

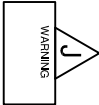
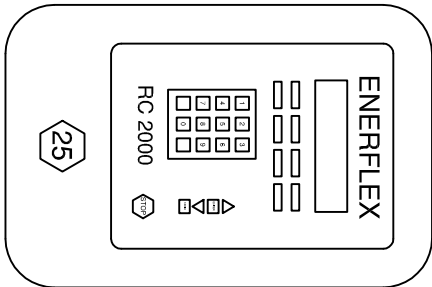
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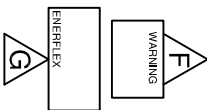
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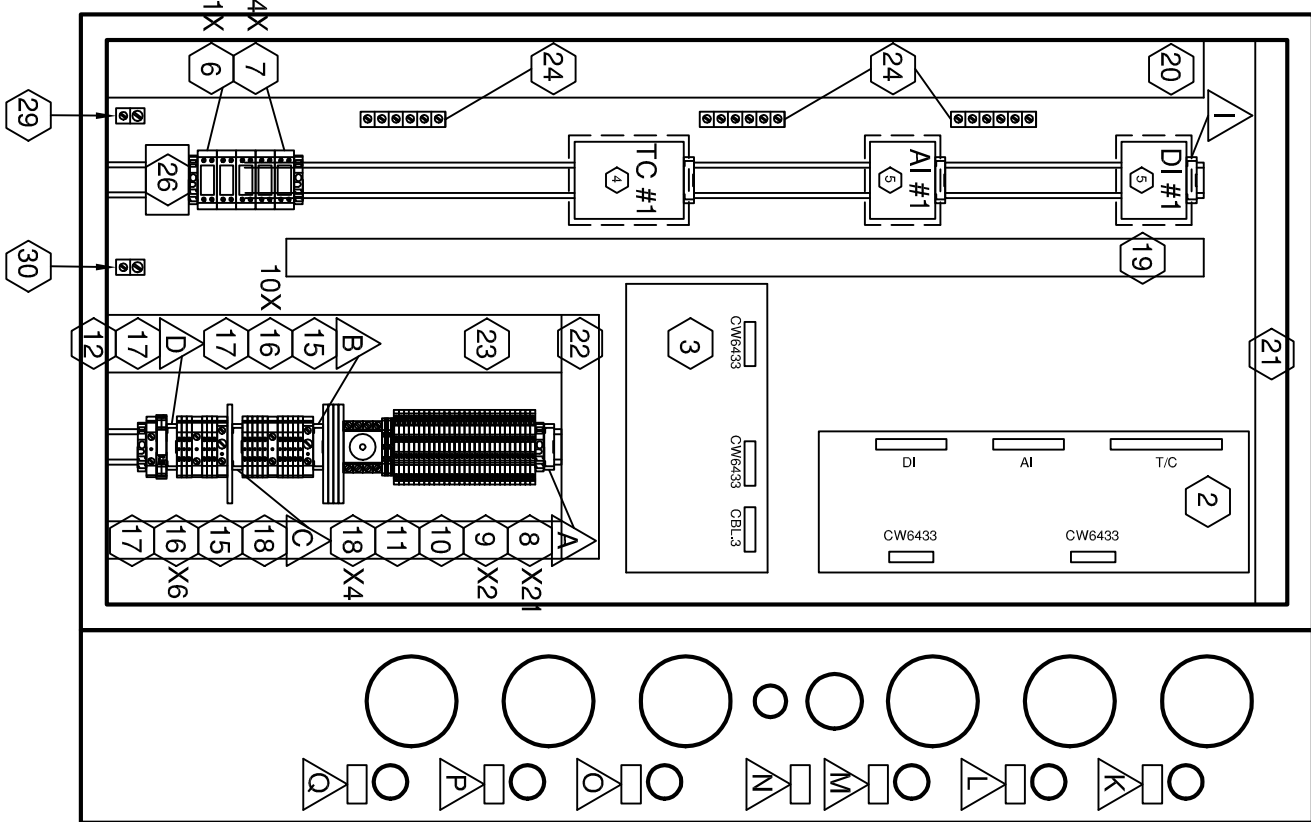
ENERFLEX
RC 2000



27
28



ENERFLEX



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MODEL #
1	1	ACE 36"x24"x12" ENCLOSURE w/ FEET	CUSTOM
2	1	RC 2000 INPUT MODULE	CW4769-3
3	1	RC 2000 OUTPUT MODULE	CW5218-2
4	1	WIELAND .40 PIN TERMINATION BLOCK	87.210.2208.3 (ENERFLEX SUPPLY)
5	2	WIELAND .26 PIN TERMINATION BLOCK	87.210.2205.3 (ENERFLEX SUPPLY)
6	1	WIELAND ANALOG NON-INCENDIVE BARR.	WW.900.102
7	4	WIELAND DI NON-INCENDIVE BARRIER	WIE5786700000010
8	21	WDK 2.5 STACKED FEED THROUGH TERM.	WET102150
9	2	WEID. WPE 4 GROUND TERMINAL	WET101010
10	1	MAGNECRAFT 24VDC 2 POLE RELAY	750XBXH-24D
11	1	MAGNECRAFT RELAY BASE FOR ABOVE	70-464-1
12	1	GOULD USM1 30A FUSE BLOCK c/w LPC30	LPC30
13	1	AB BUTTON, PUSH/PULL, 2 POS, RED	ALB800TFX6
14	2	BLOCK, CONTACT, .N/C SEAL, CL 1, DIV 2	ALB800TXD2P
15	2	WEID SAKS 1/35 FUSED TERMINAL	WET102000
16	16	WEID WDU 2.5 FEED THROUGH TERMINAL	WET102030
17	3	WEID. RELAY, FLARE, 24DC, 1W, 250V6A	80.010.4000.0
18	5	WEID. RELAY, FLARE, 24DC, 1W, 250V6A	80.010.4000.0
19	LOT	DUCT, PLASTIC, GREY 1" X 2" PANDUIT	PANF1X2LG6
20	LOT	DUCT, PLASTIC, GREY 2" X 4" PANDUIT	PANF2X4LG6
21	LOT	DUCT, PLASTIC, WHITE 1" X 3" PANDUIT	PANF1X3WH6
22	LOT	DUCT, PLASTIC, WHITE 1" X 2" PANDUIT	PANF1X2WH6
23	LOT	DUCT, PLASTIC, WHITE 2" X 3" PANDUIT	PANF2X3WH6
24	LOT	ILSCO BAR, GROUND, 6FT	N8020
25	1	RC 2000 CPU MODULE	CW-5157-2
26	1	WEID. SPARE FUSE HOLDER	WET7914760001
27	1	AB BUTTON, PUSH, FLUSH HEAD, BLACK	ALB800TA2
28	1	BLOCK, CONTACT, .N/O SEAL, CL 1, DIV 2	ALB800TXD1P
29	1	ILSCO ISOLATED GROUND LUG	
30	1	ILSCO PANEL GROUND LUG	
31	-	-	-
32	-	-	-
33	LOT	TS-35 MOUNTING RAIL	38340
34	LOT	BRACKET, END, EW35 FOR TS35	WET38356
35	LOT	SCHT5S TERMINAL STRIP MARKERS	WET163193
36			
37			
38			
39			
40	2	LIFTING EYE HOOKS	BS12/312A
41			

LAMACOID SCHEDULE

ITEM	QTY	TEXT	SIZE
A	1	INCENDIVE I/O	SCHT5S
B	1	24 VDC DISTRIBUTION	SCHT5S
C	1	IGNITION DISTRIBUTION	SCHT5S
D	1	ALTERNATOR DISTRIBUTION	SCHT5S
E	1	PANEL SHUTDOWN	1" X 3"
F	1	WARNING: EXPLOSION HAZARD SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1 DIV 2 HAZARDOUS LOCATIONS DO NOT DISCONNECT IF CIRCUIT IS LIVE OR UNLESS THAT AREA IS KNOWN TO BE NON HAZARDOUS	2" x 4"

ITEM	QTY	TEXT	SIZE
K	1	GOVERNOR	3/4" X 1.5"
L	-	-	-
M	-	-	-
N	1	FIRELOOP	3/4" X 1.5"
O	-	-	-
P	-	-	-
Q	-	-	-

WARNING :
DISCONNECT CABLE CONNECTION
TO INPUT / OUTPUT BOARDS
BEFORE WELDING

WHT/RED

LEGEND

- PANEL WIRING
- FIELD WIRING
- UNFUSED TERMINAL
- FUSED TERMINAL
- FEED THROUGH TERMINAL
- DISCONNECT TERMINAL

WIRE COLOR LEGEND

- +24VDC: RED
- 24VDC: YELLOW
- SWITCHED: ORANGE
- ANALOG INPUT/OUTPUT -: BLACK
- ANALOG INPUT/OUTPUT +: WHITE
- ANALOG LOOP: PURPLE

Project Title

DOSCK ENERGY
RC10303

PANEL LAYOUT DRAWING

Syntech

5190109-01

1 of 1

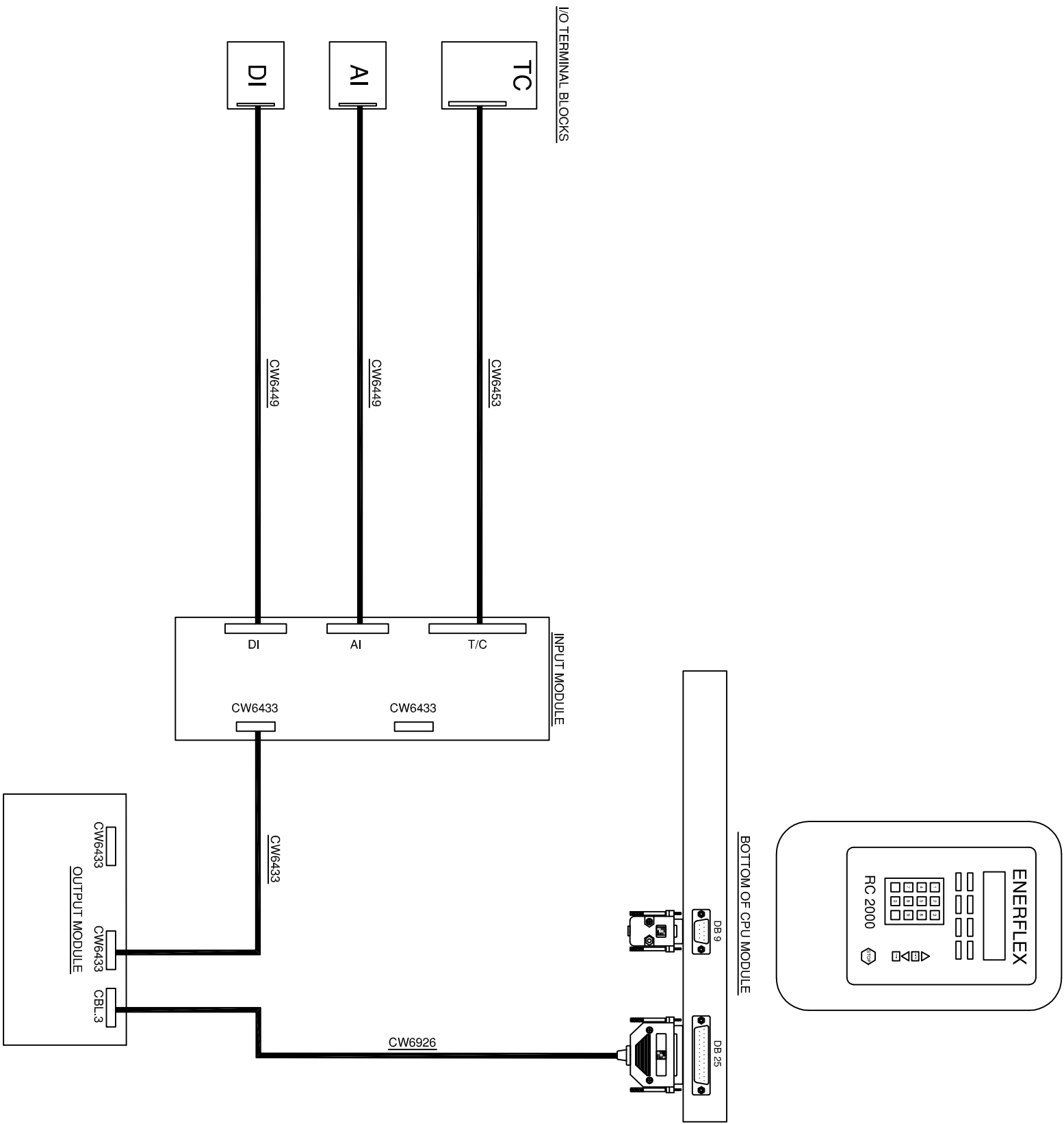
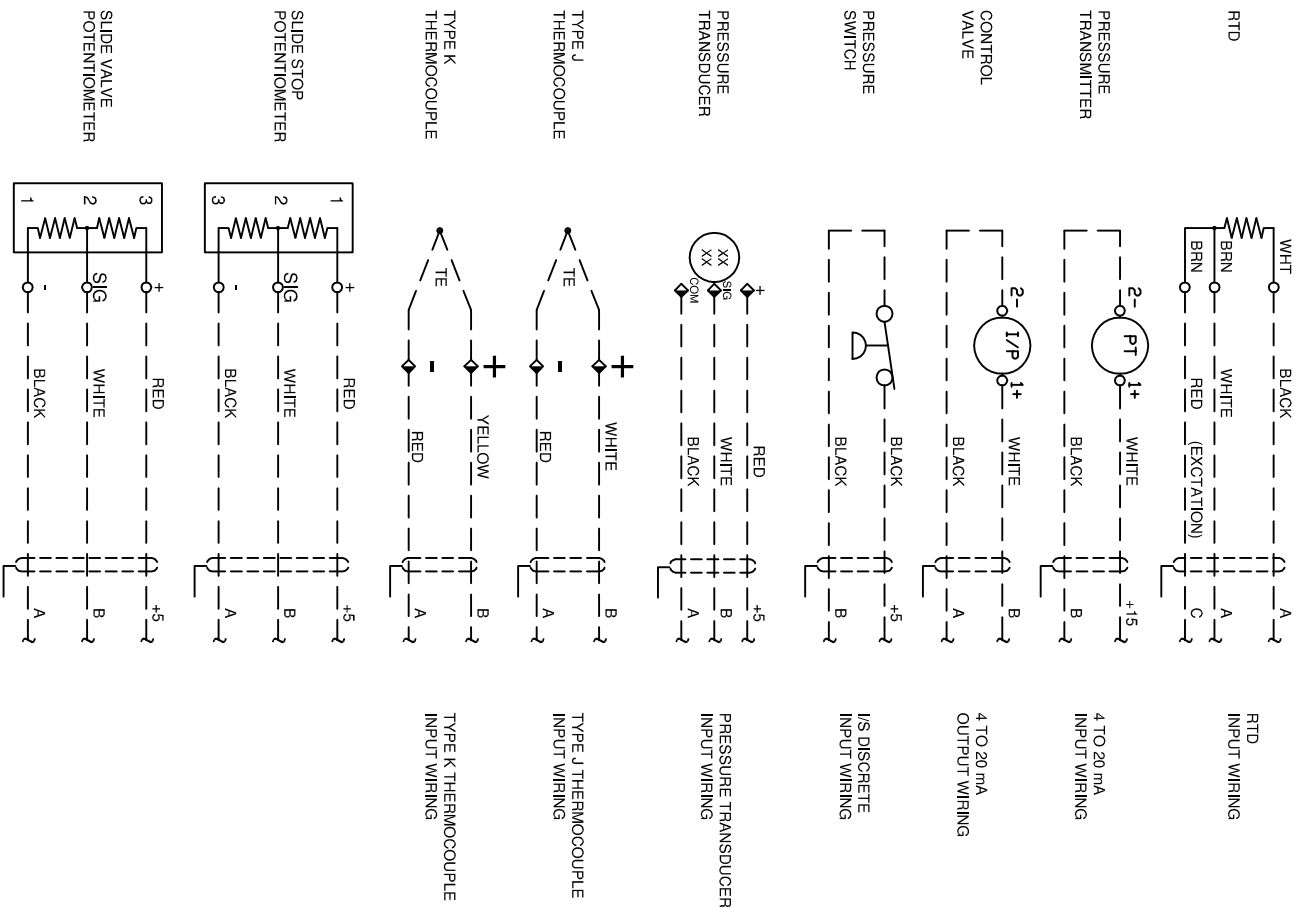
Customer

