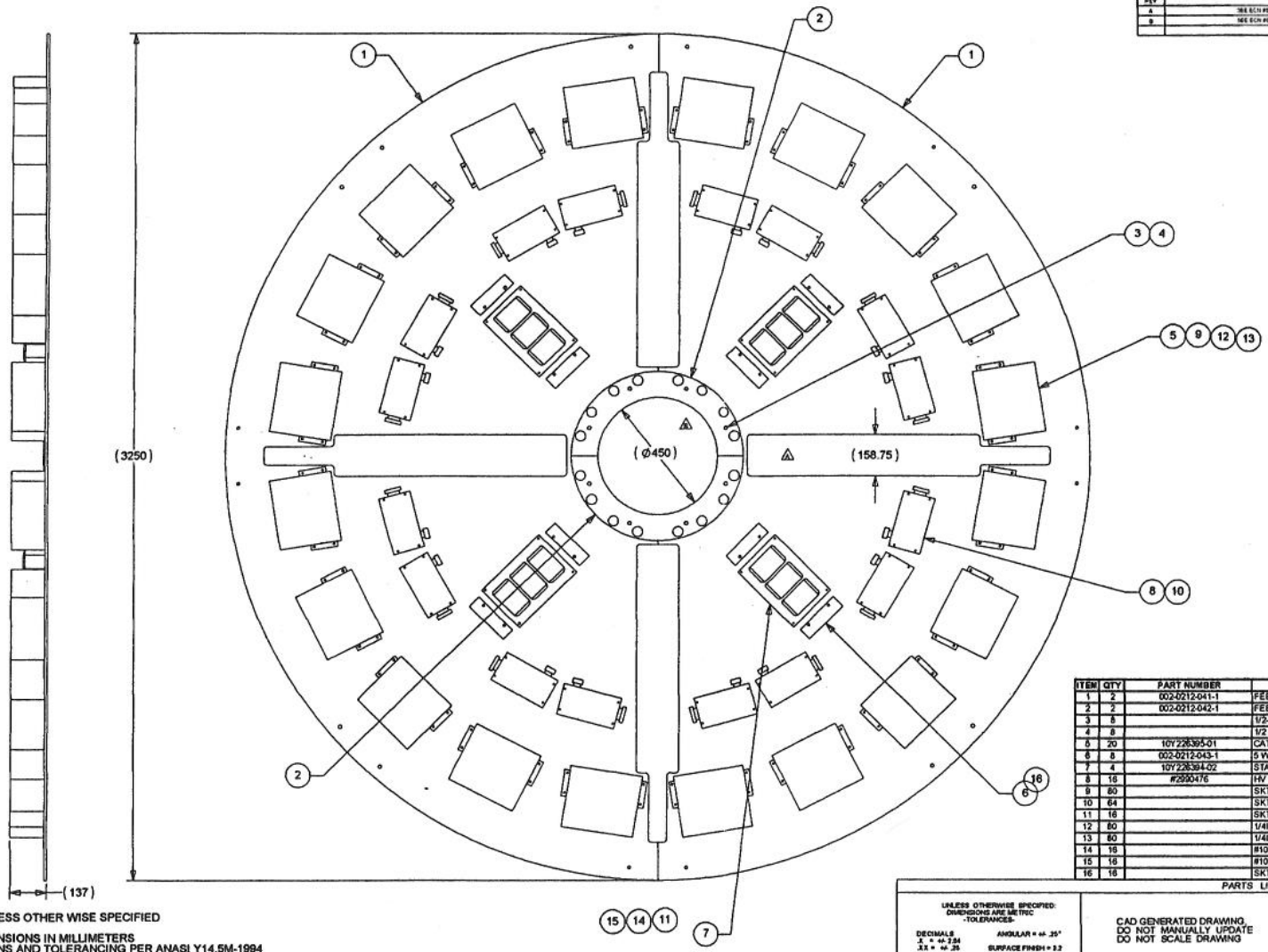
HYTEC, INC

TITLE: PHENIX STATION #1 SOUTH ARM LEFT SPLIT RING

DWG. NO 002-0212-071 | SIZE D | SHEET NO 1 of 1

SCALE 1/8 | REVISION B

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ECN #97-1213-B001-A FOR DETAILS	11/7/99	T. THOMPSON
B	ECN #99-1213-B001-B FOR DETAILS	3/8/00	T. THOMPSON



ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
1	2	002-0212-041-1	FEE MOUNTING PLATE	SST
2	2	002-0212-042-1	FEE ANNULUS	SST
3	8		1/2-13 UNC-2A SKT-HD .75LG	SST
4	8		1/2 FLAT WASHER	SST
5	20	10Y228395-01	CATHODE FEE CHASSIS	
6	8	002-0212-043-1	5 WAY T	BRASS
7	4	10Y228394-02	STA-1 MANIFOLD ASSEMBLY	
8	16	#2990476	HV DISTRIBUTION BOX	
9	80		SKT-HD 1/4-20 UNC-2A 1 IN LG	SST
10	64		SKT-HD #10-32 UNF-2A 1-3/8 IN LG	SST
11	16		SKT-HD #10-32 UNF-2A 3/4 IN LG	SST
12	80		1/4IN FLAT WASHER	SST
13	80		1/4IN LOCK WASHER	SST
14	16		#10 FLAT WASHER	SST
15	16		#10 LOCK WASHER	SST
16	16		SKT-HD #10-32 UNF-2A 1-3/4IN LG	SST

PARTS LIST

NOTES: UNLESS OTHER WISE SPECIFIED

1. ALL DIMENSIONS IN MILLIMETERS
2. DIMENSIONS AND TOLERANCING PER ANASI Y14.5M-1994
3. SURFACE TEXTURE PER ANI/ASME B 46.1-1985
4. REMOVE ALL BURRS AND BREAK SHARP EDGES TO A MAXIMUM OF .38
5. ALL INSIDE CORNERS TO BE .38 RADIUS MAX
6. COUNTERSINK 82 DEGREES ALL TAPPED HOLES TO MAJOR DIAMETER
7. COUNTERSINK 82 DEGREES APPROXIMATELY .76 TO 1.52 DEEP ALL DRILLED HOLES
8. PARTS TO BE THOROUGHLY CLEANED TO REMOVE ALL OIL, GREASE, DIRT AND CHIPS
9. PART NUMBER (DRAWING NO. PLUS DASH NO. PLUS SERIAL NO.) TO BE CLEARLY MARKED ON THE PART ITSELF.

APPROX 1329.6 LBS

S APR 2 9 2000

W. S. 3/8/2000

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE METRIC -TOLERANCES-
DECIMALS .X = +/- 0.04 .XX = +/- .25
ANGULAR = +/- .25°
SURFACE FINISH = 3.2

FINISH

PART NO. 002-0212-040-1

CAD GENERATED DRAWING, DO NOT MANUALLY UPDATE DO NOT SCALE DRAWING

	SIGNATURE	DATE
DESIGNED	E. ROMERO	9/23/99
DRAWN	E. ROMERO	9/23/99
CHECKED	H. SALAZAR	9/27/99
ENGR	T. THOMPSON	9/23/99
APPROVED	D. FIELDS	9/27/99

HYTEC, INC

TITLE: PHENIX STATION #1 FEE PLATE ASSEMBLY

DWG NO 002-0212-040 SIZE D SHEET NO 1 of 1

SCALE 1/8 REVISION B