050328

NTS

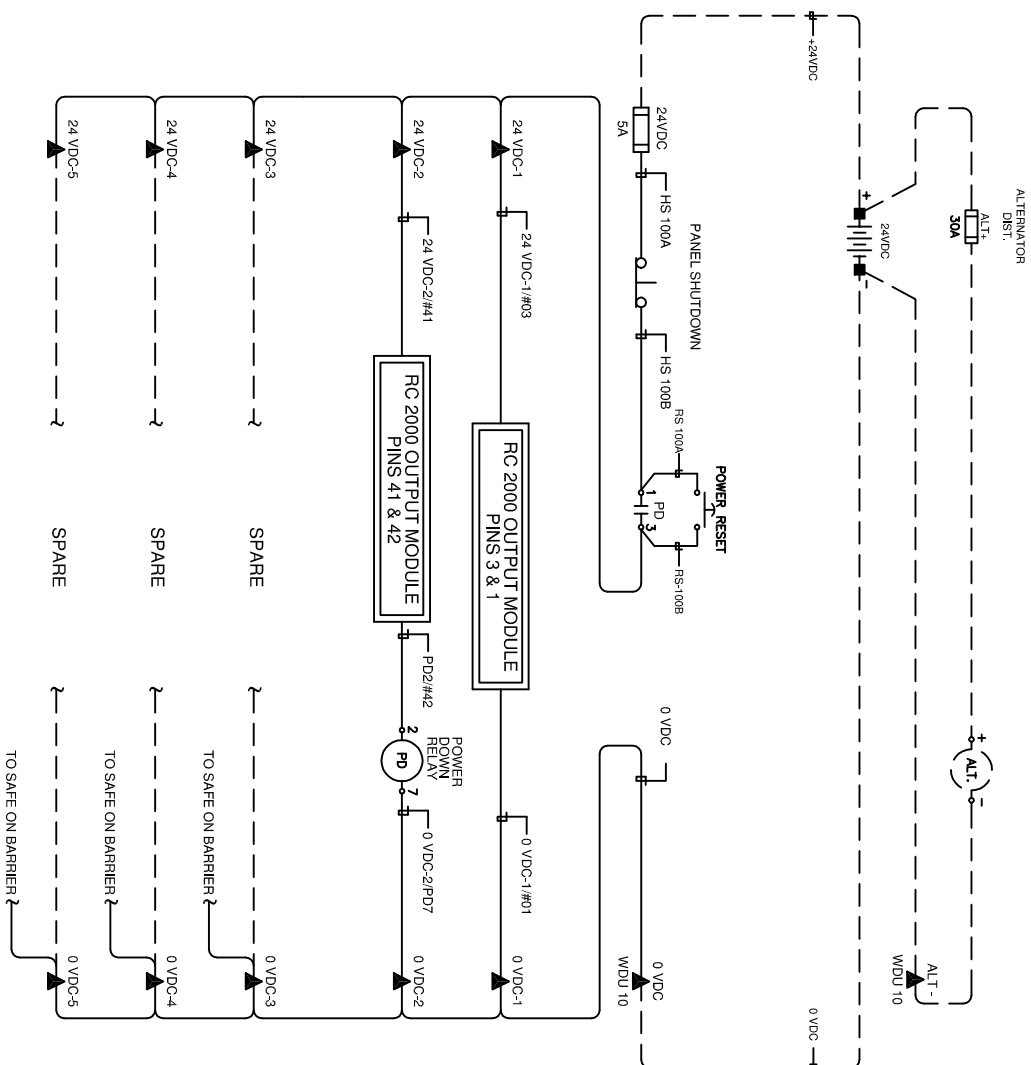
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TYPICAL FIELD I/O WIRING



Project Title DOSCK ENERGY RC10303										Syntech									
Drawing Title I/O BOARD CABLE CONNECTION LAYOUT DRAWING										Synsack Drawing Number 5190109-02					1 of 1				
										Customer Drawing Number 050328					NTS				

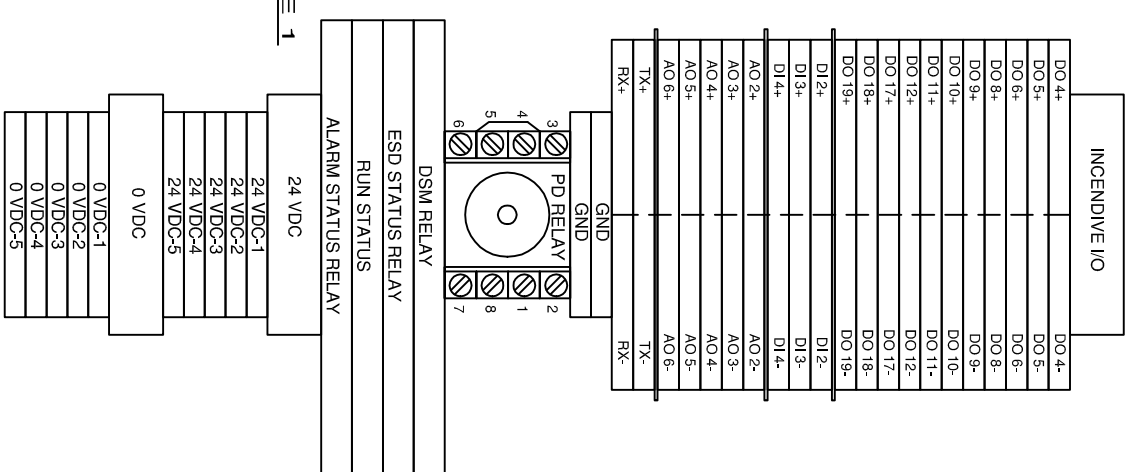
24VDC POWER DISTRIBUTION



24VDC TERMINAL LAYOUT

TOP LEVEL

BOTTOM LEVEL

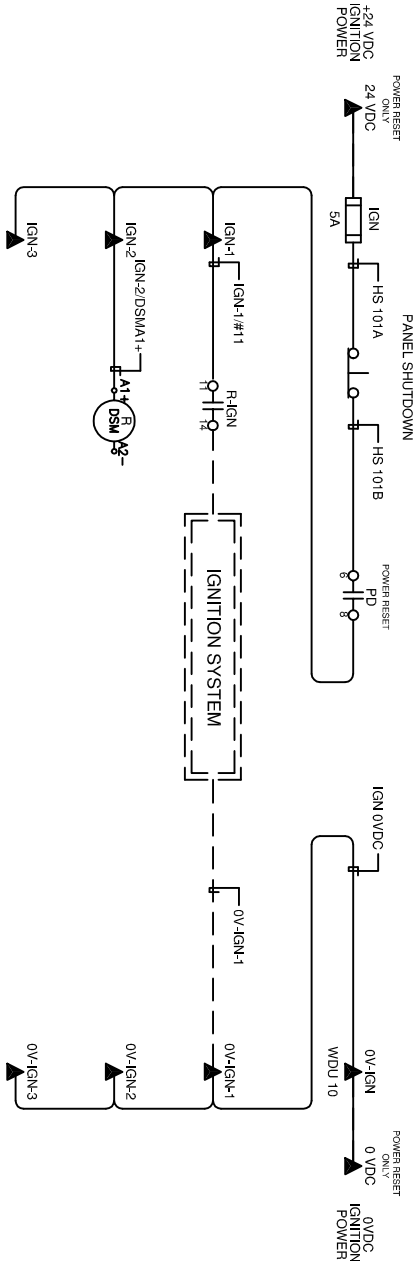


NOTE 1

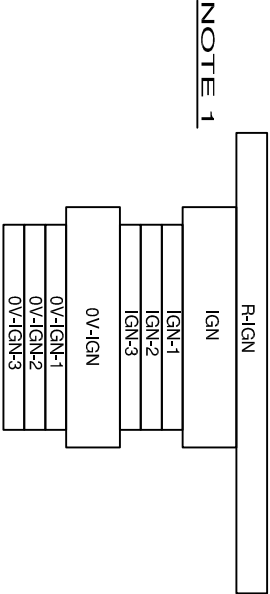
DSM RELAY
ESD STATUS RELAY
RUN STATUS
ALARM STATUS RELAY
24 VDC
24 VDC-1
24 VDC-2
24 VDC-3
24 VDC-4
24 VDC-5
0 VDC
0 VDC-1
0 VDC-2
0 VDC-3
0 VDC-4
0 VDC-5

[illegible]

IGNITION DISTRIBUTION



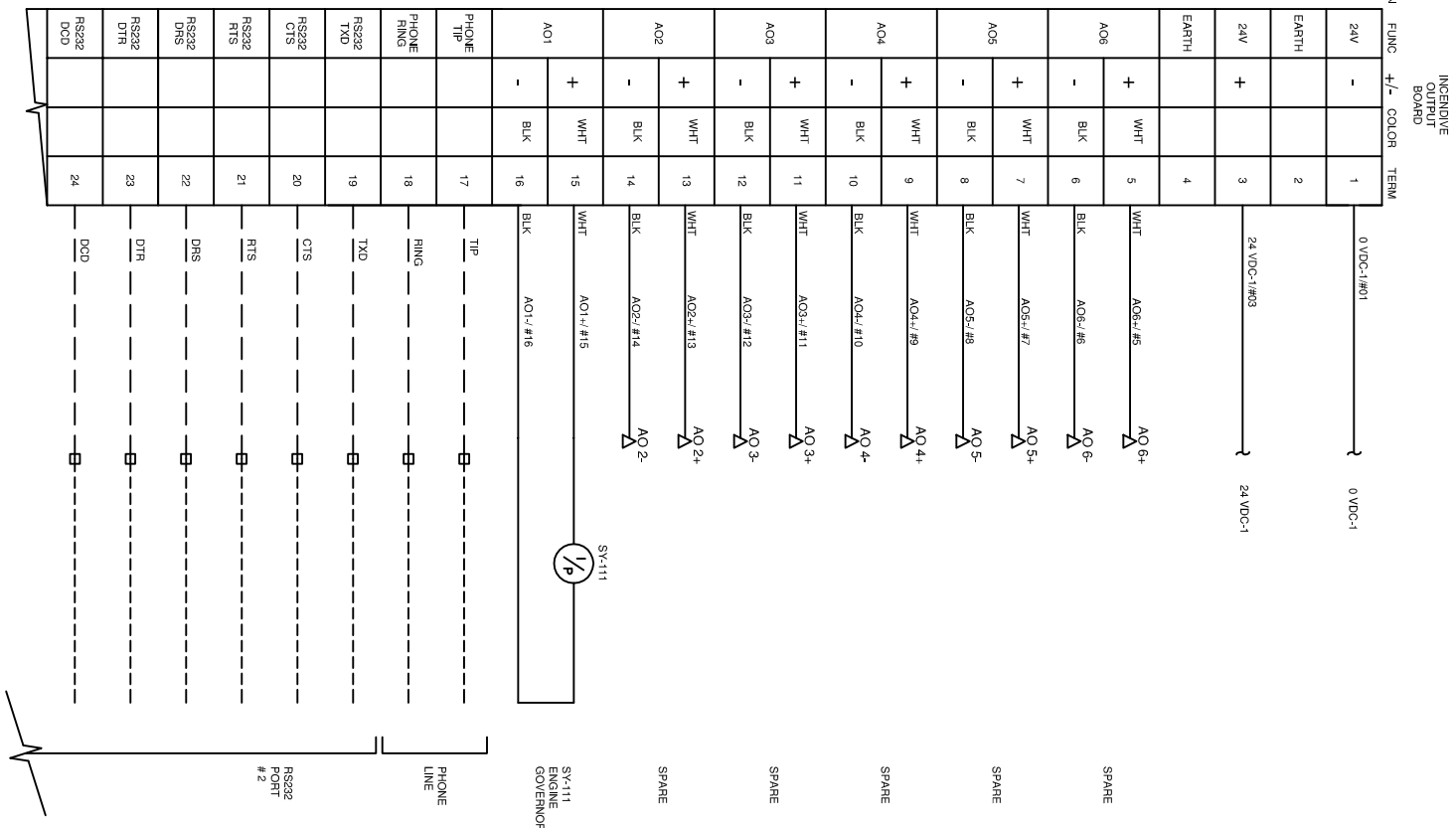
IGNITION TERMINAL LAYOUT



NOTE 1

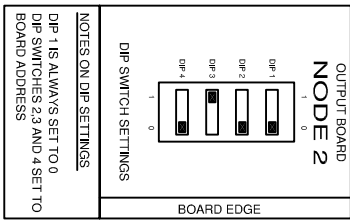
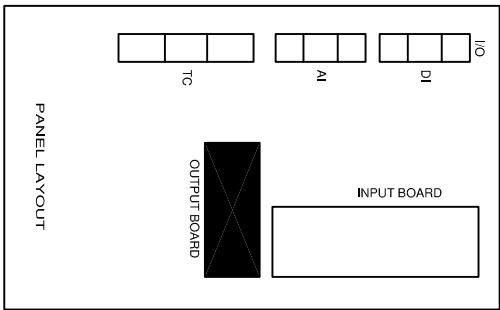
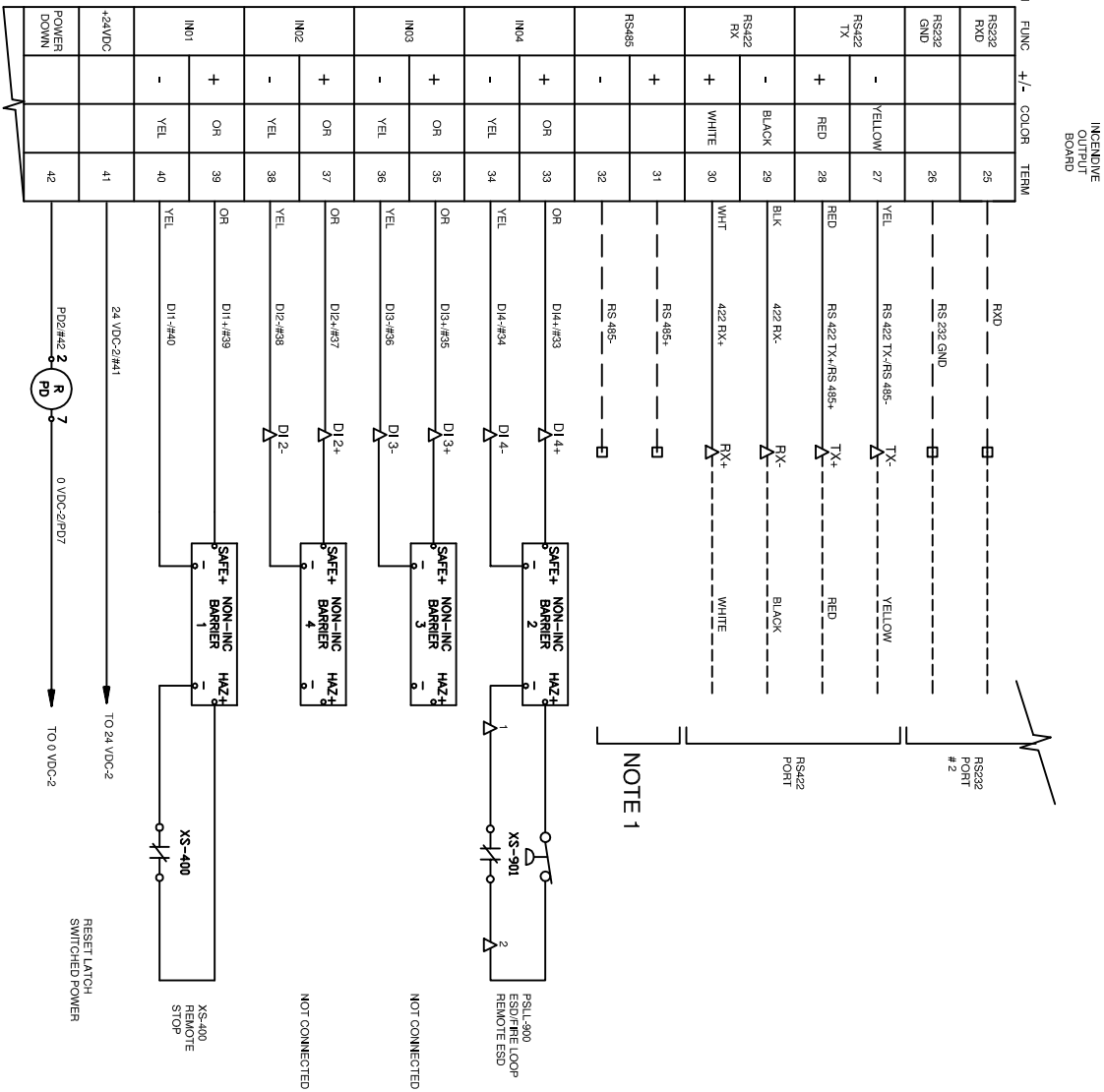
NOTES: 1. SEPARATE 24 VDC POWER PROVIDED FOR IGNITION						Project Title						DOSCK ENERGY RC10303						Syntech					
LEGEND																		Drawing Number					
1. ——— PANEL WIRING																		Customer					
2. ——— FIELD WIRING																		Drawing Number					
3. ——— UNFUSED TERMINAL																		5190109-10					
4. ——— FUSED TERMINAL																		050328					
5. ——— FEED THROUGH TERMINAL																		1 of 1					
6. ——— DISCONNECT TERMINAL																		NTS					

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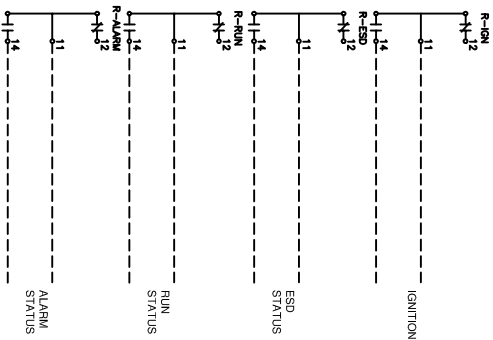
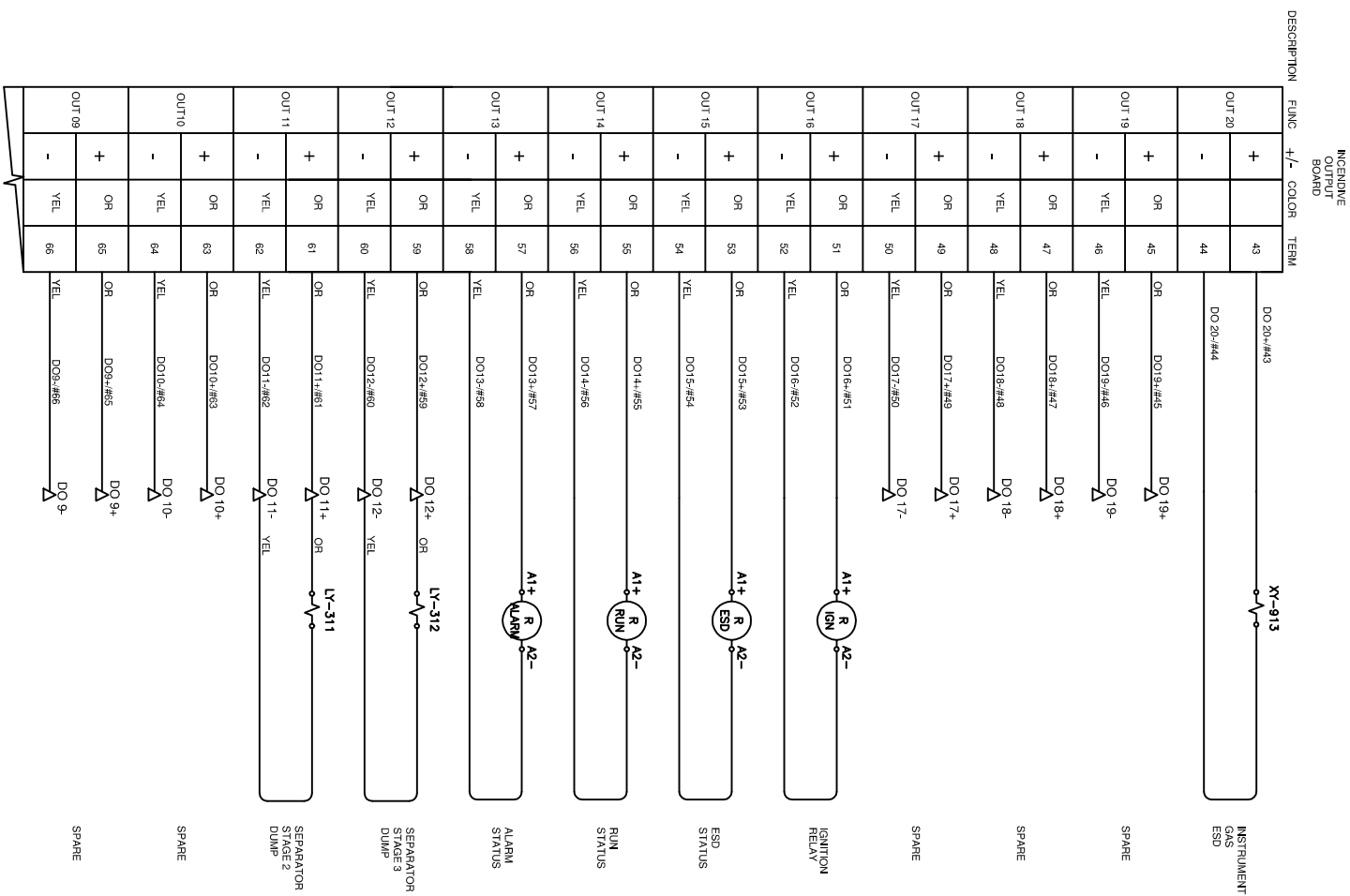
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2		PANEL SHOP AS BUILT	AK	20.05.2005	LH	
1		ISSUED FOR CONSTRUCTION	AK	10.05.2005	JC	

Project Title		DOSCK ENERGY RC10303	
Drawing Title		INCENDIVE OUTPUT BOARD LAYOUT DRAWING	
Syntech Drawing Number		Syntech	
Customer Drawing Number		5190109-11 050328	
		1 of 1 NTS	

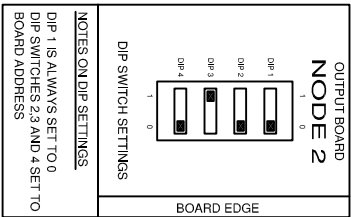
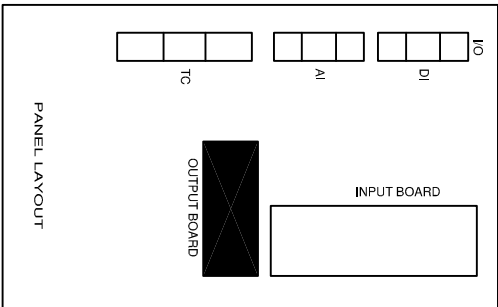


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Syntech



DESCRIPTION	FUNC	+/-	COLOR	TERM
INCENDIVE OUTPUT BOARD				
OUT 08	+	OR		67
			DOB+/#67	DO 8+
	-	YEL	DOB-/#68	DO 8-
OUT 07	+	OR		69
			DO7+/#69	
	-	YEL		
			DO7-/#70	
OUT 06	+	OR		71
			DOB+/#71	DO 6+
	-	YEL	DOB-/#72	DO 6-
OUT 05	+	OR		73
			DOB+/#73	DO 5+
	-	YEL	DOB-/#74	DO 5-
OUT 04	+	OR		75
			DOB+/#75	DO 4+
	-	YEL	DOB-/#76	DO 4-
OUT 03	+	OR		77
			DOB+/#77	
	-	YEL	DOB-/#78	
OUT 02	+	OR		79
			DOB+/#79	
	-	YEL	DOB-/#80	
OUT 01	+	OR		81
	-	YEL		
NC				83
				84



LEGEND										WIRE COLOR LEGEND									
1. _____	PANEL WIRING	1. +24VDC: RED																	
2. _____	FIELD WIRING	2. -24VDC: YELLOW																	
3. 	UNFUSED TERMINAL	3. SWITCHED: ORANGE																	
4. 	FUSED TERMINAL	4. ANALOG INPUT/OUTPUT - : BLACK																	
5. 	FEED THROUGH TERMINAL	5. ANALOG INPUT/OUTPUT + : WHITE																	
6. 	DISCONNECT TERMINAL	6. ANALOG LOOP: PURPLE																	

Rev.	Set Rev.	Revision Description	By	Date	Checked	Apprd
2	A	PANEL SHOP AS BUILT	AK	30.05.2005	JC	
2		PANEL SHOP AS BUILT	AK	20.05.2005	LH	
1		ISSUED FOR CONSTRUCTION	AK	10.05.2005	JC	

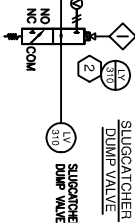
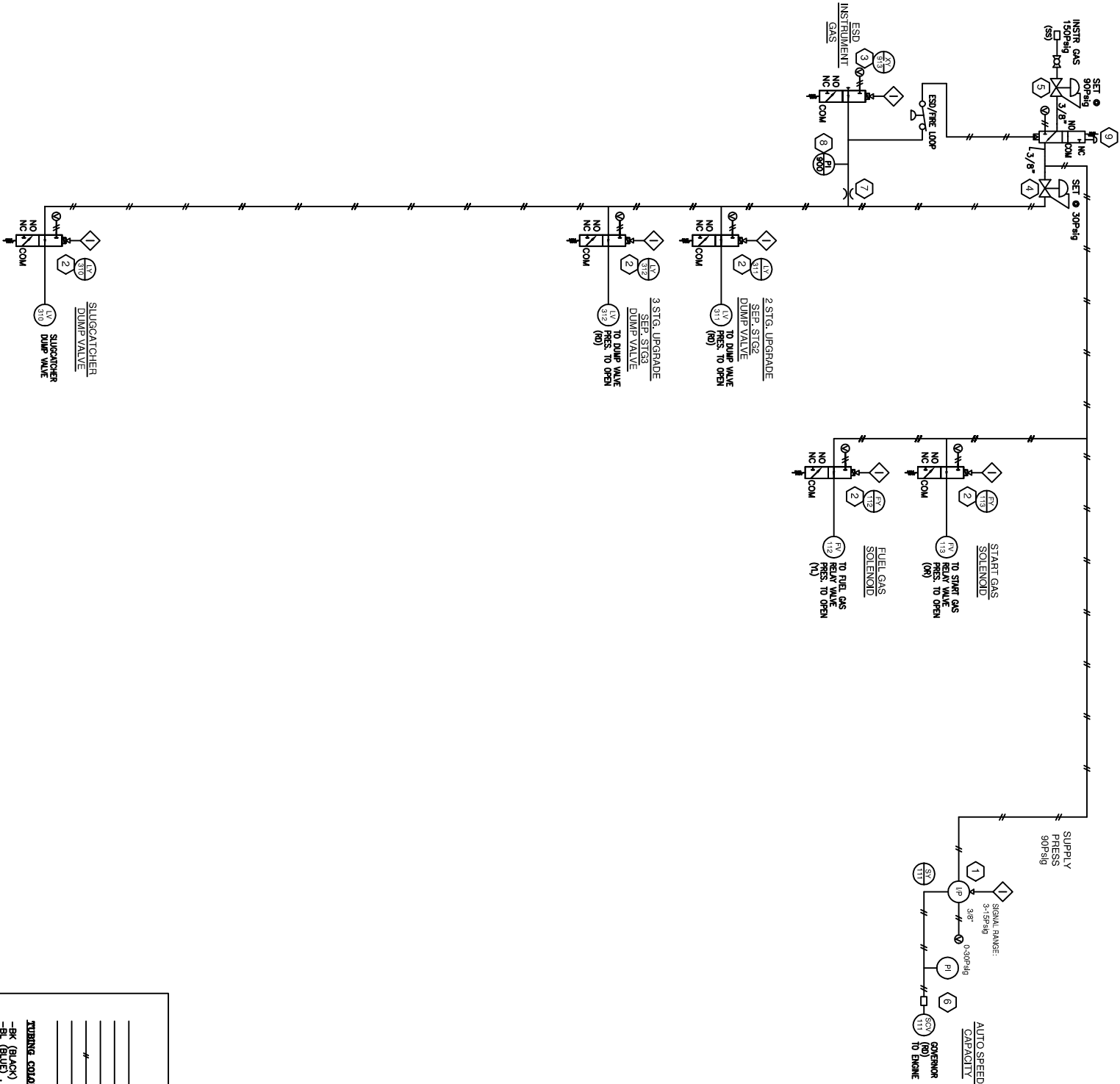
Project Title	
DOSCK ENERGY RC10303	

Drawing Title	
INCENDIVE OUTPUT BOARD CONT' LAYOUT DRAWING	

		Syntech Drawing Number	5190109-12	1 of 1
		Customer Drawing Number	050328	
		NTS		

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MODEL #
1	1	FAIRCHILD TRANSDUCER, ADJUSTABLE, I/P	TCX17800-401E2
2	5	BUKERT VALVE, SOLENOID, 3/2 WAY, 145PSI, 24VDC	462374F
3	1	SNAPTITE SOLENOID, VENTED BONNET, 90PSI, 24VDC	3013Z-2NT-V6F6C
4	1	FISHER REGULATOR, 1/4" NPT, 0-125PSI	67CFR-601/TB
5	1	FISHER REGULATOR, PRESSURE REDUCING	64-29
6	1	WIKA PRESSURE GAUGE 0-30 PSI	9603021
7	1	AMOT 2185 ORFICE, 1/4" NPT	2185L011
8	1	MURPHY GAUGE, 0-100PSI, MODEL A25PEF-100	45A 25PEF100
9	1	AMOT 3-WAY ESD SWITCH	4057DO23H2
10	-	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-
17	-	-	-
18	-	-	-



LEGEND

1. ——— PANEL WIRING

2. ——— FIELD WIRING

3. ——— UNFUSED TERMINAL

4. ——— FUSED TERMINAL

5. ——— FEED THROUGH TERMINAL

6. ——— DISCONNECT TERMINAL

WIRE COLOR LEGEND

1. +24VDC: RED

2. -24VDC: YELLOW

3. SWITCHED: ORANGE

4. ANALOG INPUT/OUTPUT -: BLACK

5. ANALOG INPUT/OUTPUT +: WHITE

6. ANALOG LOOP: PURPLE

LEGEND

PROCESS PIPING

UTILITY PIPING

TUBING – STAINLESS STEEL

TUBING – NITLON

HOSE (PRE-LUBE OIL, DRAIN)

ELECTRICAL SIGNAL

TUBING COLOR CODES

-BK (BLACK) VENTS

-BL (BLUE) ESD, FIRE LOOP SIGNAL

-RD (RED TAG #) CONTROL VALVE

-RD (GREEN) INSTRUMENT VALVE, 35psi

-YL (YELLOW) INSTR GAS BELOW 35psi

-OR (START) ENGINE START GAS

-YL (BLUE) ENGINE FUEL GAS

-SS (BLACK) ENGINE OIL

-BR (BROWN) COMPRESSOR OIL

-GR/WH (GREEN) MAINFOLD

-SS STAINLESS STEEL TUBING

Project Title

DOSCK ENERGY
RC10303

PNEUMATIC
LAYOUT DRAWING

Syntech

Drawing Number
5190109-14

Customer
Drawing Number

050328

1 of 1

NTS

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NON-INCENDIVE
THERMOCOUPLE
BOARD #1

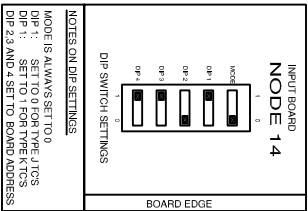
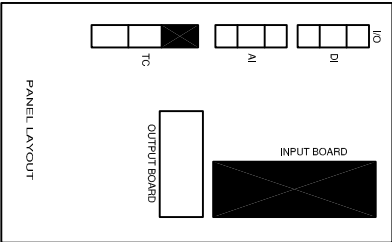
TERM		COLOR	+/-	FUNC	DESCRIPTION
1	2	WHITE/ YELLOW	+	T01	
	1	WHITE/ YELLOW	+	T01	MANIFOLD AIR TEMPERATURE
	2	RED	-		
	3	WHITE/ YELLOW	+	T02	ENGINE JACKET WATER IN TEMPERATURE
	4	RED	-		
	5	WHITE/ YELLOW	+	T03	ENGINE JACKET WATER OUT TEMPERATURE
	6	RED	-		
	7	WHITE/ YELLOW	+	T04	ENGINE OIL INLET TEMPERATURE
	8	RED	-		
	9	WHITE/ YELLOW	+	T05	COMPRESSOR OIL INLET TEMPERATURE
	10	RED	-		
	11	WHITE/ YELLOW	+	T06	STAGE 1 SUCTION TEMPERATURE
	12	RED	-		
	13	WHITE/ YELLOW	+	T07	STAGE 2 SUCTION TEMPERATURE
	14	RED	-		
	15	WHITE/ YELLOW	+	T08	THROW 1 DISCHARGE TEMPERATURE
	16	RED	-		
	17	WHITE/ YELLOW	+	T09	THROW 2 DISCHARGE TEMPERATURE
	18	RED	-		
	19	WHITE/ YELLOW	+	T10	THROW 3 DISCHARGE TEMPERATURE
	20	RED	-		
	21	WHITE/ YELLOW	+	T11	THROW 4 DISCHARGE TEMPERATURE
	22	RED	-		
	23	WHITE/ YELLOW	+	T12	STAGE 3 SUCTION TEMPERATURE
	24	RED	-		

NON-INCENDIVE
THERMOCOUPLE
BOARD #1

TERM		COLOR	+/-	FUNC	DESCRIPTION
25	26	WHITE/ YELLOW	+	T13	
	25	WHITE/ YELLOW	+	T13	THROW 1 PACKING TEMPERATURE
	26	RED	-		
	27	WHITE/ YELLOW	+	T14	THROW 2 PACKING TEMPERATURE
	28	RED	-		
	29	WHITE/ YELLOW	+	T15	FINAL DISCHARGE TEMPERATURE
	30	RED	-		
	31	WHITE/ YELLOW	+	T16	OUTSIDE TEMPERATURE
	32	RED	-		
33				EARTH	DESCRIPTION
34				EARTH	
35				EARTH	
36				EARTH	
37				EARTH	
38				EARTH	
39				EARTH	
40				EARTH	

TERM COLOR +/- FUNC

TERMOCOUPLE FIELD WIRING
K-TYPE: + = YELLOW
- = RED
J-TYPE: + = WHITE
- = RED



NOTES ON DIP SETTINGS
MODE IS ALWAYS SET TO 0
DIP 1: SET TO 0 FOR TYPE J/TCS
DIP 1: SET TO 1 FOR TYPE K/TCS
DIP 2,3 AND 4 SET TO BOARD ADDRESS

LEGEND

1. PANEL WIRING
2. FIELD WIRING
3. UNFUSED TERMINAL
4. FUSED TERMINAL
5. FEED THROUGH TERMINAL
6. DISCONNECT TERMINAL

WIRE COLOR LEGEND

1. +24VDC: RED
2. -24VDC: YELLOW
3. SWITCHED: ORANGE
4. ANALOG INPUT/OUTPUT -: BLACK
5. ANALOG INPUT/OUTPUT +: WHITE
6. ANALOG LOOP: PURPLE

Project Title

DOSCK ENERGY
RC10303

NON-INCENDIVE INPUT BOARD #1
THERMOCOUPLE LAYOUT DRAWING

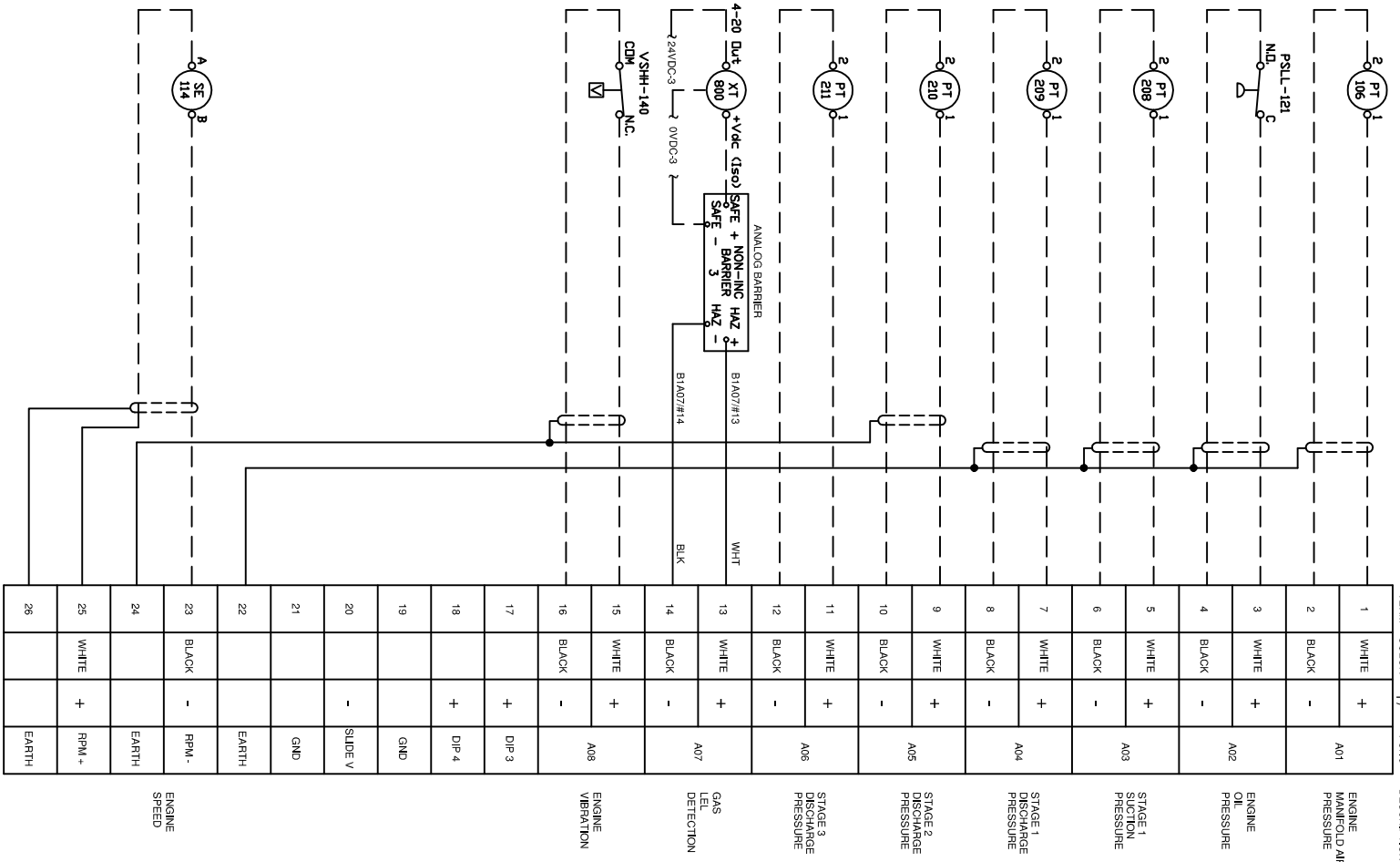
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Syntech
Drawing Number
Customer
Drawing Number

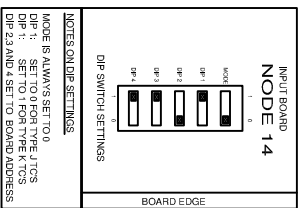
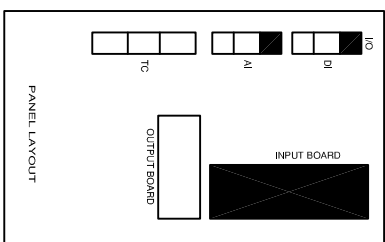
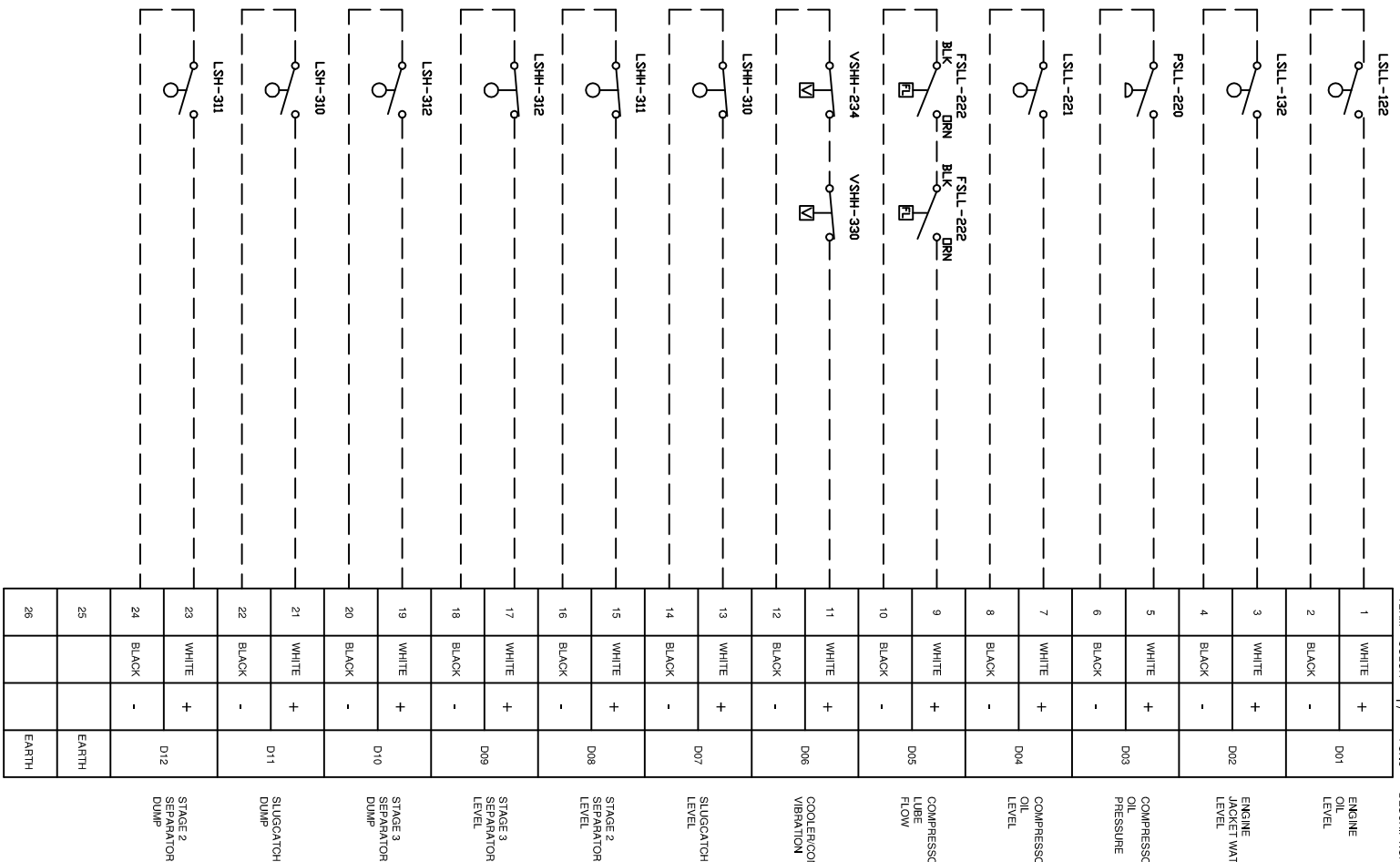
5190109-15
050328

1 of 1
NTS

NON-INCENDIVE
ANALOG
BOARD #1



NON-INCENDIBLE
DISCRETE
BOARD #1



<u>LEGEND</u>	
1. ———	PANEL WIRING
2. — — —	FIELD WIRING
3. 	UNUSED TERMINAL
4. 	FUSED TERMINAL
5. 	FEED THROUGH TERMINAL
6. 	DISCONNECT TERMINAL

WIRE COLOR LEGEND

2 -24VDC: YELLOW
3. SWITCHED: ORANGE
4. ANALOG INPUT/OUTPUT - : BLACK
5. ANALOG INPUT/OUTPUT + : WHITE
6. ANALOG LOOP: PURPLE

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Title

DOSCK ENERGY
RC10303

NON-INCENDIVE INPUT BOARD #1 ANALOG / DISCRETE LAYOUT DRAWING

Drawing Number

5190109-17

Customer Drawing Number

050328

1 of 1

Syntech

Air-X-Changers

Harsco



Plant Address
5215 Arkansas Rd.
Catoosa, OK 74015

P.O Box 1804
Tulsa, OK 74101
Telephone 918.619.8000
Fax 918.619.5000

TO:	<u>ENERFLEX</u>	DATE:	<u>12/14/2004</u>
	<u>4700 - 47TH STREET SE</u>	CUSTOMER:	<u>STOCK</u>
	<u>CALGARY, ALBERTA</u>	PO #	<u>0420448</u>
	<u></u>	AXC #	<u>045571X</u>
ATTN:	<u>DOCUMENT CONTROL</u>	TAG #	<u>STOCK - B400/3</u>

Transmittal Sheet

Attached you will find specific information for the job referenced above.

In order to to complete this manual, please reference the Air-X-Changers Library CD to obtain the vendor information and Air-X-Changers Installation, Maintenance & Operating Instructions. If you have any questions, please contact Debbie DeWitt at (918) 619-8004

Engine Drive Operating, Installation & Maintenance Instructions.

Maro Shutters, Model VI

Moore Fan Series 10K (job specific data is included in this manual)

Dodge S2000

Dodge Fan & Blower (CC203)

cc: EADS - CANADA

Very truly yours,

Debbie DeWitt
AIR-X-CHANGERS



Air-X-Changers

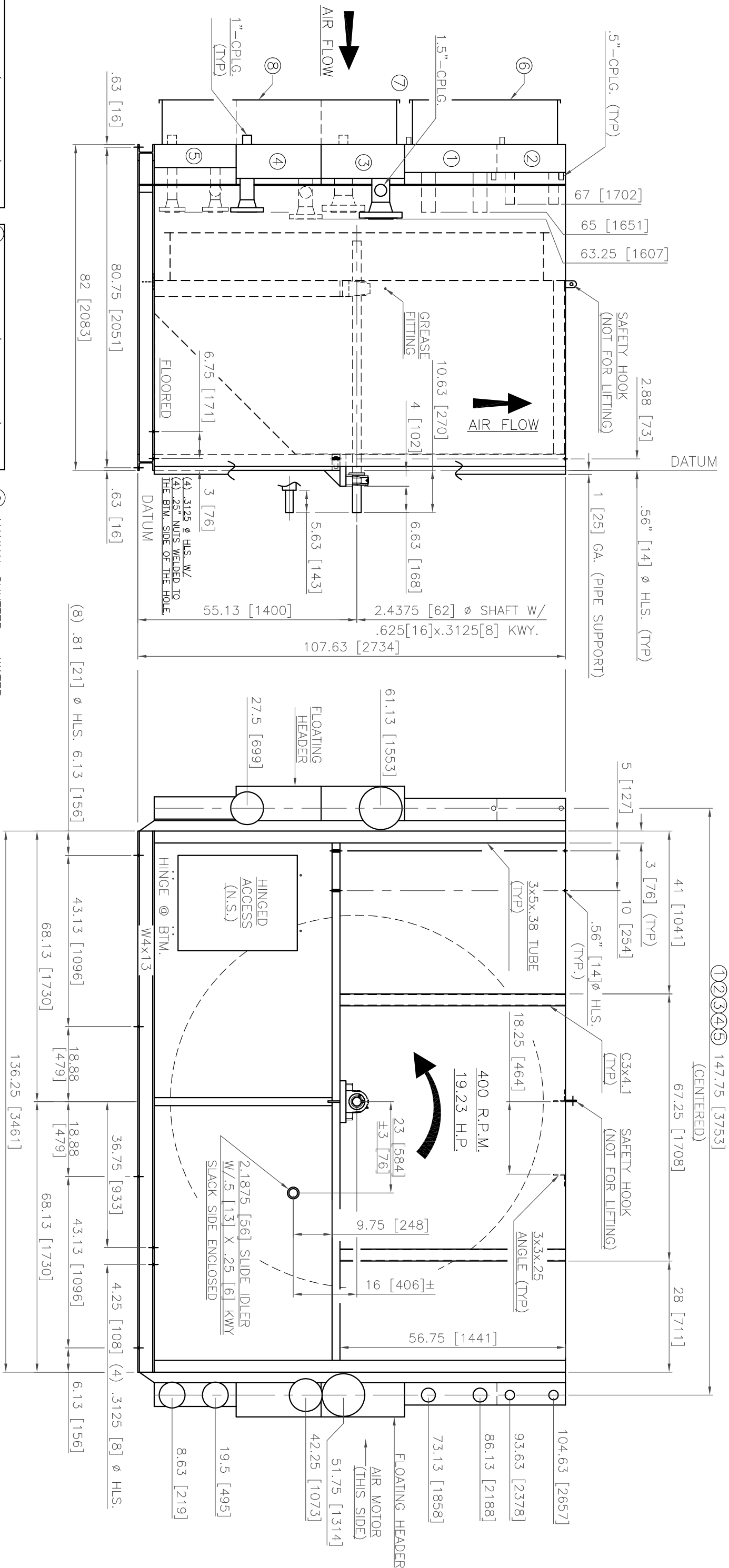
Harsco

MANUAL CONTENTS

045571X

Job Specific Documentation

Transmittal
Manual Contents
Certified Drawing
Parts List
Spec Sheet
U-1A Data Report(s)
Nameplate(s)
Hydrostatic Test Certification(s)
Heat Treat Chart(s)
X-Ray Test Report(s)
Ultrasonic Test Report(s)
Material Traceability Records
Final In-Process Inspection Report(s)
Additional Final In-Process Inspection Report(s)
Paint In-Process Inspection Report(s)
As-Built Drawing
Moore Fan Data



COMBINED	
①	E/W (12 GALLONS) D.P. 14 P.S.I. @ 300/-20 °F. NOZZLES 3"- PIPE STUB
②	TAW/ELW/CW (8.75 GALLONS) D.P. 14 P.S.I. @ 300/-20 °F. NOZZLES 2"- PIPE STUB
③	IC-1 (ASME STAMP) D.P. 645 P.S.I. @ 350/-20 °F. NOZZLES 4"-300 R.F.
④	IC-2 (ASME STAMP) D.P. 645 P.S.I. @ 350/-20 °F. NOZZLES 3"-300 R.F.
⑤	AC (ASME STAMP) D.P. 1292 P.S.I. @ 350/-20 °F. NOZZLES 2"-600 R.F.

6. MANUAL SHUTTER — WATER
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

7. AUTO SHUTTER — IC-1 BY 9
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

(8) AUTO SHUTTER - IC-2 & AC BY 9
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

NOTES:

1. ESTIMATED DRY WEIGHT: 9,600 #
2. CUSTOMER TO SUPPLY AC SECTION
3. METRIC []

REV.	DESCRIPTION	BY	DATE	APP'D	DATE	JOB STATUS:	CUSTOMER: ENERFLEX

[illegible]

PARTS LIST



air-x-changers

a harsco company

Post Office Box 1804
Tulsa, OK 74015
Phone: (918) 266-1850
Fax (918) 266-1322

JOB NUMBER: 045571

CUSTOMER: **ENERFLEX**

ORDER COVERS: (1) Model 93AVI

FINISH: *EFX Standard*

SURFACE PREPARATION: *Structure = Chemical Clean, Section Frame & Headers = Chemical Clean*

PRIMER: *Structure = H-I-S 9267 Gray Primer, Section Frame & Headers = H-I-S 9267 Gray Primer; 1.5 TO 2.0 MILS. DFT.*

FINISH COAT: *Structure = H-I-S S685 Gray Enamel, Section Frame & Headers = H-I-S S685 Gray Enamel; 1.5 TO 2.0 MILS. DFT.*

P.O.	QTY.	DESCRIPTION OF COMPONENTS
		NOTE: AN ASTERIK (*) IN QUANTITY COLUMN INDICATES A RECOMMENDED SPARE PART
	4	SECTION(S) IN ACCORDANCE WITH SPECIFICATION SHEET. This unit will have 045558.4 IC-2 section installed in it.
	1	93AVI STRUCTURE(S), COMPLETE WITH: <i>Rear Floor Underscoop</i> <i>EFX Standard "Fall Protection" Safety Hook</i> <i>100% RT Adjustment for one nozzle</i> <i>EFX Standard Pipe Supports</i> <i>Pump and tank bolt holes with nuts in cooler base</i> <i>Canadian export welded tips on Moore fan</i> NOTE: Existing IC-2 section 045558.4 to be placed in this cooler
	1	SET SHUTTERS: TYPE <i>Manual</i> , FOR SERVICE(S) <i>TAW/ELW/CW, EJW</i> , SQ. FT. = <i>39</i> , #LINKAGE SETS = <i>1</i> , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	SET SHUTTERS: TYPE <i>Auto</i> , FOR SERVICE(S) <i>IC-1</i> , SQ. FT. = <i>19.5</i> , #LINKAGE SETS = <i>1</i> , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	SET SHUTTERS: TYPE <i>Auto</i> , FOR SERVICE(S) <i>IC-2, AC</i> , SQ. FT. = <i>39.45</i> , #LINKAGE SETS = <i>2</i> , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	AIR MOTOR: FOR SERVICE(S) <i>IC-1, Garzo (6-30psi spring)</i> MAKE, <i>501-12 w/Pivot Mount</i> MODEL, POSITIONER: <i>None</i>
	1	AIR MOTOR: FOR SERVICE(S) <i>IC-2, AC, Garzo (6-30psi spring)</i> MAKE, <i>501-12 w/Pivot Mount</i> MODEL, POSITIONER: <i>None</i>
	* 1	FAN(S): <i>93</i> Inch DIAMETER, <i>6</i> BLADES, <i>LH</i> ROTATION, <i>MOORE-CL10K</i> MAKE, <i>22.2°</i> ANGLE @ <i>Clevis</i> , <i>2-7/16</i> Inch BORE WITH <i>5/8</i> Inch X <i>5/16</i> Inch KEYWAY. MODEL/PITCH: <i>36-HDVT/Manual</i> , HUB: <i>TAPER WELD VORTEX TIPS TO FAN BLADES!</i>
	* 1	FAN SHAFT(S): <i>2-7/16</i> Inch DIA. X <i>67.25</i> Inch LONG WITH <i>5/8</i> Inch SQ. KEYS <i>each</i> END, KEYWAY LENGTH(DRIVE END): <i>6 Inch</i> , KEYWAY LENGTH(FAN END): <i>6 Inch</i> , KEY LENGTH: <i>5 Inch</i>
	* 2	<i>2-7/16</i> Inch FAN SHAFT BEARINGS, MAKE/MODEL: <i>Dodge-S2000/P2B-S2-207R</i> , AXC P/N <i>BR1111</i>
	* 1	IDLER SHAFT(S): <i>2-3/16</i> inch DIA. X <i>20</i> inch LONG WITH <i>1/2</i> inch SQ. KEY <i>4.5</i> inch LONG-ONE END
	1	SET(S): <i>Adj. Block</i> TYPE IDLER FRAME PARTS
	* 1	<i>2-3/16</i> Inch IDLER BEARING(S), MAKE/MODEL: <i>Dodge-FB/CC203 w/'Boxed' Idler Housing</i> , AXC P/N
	1	SET(S) REMOVABLE SOFT BUGSCREENS. ONE SET CONSISTS OF: _3_ PANEL(S) _37_ Inches X _45_ Inches _3_ PANEL(S) _45_ Inches X _61.5_ Inches COMPLETE WITH ONE (1) SOFTBUGSCREEN INSTALLATION KIT.

**air-x-changers**

a harsco company

Post Office Box 1804
Tulsa, OK 74015
Phone: (918) 266-1850
Fax (918) 266-1322**JOB NO.** 045571

Initial Release Date 11/11/2004

Page 1 of 1

Purchaser	ENERFLEX	Ultimate User	2004 STOCK
Inquiry/PO#	TAG 040XXX / PO 0420448	Destination	BC/ALB/SASK
No. Units	1	Model:	93AVI
Assembly:	PACKAGED	Draft:	INDUCED
		Reference	F18GL(LCR) - JGA/4 @ 400HP
		Overall Size (WxLxH),	~7.83x13.00x8.76
		Est. Wt., lbs.	8,200

PERFORMANCE

Service	EJW	TAW/ELW/CW	IC-1	IC-2	AC
Flow	130GPM	35GPM	2.23MMSCFD	(045558.4 by AXC)	2.23MMSCFD
Fluid	50%GLY	50%GLY	.650SPGR		.650SPGR
Temp. In / Out, f	180.0 / 164.9	157.2 / 130.0	199.0 / 114.0		258.0 / 121.0
Pressure, psia			246.0		1,120.0
Pressure Drop, psi	10.4	12.1	0.9		1.7
Heat Load, btu/hr	910,800	426,366	221,227		407,235
True LMTD, f	48.6	33.3	49.7		67.1
Overall Rate, U, btu/hr ft ² f	172.4	158.8	61.9		91.4
Fouling Factor, ft ² hr f / btu	0.0005	0.0005	0.0020		0.0020
Surface, Bare / Extended, sq.ft.	112 / 1773	81 / 1284	73 / 1162		67 / 1070
Sections, No./Connected	(1) COMBINED w/2	(1) COMBINED w/1	(1) SINGLY		(1) SINGLY
Design Temp. (Max / Min), f	300/-20	300/-20	350/-20		350/-20
Design / Test Press., psig	*14 / 65	*14 / 65	645 / 839		1292 / 1680
Pass Arrangement	CROSSFLOW	CROSSFLOW	CROSSFLOW		CROSSFLOW
No. Tube Rows/Tube Passes	4 / 2	4 / 4	3 / 1		3 / 2
Section Weight, lbs	1300		950		800
Tubes, OD x BWG	5/8X16(.060MIN)	5/8X16(.060MIN)	5/8X16(.060MIN)		5/8X16(.060MIN)
Material	SA214	SA214	SA214		SA214
No. Per Section / Length, ft	58 / 12	42 / 12	38 / 12		35 / 12
Retarders					
Accelerators					
Fins, Type	L-TENSION / WHEEL	L-TENSION / WHEEL	L-TENSION / WHEEL		L-TENSION / WHEEL
Material	ALUMINUM	ALUMINUM	ALUMINUM		ALUMINUM
Nozzles, Rating/Type	STUB	STUB	300 RF		600 RF
Material / Bore	SA106 GR.B / SCH-40	SA106 GR.B / SCH-80	SA105 / SCH-80		SA105 / SCH-160
(No. Inlets) / Size, in	(1) / 3IN	(1) / 2IN	(1) / 4IN		(1) / 2IN
(No. Outlets) / Size, in	(1) / 3IN	(1) / 2IN	(1) / 4IN		(1) / 2IN
Headers, Type	RECT. TUBE	RECT. TUBE	ASME TUBE-8.5		BOX W/PLUGS
Material	SA500 GR.B	SA500 GR.B	SA106 GR.C		SA516 70(N)
Corrosion Allow., in			0.0625		0.0625
Grooved Tubesheet			YES		YES
Plugs, Type	TAPER	TAPER	SHOULDER		SHOULDER
Plugs Material	B-16 BRASS	B-16 BRASS	SA105		SA105
Industry Specifications	AXC-STD	AXC-STD	AXC-STD		AXC-STD
ASME Code Stamp / N.B.			YES		YES
Canadian Registration #			YES		YES
PWHT			YES		
NACE					

Inspection/NDT

***UB

F= 100% R.T of all header seam & nozzle butt welds PLUS 100% U.T. of all attachment welds. S= Spot R.T. of 1 long seam & 1 end closure, per header
 U = 100% UT of all header seam, attachment & nozzle butt welds. B= 100% R.T. of all nozzle butt welds.
 SB= S PLUS B as each are described above. UB= U PLUS B as each are described above.

AIR-SIDE PERFORMANCE		FAN DATA		DRIVER DATA		REDUCER DATA	
Ambient Air Temp., In, f	90	No. Fans / Make1 / MOORE-CL10K	Type	ENGINE DRIVE	Type	REDUCER BY OTHERS	
Elevation, ft	3000	Blade Material	ALUMINUM				
Air Flow, SCFM	65,573	HP@RPM	19.22 @ 400				
Air Temp., Out, f	121.9	Dia., in / No. Blades	93 / 6				
Min. Ambient, f	-20	Blade Angle, Deg	22.2 @ Clevis				
		Series/Blade Adj.	36-HDVT/Manual				
		Fan Hub Bushing	TAPER				

* Actually built to standard 50# design. Designated 14# to eliminate necessity of Provincial registration.

*** Includes 100% R.T. of only one nozzle butt weld.

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)
2. Manufactured for: Enerflex, 4700 - 47th Street Southwest, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)
3. Location of installation: Unknown, Unknown
(Name and address)

4. Type: Heat Exchanger 045571.3 R0816.213 HDR-3-RQ,C738342-CRN-3R1 47528 2004
(Horiz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001

to A03 -- Year NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)

Formed Tube

6. Shell: SA106 GRC 1.00" .0625" 8.5" 1' - 9.25"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow (in.) Diameter ID (Ft/In) Length (Overall) (Ft/In)

7. Seams: Seamless ----- C=.20 1125 1.25 Hr ----- ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, /full) No. of course

8. Heads: (a) Matl. SA516 70N 1.25 Hr @ 1125 °F (b) Matl. -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	ENDS	0.625 "	.0625"	--	-----	--	--	--	6.5"	X 6.5"
b	-----	-----	-----	--	-----	--	--	--	--	--

If removable bolts used (describe other fastening) -----

Header Volume 489 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)

9. MAWP 645 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 645 psi. hydro., pneu., or comb. test pressure 839 psi.

10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	4"	300# RFWN	SA105/SA106 GRB	SCH80	Weld	Welded	HEADER
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE

11. Supports: Skirt ----- Lugs ----- Legs ----- Other Structure Attached Bolted
(yes/no) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 38 0.6250" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 76 .75" X 16UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F) Cold Forming in accordance with UG-79 & UCS-79

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2002

Date 12/14/01 Company Name Air-X-Changers, A Harsco Company Signed Hebraiah Helms
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 12/7, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 12/14/04 Signed: [Signature] Commissions: NB #11672A / DE #765
(Authorized Inspector) (Nat'l Board (inc. endorsements), State, Prov. and No.)

FORM 1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)

2. Manufactured for: Enerflex, 4700 - 47th Street Southwest, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)

3. Location of installation: Unknown, Unknown
(Name and address)

4. Type: Heat Exchanger 045558.4 R8857.213 HDR-4-RD040136-CRNS-RD 47070 2004
(Horz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
to A03 -- NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)

6. Shell: SA106 GRC 1.00" .0625" 8.5" 1' - 9.625"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diameter ID (ft/in) Length (Overall) (ft/in)

7. Seams: Seamless ----- C=.20 1150 1 Hr ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff. (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, full) No. of course

8. Heads: (a) Matl. SA516 70 1 Hr @ 1150 °F (b) Matl. -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	ENDS	0.625"	.0625"	--	-----	--	--	--	6.5"	x 6.5"
b	-----	-----	-----	--	-----	--	--	--	--	--

If removable bolts used (describe other fastening) -----

Header Volume 498 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)

9. MAWP 645 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 645 psi. hydro., pneu., or comb. test pressure 839 psi.

10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	3"	300# RFWN	SA105/SA106 GRB	SCH80	Weld	Welded	HEADER
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE

11. Supports: Skirt ----- Lugs ----- Legs ----- Other Structure Attached Bolted
(yes/no) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 26 1.0000" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 52 1.125" x 12UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F) Cold Forming in accordance with UG-79 & UCS-79

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2005

Date 11-19-04 Company Name Air-X-Changers, A Harsco Company Signed [Signature]
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 11/11, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 11/19/04 Signed [Signature] Commissions: NB # 11672A / OK # 765
(Authorized Inspector) (Nat'l Board (Inc. endorsements), State, Prov. and No.)

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)

2. Manufactured for: Enerflex, 4700 - 47th Street Southeast, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)

3. Location of installation: Unknown, Unknown
(Name and address)

4. Type: Heat Exchanger 045571.5 R8537.213 HDR-5-RQ,045554-CRN-3-R0 47530 2004
(Horz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
to A03 -- Year NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)

6. Shell: SA516 70N 1.00" .0625" 5.5000" 1' - 7.75"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow (in.) Diameter ID (Ft/In) Length (Overall) (Ft/In)

7. Seams: Corner Joint ----- C= .20 ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, /full) No. of course

8. Heads: (a) Matl. SA516 70N ----- (b) Matl. SA516 70N -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	TOP, BTM	0.75 "	.0625"	--	--	--	--	--	4"	X 19.75"
b	ENDS	0.625 "	.0625"	--	--	--	--	--	4"	X 4"

If removable bolts used (describe other fastening) -----

Header Volume .171 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)

9. MAWP 1292 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 1292 psi. hydro., pneu., or comb. test pressure 1680 psi.

10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	2"	600# RFWN	SA105/SA106 GRB	SCH160	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER

11. Supports: Skirt ----- Lugs ----- Legs ----- Other ----- Structure ----- Attached ----- Bolted -----
(yes/no) (No.) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 35 0.6250" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 70 .75" X 16UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F)

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2005

Date 12-14-04 Company Name Air-X-Changers, A Harsco Company Signed Neilrah Helt
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 12/7, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 12/14/04 Signed: [Signature] Commissions: UB# 11672A / OK# 765
(Authorized Inspector) (Nat'l Board (Inc. endorsements), State, Prov. and No.)

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

MAX. DESIGN PRESS. 14 PSI @ 300 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 50 PSI
SER. NO. 045571.1.2 CRN
YEAR 2004 HYDRO. 65 PSI ITEM E-JW-TAN

47528

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

HT

MAX. DESIGN PRESS. 645 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 645 PSI
SER. NO. 045571.3 CRN R0816.213
YEAR 2004 HYDRO. 839 PSI ITEM IC-1

47070

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

HT

MAX. DESIGN PRESS. 645 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 645 PSI
SER. NO. 045558.4 CRN R8857.213
YEAR 2004 HYDRO. 839 PSI ITEM IC2

47530

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

MAX. DESIGN PRESS. 1292 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 1292 PSI
SER. NO. 045571.5 CRN R8537.213
YEAR 2004 HYDRO. 1680 PSI ITEM AC



Air-X-Changers

Harsco

CERTIFICATE OF HYDROSTATIC TEST

CERTIFICATE NUMBER: 045571C7378

AXC JOB # 045571 **DATE:** 12/7/2004 **YEAR BUILT:** 2004

ITEM DESCRIPTION: EJW/TAW

AXC SERIAL #: 045571.1.2

DESIGN PRESSURE: 14/50 **@** 300/-20 **°F** **TEST PRESSURE:** 65

This is to certify that above air cooled heat exchanger section was hydrostatically tested in accordance with ASME section VIII, Division 1, UG-99 and/or the customer requirements, at no less than 1.3 times the working pressure for a time no less than one (1) hour.

HYDROSTATIC TEST CERTIFIED BY: **Deborah DeWitt**

Witnessed By Client Representative (if applicable) _____

TSI Heat Treating Certification

Order No.: 85846

Date: 12/03/2004

Entry Date: 12/02/2004

Page: 1 of 1

To:

AIR - X - CHANGERS
P O BOX 1804

Purchase Order No.: 1010175

Packing List No.: 20765

TULSA

OK 74101

24611

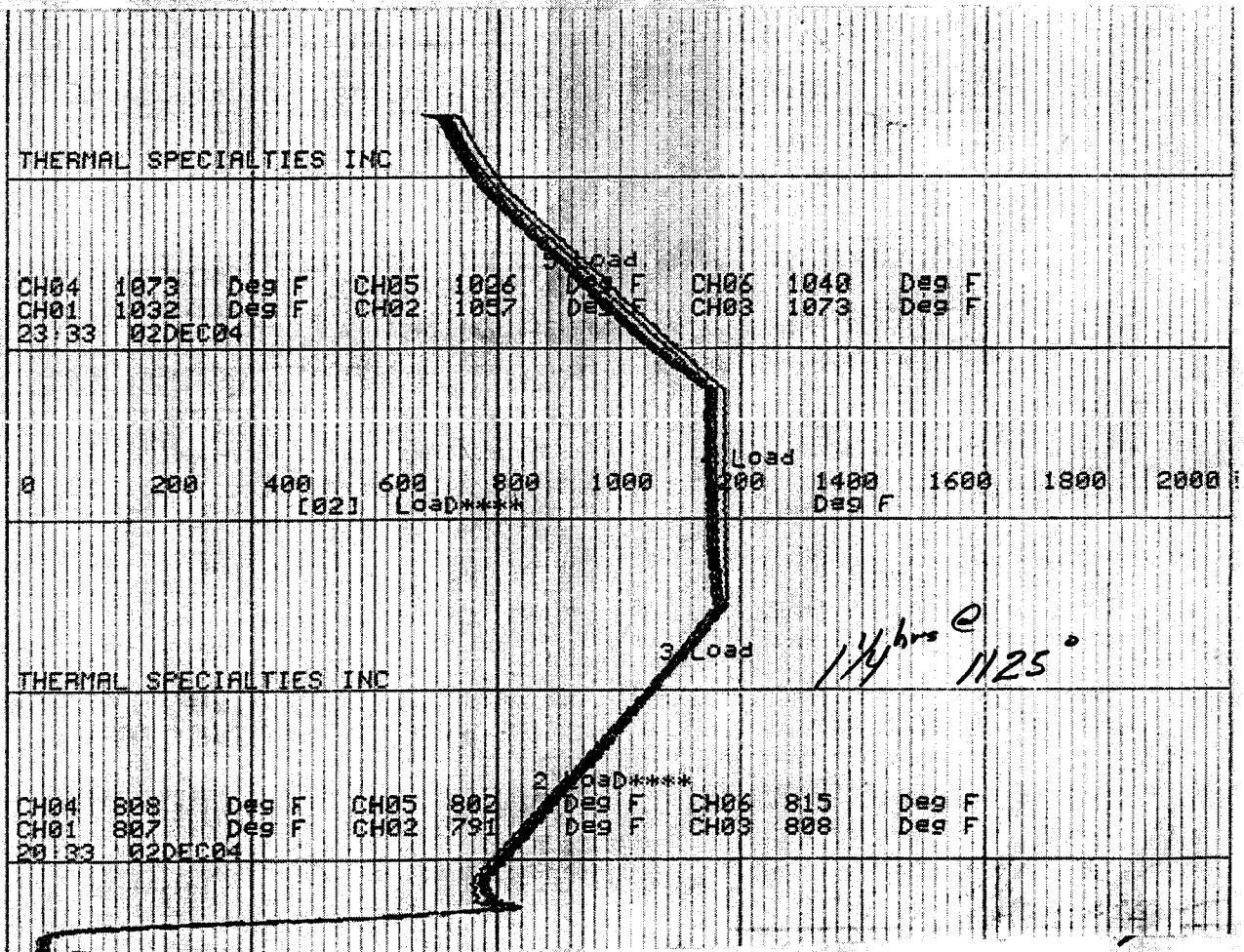
FURNACE NUMBER: 25 RECORDER: H42 CALIBRATION DATE: Nov. 04, 2004

CHART DIVISION: 60 minutes

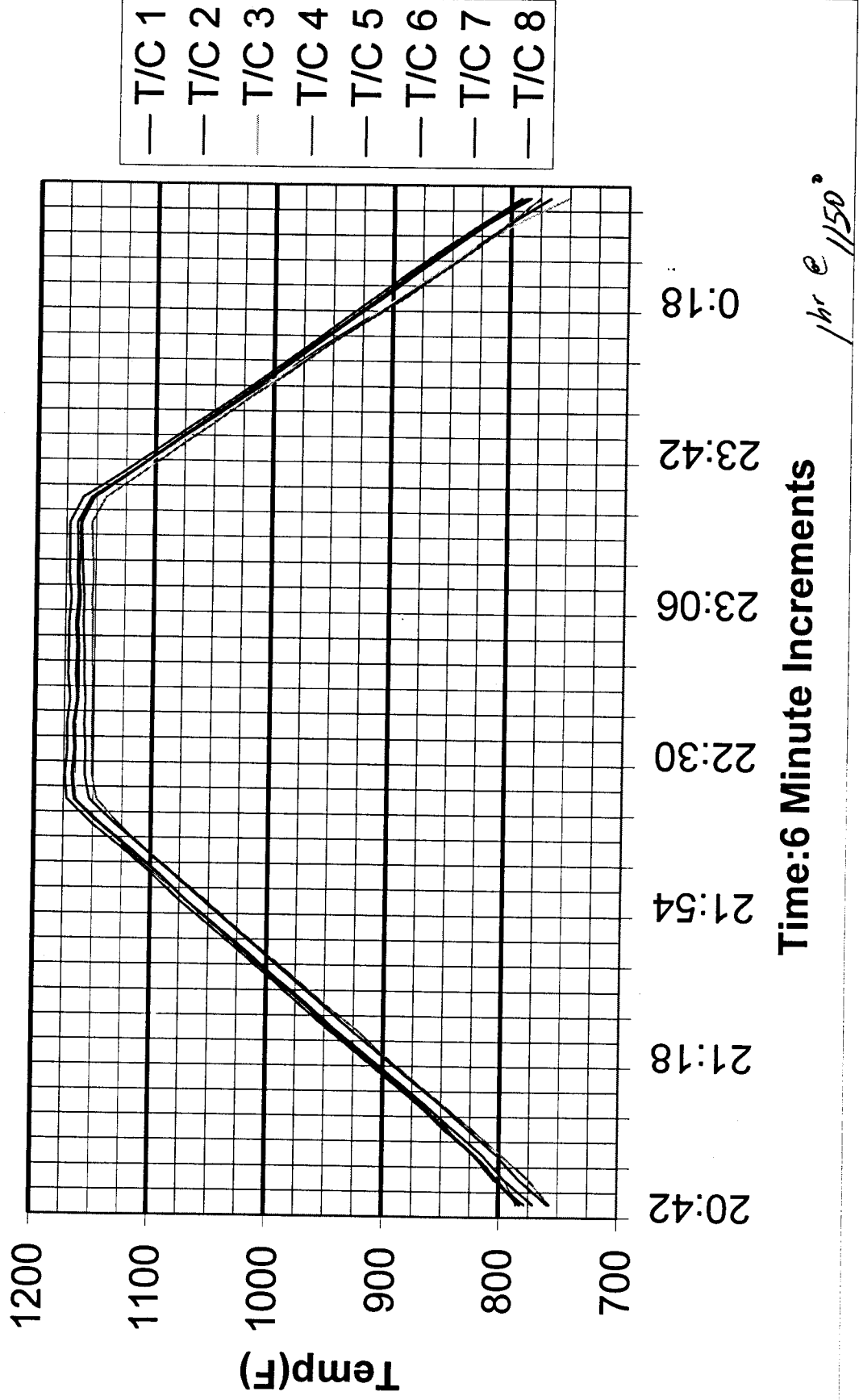
APPROVED BY: [Signature]

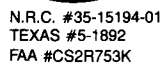
DATE: 12-5-04

Quantity	Part Number / Part Name / Part Description	Pounds
1	HEADER 045571.3 FRONT	220
1	HEADER 045571.3 BACK JOB# 045571 93AUI	220



Bodycote Thermal Processing Fce#2001





8441 SOUTH UNION • TULSA, OKLAHOMA 74132 • (918) 446-1696

PAGE 1 OF 1

GSX ASSUMES NO RESPONSIBILITY FOR LOSSES OF ANY KIND DUE TO INTERPRETATION.



TULSA GAMMA RAY, INC.

1127 SOUTH LEWIS AVENUE
TULSA, OKLAHOMA 74104-3900
918 / 585-3228 • FAX 918 / 584-5598
1 - 800 - 625-9288

CUSTOMER DATA	
NAME	<u>AXC Weld</u>
ADDRESS	
ATTENTION	<u>QC</u>
WORK ORDER	<u>045571</u>
JOB LOCATION	<u>AXCW Shop</u>
DESCRIPTION	<u>RD Insp</u>
PURCHASE ORDER	
ZIP	

ULTRASONIC INSPECTION REPORT FORM #1

DATE 12/3/04 DAY Fri

INSPECTION DESCRIPTION: WELD ✓
LAMINAR REFLECTOR _____

PIPE _____
OTHER ✓ Noz & cplg attach.

APPLICABLE CODE: ASME Sec V, Sec VIII, Div 1 app 12

EQUIPMENT MANUFACTURER: KBI

MODEL NUMBER: USN50

TRANSDUCERS: LONGITUDINAL MHZ 1) 225 3 /2)

SIZE 1) 1" 1/2 /2)

SINGLE ✓ DUAL _____

ANGLE 1) 70 45 /2)

SHEAR: MHZ 1) 225 /2)

SIZE 1) 1/2 /2)

SURFACE: MHZ 1) _____ /2)

SIZE 1) _____ /2)

CALIBRATION: LONGITUDINAL - REFERENCE LEVEL 21/32 (db) SCANNING LEVEL +6 (db)

SHEAR - BLOCK TYPE FCW2 / ASME Ref B4

REFERENCE LEVEL 43/56 (db) SCANNING LEVEL +6 (db)

COUPLANT: CELLULOSE _____ GLYCERIN ✓ OIL _____ WATER _____ OTHER _____

SCANNING: CONTACT ✓ IMMERSION _____ MANUAL ✓ AUTOMATIC _____

SPEED < 6" per sec

100% OF SURFACE _____ GRID OR SPOT (SIZE) _____

SURFACE - INSIDE _____ OUTSIDE ✓

VERTICLE ✓ HORIZONTAL _____

DIRECTIONS - PARALLEL _____ PERPENDICULAR _____ OPPOSING ✓

- FOR WELD A _____ B _____ C _____ SURFACE(S) _____

PART IDENTIFICATION - COMMENTS RD Insp

Job # 045571 . 5 FK/SK 25-1,2,3,4, EB-1, EB-2, Noz & cplg attach, Noz Butts Weld

RESULTS: Acceptable

TECHNICIAN HOURS 1 ASST. HOURS _____ TRAVEL HOURS _____ MILEAGE _____ PERDIEM _____

TECHNICIAN: Delia LEVEL II FORM 1A ut-2

SUPERVISED BY: _____ LEVEL _____ (GRAPHIC DEPICTION)

CUSTOMER REPRESENTATIVE Pam M... TOTAL TIME 1.0

MATERIAL TRACEABILITY RECORD

Job No. 045571

PIPE ☒ PLATE ☐ TUBES ☐ BY RM DATE 11/30/04 CUST. ENERFLEX

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
<u>13</u> 1009621 1009393 1008003	1. 4" S180 GRB SA106	336117
	2. 4" S180 RFWN 300# SA105	223A3
	3. 1" CPLG FULL 6000# SA105	35J
1008385	1. 1.5" TOL 6000# SA105	56003
	2.	
	3.	
<u>15</u> 1008195 1009456 1008003	1. 2" S160 GRB SA106	336108
	2. 2" S160 RFWN 600# SA105	310A3
	3. 1" CPLG FULL 6000# SA105	35J
1008385	1. 1.5" TOL 6000# SA105	56003
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

MATERIAL TRACEABILITY RECORD

Job No. 045571

PIPE ☐

PLATE ☒

TUBES ☐

BY 4

DATE 12-1-04

CUST. Enerflex

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
.3	1. Sq Tube 1x8.5x8.5 SA106-C	J4K3260
	2.	
	3. SA516-70N .625 Burns	812C35760 ✓
	1.	
	2.	
	3.	
.5	1. SA516-70N 1 Jindal	500269 ✓
	2. SA516-70N .75 ISG	813D62390 ✓
	3. SA516-70N .625 Burns	812C35760 ✓
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

MATERIAL TRACEABILITY RECORD

Job No. 045571X

PIPE ☐ PLATE ☐ TUBES ☒ BY LM DATE 12/02/04 CUST. ENER FLEX

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
1009198	1. 12' - 5/8 x .060 SA-214	A-41878
	2.	
-1.22.3.4	3.	WEB CO
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

N/A Not Applicable

air-x-changers

FINAL -- IN PROCESS INSPECTION CHECKLIST

Customer: **ENERFLEX** Job/Section No.: **045571** Date: **12/08/04**MODEL: **93 AVI**

TAG NUMBER:

FINAL ASSEMBLY	Prod. Check	Lead	Hold Points Q. C.	Cust.	FINAL ASSEMBLY	Prod. Check	Lead	Hold Points Q. C.	Cust.
Dimensional Insp. Of Sub Columns					Manual and/or Air Motors	W/S 12-10-04	EA 12/10/04	AB 12-11-04	
Dimensional Insp. Of Base Holes	W/S 12-10-04	EA 12/10/04	B 12-11-04		Final Paint of Unit	W/S 12-10-04	EA 12/10/04	B 12-11-04	
Fan Blade Clearance	TD 12-10-04	EA 12/10/04	B 12-10-04		Final Paint of Ship Out Sections				
Fan Blade Pitch	W/S 12-10-04	EA 12/10/04	B 12-10-04		Clean Galvanizing				
Fan Shaft Clearance	TD 12-10-04	EA 12/10/04	B 12-10-04		All Bearings and/or Universals Greased	W/S 12-10-04	EA 12/10/04	B 12-11-04	
Idle Alignment	W/S 12-10-04	EA 12/10/04	B 12-10-04		Vibration Switches				
Electric Motor					Unit Name Plate	DK 12-11-04	EA 12/10/04	B 12-11-04	
Gear Box					Lifting Lug	DK 12-11-04	EA 12/10/04	B 12-11-04	
Bearing set screws Torque	TD 12-10-04	EA 12/10/04	B 12-11-04		Set All Loose Parts Tagged	DK 12-11-04	EA 12/10/04	B 12-11-04	
Prevention of Rust	W/S 12-10-04	EA 12/10/04	B 12-11-04						
Flange Arrangement and Facing	W/S 12-10-04	EA 12/10/04	B 12-11-04		Name Plate Attachment	DK 12-11-04	EA 12/10/04	B 12-11-04	
Hail, Core, Fan Guards, Bug Screens					Run Test and Vibration Check				
Shutters Operate Correctly	W/S 12-10-04	EA 12/10/04	B 12-11-04		Megger Test on Motors				

Q. C. Review:

Q. C. Release For Shipment:

Comments:

Joe Barden 12/12/04

air-x-changers

ADDITIONAL ENERFLEX SYSTEMS REQUIREMENTS, FINAL -- IN PROCESS INSPECTION CHECKLIST

Customer: *Enerflex Systems* Job/Section No.: 045571 Date: 12/08/04
MODEL: 93 AVI TAG NUMBER:

[illegible]

Q. C. Review: *Jill Cosper*

Q. C. Release For Shipment:

Comments:

QC – ‘AS BUILT’ DRAWING IS REQUIRED

Customer doc. packet to include: WARRANTY, SPEC. SHEET, U1A & NAMEPLATE COPIES FINAL W/AS BUILT'

NOZZLE LEVELNESS CHART

JOB # 045571 12/08/04

NOZZLE #1 NOZZLE #2 NOZZLE #3

SECTION #	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS
1	.3 Bottom BK	3" pipe	.6 Top BK	3" pipe		
2	.6 Bottom BK	2" pipe	.1 Top BK	2" pipe		
3	.6 BK	.6	.8 FR	.1		
4	.3 BK	.1	.9 FR	.2		
5	.1 Top BK	.3	.6 Bottom BK	.1		
6						

QUALITY CONTROL *JB* and *AK* 12-11-04

Air-X-Changers

Harsco



PAINT -- IN PROCESS INSPECTION CHECKLIST			
MODEL:	93AUC	JOB NO.:	045571
DATE:		12-10-04	
INITIAL AND DATE ALL CHECKPOINTS	GROUP LEADER DWD	QUALITY CONTROL	
		REJECTED	ACCEPTED
Surface Cleaning Before Primer	DH20		
Surface Preparation Before Final Paint	LM		
Final Paint Accepted	DH		AB 12/12/04
Type of Primer:	9267		
Dry Mills Total::	1.5-2.0		
Type of Intermediate:			
Dry Mills Total:			
Type of Top Coat:	685		
Dry Mills Total:	3.0-4.0		
Comments:			

Technical drawing of a 12-inch air motor assembly. The drawing shows a side view of the motor with various components labeled, including the air motor, floating header, and safety hook. Dimensions are provided in inches and millimeters. Callouts include 'AIR FLOW', 'SAFETY HOOK', 'FLOATING HEADER', and 'AIR MOTOR'. The drawing is oriented vertically on the page.



MOORE FANS LLC

INSTALLATION MANUAL

800 S. MISSOURI AVENUE
MARCELINE, MO 64658 USA
TELEPHONE: (660) 376-3575
FACSIMILE: (660) 376-2909

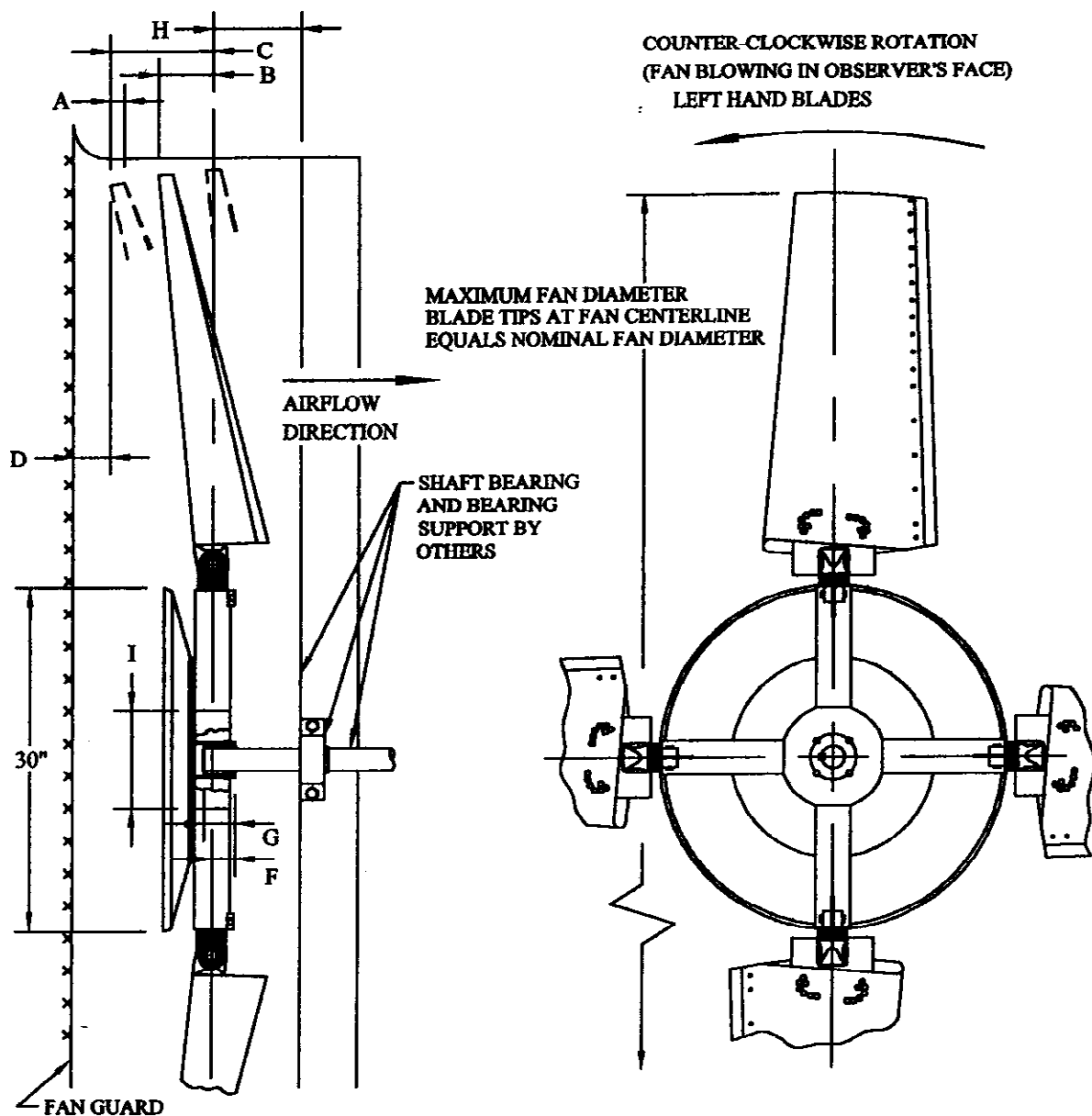
SOLD TO ¹⁵⁸ **AIR-X-CHANGERS**
ATTN: **ACCOUNTS PAYABLE**
PO BOX 1804
TULSA OK 74101-1804

JOB NO.: 81303

INVOICE DATE:
MODEL NO.: **CLASS 10000 HD**
PURCHASE ORDER NO: **1009803**
CUSTOMER JOB NO: **045571X**
SHIP REQUIRED: **12/01/2004**
PAYMENT TERMS: **NET 30 DAYS**
ROUTING: **MOORE TULSA**
F.O.B. POINT: **MARCELINE, MO.**
FREIGHT: **PREPAID**
CRATING: **STANDARD DOMESTIC**

SHIP TO **AIR-X-CHANGERS**
5555 BIRD CREEK ROAD
CATOOSA, OK 74015

QTY	DESCRIPTION
1	1036/073-U0-A/36L-VT-3-7.75-6
1	U BUSHING 2.438" BORE .625X.313 K/ H-2.719
6	WELD WING TIPS ON BLADES
1	PACK ALONE 1-FAN SERIES 33/40 MANUAL
 DISCOUNT Serial Nos.: F130851	
ASSEMBLY DATA	
SERIES: 36 BLADES: 6 ARRANGEMENT: 07 CLEVIS ANGLE: 0.0° HUB LENGTH C/L TO BASE: 1.50 DYNAMIC BALANCE HUB: YES 4 INCH HOLE IN AIR SEAL: NO	DIA.: 7.75 TYPE: MANUAL HD MOUNTS: Standard WEIGHT: Left Hand STOP DROOP: 4.10 CH TO TIP: 29.95 BALANCE WT.: BUSHING: U KEYWAY: 0.625" X 0.313" STD. BORE TOL.: +.001" - .000"
MATERIAL: ALUMINUM H DIM.: 2.710" BORE: 2.438" CUT DROOP COLOR CODE:	
AIR PERFORMANCE DATA	
ELEVATION: Ft. ACFM/FAN: STATIC PRESSURE: VELOCITY THROUGH FAN: BHP REQUIRED: THEORETICAL NO. OF BLADES:	AIR TEMPERATURE: ° RPM: "WG VELOCITY PRESSURE: FPM *MOTOR HP: *MAXIMUM APPLIED TORQUE: BLADE LOAD FACTOR:
DENSITY RATIO: INLET CORRECTION: "WG TOTAL PRESSURE: EFFICIENCY: FT.LBS.	
CAUTION: * MAXIMUM APPLIED TORQUE USING FACTOR OF NOMINAL TIMES (FACTORY SHOULD BE NOTIFIED IF MAX. APPLIED TORQUE OR MOTOR HP IS GREATER THAN THE VALUE SHOWN.)	
ADDITIONAL NOTES:	MARKS: P.O. NO. 1009803 1 - ITEM FA4818



- A = BLADE TIP THICKNESS @ 19° BLADE ANGLE
B = RUNNING POSITION OF BLADES
C = MAXIMUM BLADE TRAVEL
D = MINIMUM OBSTACLE CLEARANCE AT INLET
F = CENTERLINE OF FAN TO BASE OF BUSHING
G = BUSHING OVERALL HEIGHT
H = MINIMUM OBSTACLE CLEARANCE AT OUTLET
I = NOMINAL MECHANICAL HUB DIAMETER
L = MAX. BUSHING TORQUE FT. LBS.
= WITH S.A.E. STANDARD SQUARE KEYWAY
* = WITH SHALLOW KEYWAY IN BUSHING
° = MAX METRIC BORE WITH STANDARD KEYWAY

WITH FAN OPERATING
AT 12000 FT : MINUTE
BLADE TIP SPEED
PERCENT BLADE
LOADING

DIA	100%		75%		C	D	H	MAX BLADES	BUSHING TYPE	MAX # BORE	MAX ° BORE	MAX ° BORE	I	F	G	L
	A	B	A	B												
6'	4.6"	1.5"	1.3"	3.5"	2.0"	7.0"										
7'	4.2"	1.8"	1.5"	3.8"	2.0"	7.0"										
7.75'	3.8"	2.1"	1.8"	4.1"	2.0"	7.0"										
9'	3.4"	2.6"	2.1"	4.6"	2.0"	7.0"										
10'	3.0"	3.1"	2.4"	5.1"	2.0"	7.0"										
11'	2.6"	3.8"	3.1"	5.8"	2.0"	7.0"										
12'	2.2"	4.6"	3.6"	6.6"	2.0"	7.0"										



SERIES 36 FAN LEFT HAND ROTATION

Air-X-Changers

Harsco



Plant Address
5215 Arkansas Rd.
Catoosa, OK 74015

P.O Box 1804
Tulsa, OK 74101
Telephone 918.619.8000
Fax 918.619.5000

TO:	<u>ENERFLEX</u>	DATE:	<u>12/14/2004</u>
	<u>4700 - 47TH STREET SE</u>	CUSTOMER:	<u>STOCK</u>
	<u>CALGARY, ALBERTA</u>	PO #	<u>0420448</u>
	<u></u>	AXC #	<u>045571X</u>
ATTN:	<u>DOCUMENT CONTROL</u>	TAG #	<u>STOCK - B400/3</u>

Transmittal Sheet

Attached you will find specific information for the job referenced above.

In order to to complete this manual, please reference the Air-X-Changers Library CD to obtain the vendor information and Air-X-Changers Installation, Maintenance & Operating Instructions. If you have any questions, please contact Debbie DeWitt at (918) 619-8004

Engine Drive Operating, Installation & Maintenance Instructions.

Maro Shutters, Model VI

Moore Fan Series 10K (job specific data is included in this manual)

Dodge S2000

Dodge Fan & Blower (CC203)

cc: EADS - CANADA

Very truly yours,

Debbie DeWitt

AIR-X-CHANGERS



Air-X-Changers

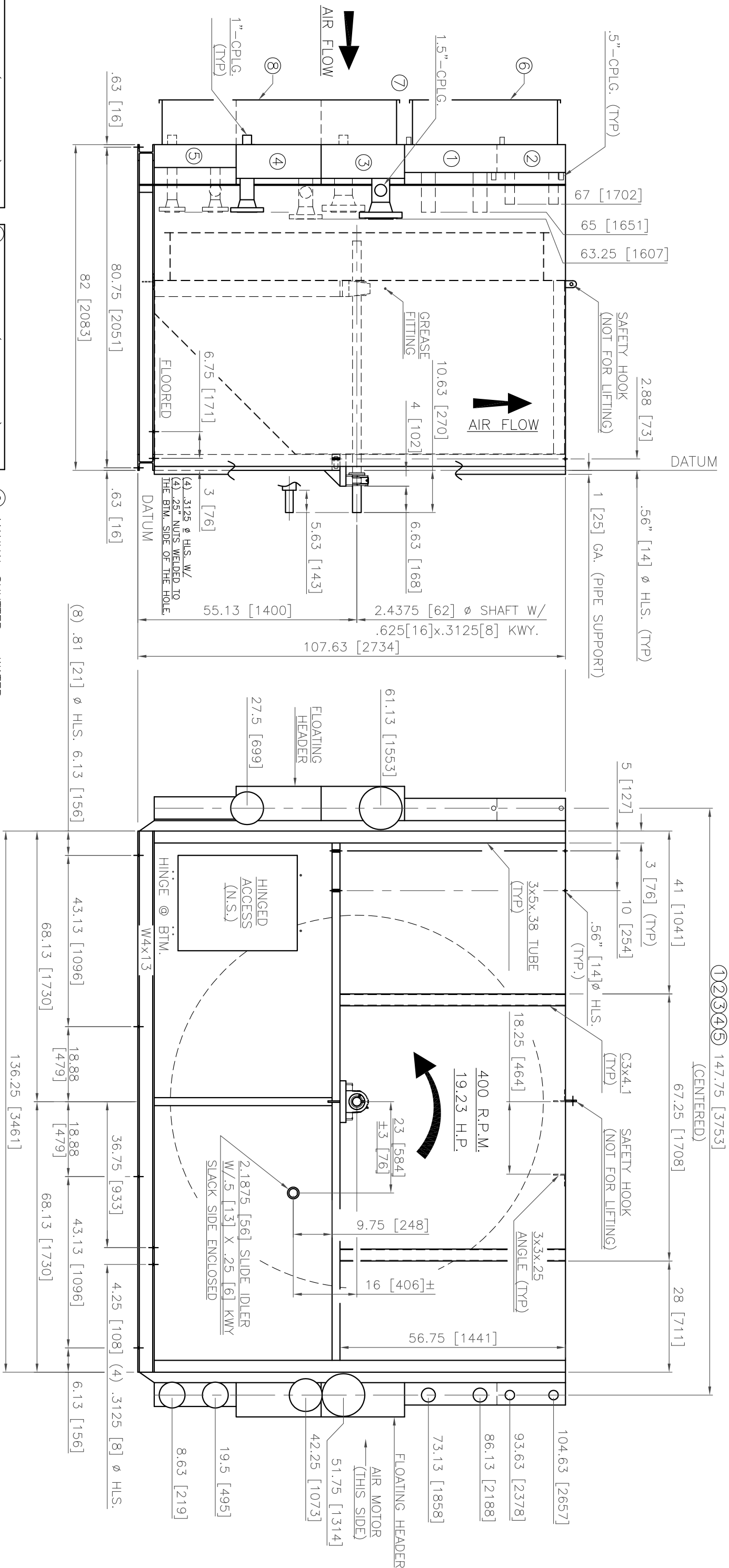
Harsco

MANUAL CONTENTS

045571X

Job Specific Documentation

Transmittal
Manual Contents
Certified Drawing
Parts List
Spec Sheet
U-1A Data Report(s)
Nameplate(s)
Hydrostatic Test Certification(s)
Heat Treat Chart(s)
X-Ray Test Report(s)
Ultrasonic Test Report(s)
Material Traceability Records
Final In-Process Inspection Report(s)
Additional Final In-Process Inspection Report(s)
Paint In-Process Inspection Report(s)
As-Built Drawing
Moore Fan Data



COMBINED	
①	E/W (12 GALLONS) D.P. 14 P.S.I. @ 350/-20 °F. NOZZLES 3"- PIPE STUB
②	TAW/ELW/CW (8.75 GALLONS) D.P. 14 P.S.I. @ 350/-20 °F. NOZZLES 2"- PIPE STUB
③	IC-1 (ASME STAMP) D.P. 645 P.S.I. @ 350/-20 °F. NOZZLES 4"-300 R.F.
④	IC-2 (ASME STAMP) D.P. 645 P.S.I. @ 350/-20 °F. NOZZLES 3"-300 R.F.
⑤	AC (ASME STAMP) D.P. 1292 P.S.I. @ 350/-20 °F. NOZZLES 2"-600 R.F.

6. MANUAL SHUTTER — WATER
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

7. AUTO SHUTTER — IC-1 BY 9
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

(8) AUTO SHUTTER - IC-2 & AC BY 9
W/ EXTERNAL REMOVABLE BUGSCREEN
PANELS. (FURNISHED BY AXC AND
INSTALLED BY OTHERS.)

(9) (2) GARZO 501-12 AIR MOTOR

NOTES:

1. ESTIMATED DRY WEIGHT: 9,600 #
2. CUSTOMER TO SUPPLY AC SECTION
3. METRIC []

REV.	DESCRIPTION	BY	DATE	APP'D	DATE	JOB STATUS:	CUSTOMER: ENERFLEX

[illegible]

PARTS LIST



air-x-changers

a harsco company

Post Office Box 1804
Tulsa, OK 74015
Phone: (918) 266-1850
Fax (918) 266-1322

JOB NUMBER: 045571

CUSTOMER: **ENERFLEX**

ORDER COVERS: (1) Model 93AVI

FINISH: *EFX Standard*

SURFACE PREPARATION: *Structure = Chemical Clean, Section Frame & Headers = Chemical Clean*

PRIMER: *Structure = H-I-S 9267 Gray Primer, Section Frame & Headers = H-I-S 9267 Gray Primer; 1.5 TO 2.0 MILS. DFT.*

FINISH COAT: *Structure = H-I-S S685 Gray Enamel, Section Frame & Headers = H-I-S S685 Gray Enamel; 1.5 TO 2.0 MILS. DFT.*

P.O.	QTY.	DESCRIPTION OF COMPONENTS
		NOTE: AN ASTERIK (*) IN QUANTITY COLUMN INDICATES A RECOMMENDED SPARE PART
	4	SECTION(S) IN ACCORDANCE WITH SPECIFICATION SHEET. This unit will have 045558.4 IC-2 section installed in it.
	1	93AVI STRUCTURE(S), COMPLETE WITH: <i>Rear Floor Underscoop</i> <i>EFX Standard "Fall Protection" Safety Hook</i> <i>100% RT Adjustment for one nozzle</i> <i>EFX Standard Pipe Supports</i> <i>Pump and tank bolt holes with nuts in cooler base</i> <i>Canadian export welded tips on Moore fan</i> NOTE: Existing IC-2 section 045558.4 to be placed in this cooler
	1	SET SHUTTERS: TYPE <i>Manual</i> , FOR SERVICE(S) <i>TAW/ELW/CW, EJW</i> , SQ. FT. = 39 , #LINKAGE SETS = 1 , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	SET SHUTTERS: TYPE <i>Auto</i> , FOR SERVICE(S) <i>IC-1</i> , SQ. FT. = 19.5 , #LINKAGE SETS = 1 , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	SET SHUTTERS: TYPE <i>Auto</i> , FOR SERVICE(S) <i>IC-2, AC</i> , SQ. FT. = 39.45 , #LINKAGE SETS = 2 , MOUNTING TYPE: <i>Standard</i> , EXTRA FEATURES: <i>Deep Side frames</i>
	1	AIR MOTOR: FOR SERVICE(S) <i>IC-1, Garzo (6-30psi spring)</i> MAKE, 501-12 w/Pivot Mount MODEL, POSITIONER: <i>None</i>
	1	AIR MOTOR: FOR SERVICE(S) <i>IC-2, AC, Garzo (6-30psi spring)</i> MAKE, 501-12 w/Pivot Mount MODEL, POSITIONER: <i>None</i>
	* 1	FAN(S): 93 Inch DIAMETER, 6 BLADES, <i>LH</i> ROTATION, MOORE-CL10K MAKE, 22.2° ANGLE @ <i>Clevis</i> , 2-7/16 Inch BORE WITH 5/8 Inch X 5/16 Inch KEYWAY. MODEL/PITCH: 36-HDVT/Manual , HUB: TAPER WELD VORTEX TIPS TO FAN BLADES!
	* 1	FAN SHAFT(S): 2-7/16 Inch DIA. X 67.25 Inch LONG WITH 5/8 Inch SQ. KEYS <i>each</i> END, KEYWAY LENGTH(DRIVE END): 6 Inch , KEYWAY LENGTH(FAN END): 6 Inch , KEY LENGTH: 5 Inch
	* 2	2-7/16 Inch FAN SHAFT BEARINGS, MAKE/MODEL: Dodge-S2000/P2B-S2-207R , AXC P/N BR1111
	* 1	IDLER SHAFT(S): 2-3/16 inch DIA. X 20 inch LONG WITH 1/2 inch SQ. KEY 4.5 inch LONG-ONE END
	1	SET(S): <i>Adj. Block</i> TYPE IDLER FRAME PARTS
	* 1	2-3/16 Inch IDLER BEARING(S), MAKE/MODEL: Dodge-FB/CC203 w/'Boxed' Idler Housing , AXC P/N
	1	SET(S) REMOVABLE SOFT BUGSCREENS. ONE SET CONSISTS OF: _3_ PANEL(S) _37_ Inches X _45_ Inches _3_ PANEL(S) _45_ Inches X _61.5_ Inches COMPLETE WITH ONE (1) SOFTBUGSCREEN INSTALLATION KIT.

**air-x-changers**

a harsco company

Post Office Box 1804
Tulsa, OK 74015
Phone: (918) 266-1850
Fax (918) 266-1322**JOB NO.** 045571

Initial Release Date 11/11/2004

Page 1 of 1

Purchaser	ENERFLEX	Ultimate User	2004 STOCK
Inquiry/PO#	TAG 040XXX / PO 0420448	Destination	BC/ALB/SASK
No. Units	1	Model:	93AVI
Assembly:	PACKAGED	Draft:	INDUCED
		Reference	F18GL(LCR) - JGA/4 @ 400HP
		Overall Size (WxLxH),	~7.83x13.00x8.76
		Est. Wt., lbs.	8,200

PERFORMANCE

Service	EJW	TAW/ELW/CW	IC-1	IC-2	AC
Flow	130GPM	35GPM	2.23MMSCFD	(045558.4 by AXC)	2.23MMSCFD
Fluid	50%GLY	50%GLY	.650SPGR		.650SPGR
Temp. In / Out, f	180.0 / 164.9	157.2 / 130.0	199.0 / 114.0		258.0 / 121.0
Pressure, psia			246.0		1,120.0
Pressure Drop, psi	10.4	12.1	0.9		1.7
Heat Load, btu/hr	910,800	426,366	221,227		407,235
True LMTD, f	48.6	33.3	49.7		67.1
Overall Rate, U, btu/hr ft ² f	172.4	158.8	61.9		91.4
Fouling Factor, ft ² hr f / btu	0.0005	0.0005	0.0020		0.0020
Surface, Bare / Extended, sq.ft.	112 / 1773	81 / 1284	73 / 1162		67 / 1070
Sections, No./Connected	(1) COMBINED w/2	(1) COMBINED w/1	(1) SINGLY		(1) SINGLY
Design Temp. (Max / Min), f	300/-20	300/-20	350/-20		350/-20
Design / Test Press., psig	*14 / 65	*14 / 65	645 / 839		1292 / 1680
Pass Arrangement	CROSSFLOW	CROSSFLOW	CROSSFLOW		CROSSFLOW
No. Tube Rows/Tube Passes	4 / 2	4 / 4	3 / 1		3 / 2
Section Weight, lbs	1300		950		800
Tubes, OD x BWG	5/8X16(.060MIN)	5/8X16(.060MIN)	5/8X16(.060MIN)		5/8X16(.060MIN)
Material	SA214	SA214	SA214		SA214
No. Per Section / Length, ft	58 / 12	42 / 12	38 / 12		35 / 12
Retarders					
Accelerators					
Fins, Type	L-TENSION / WHEEL	L-TENSION / WHEEL	L-TENSION / WHEEL		L-TENSION / WHEEL
Material	ALUMINUM	ALUMINUM	ALUMINUM		ALUMINUM
Nozzles, Rating/Type	STUB	STUB	300 RF		600 RF
Material / Bore	SA106 GR.B / SCH-40	SA106 GR.B / SCH-80	SA105 / SCH-80		SA105 / SCH-160
(No. Inlets) / Size, in	(1) / 3IN	(1) / 2IN	(1) / 4IN		(1) / 2IN
(No. Outlets) / Size, in	(1) / 3IN	(1) / 2IN	(1) / 4IN		(1) / 2IN
Headers, Type	RECT. TUBE	RECT. TUBE	ASME TUBE-8.5		BOX W/PLUGS
Material	SA500 GR.B	SA500 GR.B	SA106 GR.C		SA516 70(N)
Corrosion Allow., in			0.0625		0.0625
Grooved Tubesheet			YES		YES
Plugs, Type	TAPER	TAPER	SHOULDER		SHOULDER
Plugs Material	B-16 BRASS	B-16 BRASS	SA105		SA105
Industry Specifications	AXC-STD	AXC-STD	AXC-STD		AXC-STD
ASME Code Stamp / N.B.			YES		YES
Canadian Registration #			YES		YES
PWHT			YES		
NACE					

Inspection/NDT

***UB

F= 100% R.T of all header seam & nozzle butt welds PLUS 100% U.T. of all attachment welds. S= Spot R.T. of 1 long seam & 1 end closure, per header
 U = 100% UT of all header seam, attachment & nozzle butt welds. B= 100% R.T. of all nozzle butt welds.
 SB= S PLUS B as each are described above. UB= U PLUS B as each are described above.

AIR-SIDE PERFORMANCE		FAN DATA		DRIVER DATA		REDUCER DATA	
Ambient Air Temp., In, f	90	No. Fans / Make	1 / MOORE-CL10K	Type	ENGINE DRIVE	Type	REDUCER BY OTHERS
Elevation, ft	3000	Blade Material	ALUMINUM				
Air Flow, SCFM	65,573	HP@RPM	19.22 @ 400				
Air Temp., Out, f	121.9	Dia., in / No. Blades	93 / 6				
Min. Ambient, f	-20	Blade Angle, Deg	22.2 @ Clevis				
		Series/Blade Adj.	36-HDVT/Manual				
		Fan Hub Bushing	TAPER				

* Actually built to standard 50# design. Designated 14# to eliminate necessity of Provincial registration.

*** Includes 100% R.T. of only one nozzle butt weld.

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)
2. Manufactured for: Enerflex, 4700 - 47th Street Southwest, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)
3. Location of installation: Unknown, Unknown
(Name and address)
4. Type: Heat Exchanger 045571.3 R0816.213 HDR-3-RQ,C738342-CRN-3R1 47528 2004
(Horz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001

to A03 -- Year NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)

Formed Tube
6. Shell: SA106 GRC 1.00" .0625" 8.5" 1' - 9.25"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow (in.) Diameter ID (Ft/In) Length (Overall) (Ft/In)

7. Seams: Seamless ----- C=.20 1125 1.25 Hr ----- ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, /full) No. of course

8. Heads: (a) Matl. SA516 70N 1.25 Hr @ 1125 °F (b) Matl. -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	ENDS	0.625 "	.0625"	--	-----	--	--	--	6.5"	X 6.5"
b	-----	-----	-----	--	-----	--	--	--	--	--

If removable bolts used (describe other fastening) -----

Header Volume 489 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)

9. MAWP 645 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 645 psi. hydro., pneu., or comb. test pressure 839 psi.

10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	4"	300# RFWN	SA105/SA106 GRB	SCH80	Weld	Welded	HEADER
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE

11. Supports: Skirt ----- Lugs ----- Legs ----- Other Structure Attached Bolted
(yes/no) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 38 0.6250" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 76 .75" X 16UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F) Cold Forming in accordance with UG-79 & UCS-79

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2002

Date 12/14/01 Company Name Air-X-Changers, A Harsco Company Signed Hebraiah Helms
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 12/7, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 12/14/04 Signed: [Signature] Commissions: NB #11672A / DE #765
(Authorized Inspector) (Nat'l Board (inc. endorsements), State, Prov. and No.)

FORM 1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)
2. Manufactured for: Enerflex, 4700 - 47th Street Southwest, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)
3. Location of installation: Unknown, Unknown
(Name and address)
4. Type: Heat Exchanger 045558.4 R8857.213 HDR-4-RD040136-CRNS-RD 47070 2004
(Horz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001

to A03 -- NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)

Formed Tube
6. Shell: SA106 GRC 1.00" .0625" 8.5" 1' - 9.625"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diameter ID (ft/in) Length (Overall) (ft/in)
7. Seams: Seamless ----- C=.20 1150 1 Hr ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff. (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, full) No. of course

8. Heads: (a) Matl. SA516 70 1 Hr @ 1150 °F (b) Matl. -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	ENDS	0.625"	.0625"	--	-----	--	--	--	6.5"	x 6.5"
b	-----	-----	-----	--	-----	--	--	--	--	--

If removable bolts used (describe other fastening) -----

Header Volume 498 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)

9. MAWP 645 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 645 psi. hydro., pneu., or comb. test pressure 839 psi.

10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	3"	300# RFWN	SA105/SA106 GRB	SCH80	Weld	Welded	HEADER
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE

11. Supports: Skirt ----- Lugs ----- Legs ----- Other Structure Attached Bolted
(yes/no) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 26 1.0000" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 52 1.125" x 12UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F) Cold Forming in accordance with UG-79 & UCS-79

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2005

Date 11-19-04 Company Name Air-X-Changers, A Harsco Company Signed [Signature]
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 11/11, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 11/19/04 Signed [Signature] Commissions: NB # 11672A / OK # 765
(Authorized Inspector) (Nat'l Board (inc. endorsements), State, Prov. and No.)

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form For Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Air-X-Changers, A Harsco Company 5215 Arkansas Road, Port of Catoosa, OK 74015
(Name and address of manufacturer)
2. Manufactured for: Enerflex, 4700 - 47th Street Southeast, Calgary, Alberta, Canada T2B 3R1
(Name and address of purchaser)
3. Location of installation: Unknown, Unknown
(Name and address)
4. Type: Heat Exchanger 045571.5 R8537.213 HDR-5-RQ,045554-CRN-3-R0 47530 2004
(Horz/vert tank) (Mfg. Serial No.) (CRN) (Drawing No.) (Nat'l Board No.) Year Built
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE.
The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
Year

to A03 -- NONE
Addenda (Date) Code Case No. Special Service per UG-120(d)
6. Shell: SA516 70N 1.00" .0625" 5.5000" 1' - 7.75"
Matl. (Spec No./Grade) Nom. Thk. (in.) Corr. Allow (in.) Diameter ID (Ft/In) Length (Overall) (Ft/In)
7. Seams: Corner Joint ----- C= .20 ----- -----
Long (wld, Dbl, Sgl, Lap, Butt) R. T. (spot/full) Eff (%) H.T. Temp °F Time (hr) Girth (wld, Dbl, Sgl, Lap, Butt) R. T. (spot, part, /full) No. of course
8. Heads: (a) Matl. SA516 70N ----- (b) Matl. SA516 70N -----
(Spec No. Grade) (Spec No. Grade)

	Location (Top, bot, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diam	Side to Pressure Convex or Concave
a	TOP, BTM	0.75 "	.0625"	--	--	--	--	--	4"	X 19.75"
b	ENDS	0.625 "	.0625"	--	--	--	--	--	4"	X 4"

If removable bolts used (describe other fastening) -----

Header Volume .171 Cu. Ft. (Matl., Spec. No., Gr., Size, No.)
9. MAWP 1292 psi at max. temp. 350 °F
Min. design metal temp. -20 Degrees F at 1292 psi. hydro., pneu., or comb. test pressure 1680 psi.
10. Nozzle, inspection and safety valve openings:

Purpose (Inlet, outlet, drain)	No.	Dia. or Size	Type	Material	Nominal Thickness	Reinforce Material	How Attached	Location
IN,OUT	2	2"	600# RFWN	SA105/SA106 GRB	SCH160	Weld	Welded	HEADER
VENT/DRAIN	1	1.5"	T-O-L	SA105	6000#	Weld	Welded	NOZZLE
VENT/DRAIN	1	1"	CPLG.	SA105	6000#	Weld	Welded	HEADER

11. Supports: Skirt ----- Lugs ----- Legs ----- Other ----- Structure ----- Attached ----- Bolted -----
(yes/no) (No.) (No.) (No.) (Description) (Where and How)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:

(Name of part, item number, Mfg's name and identifying stamp)

Tubes: 35 0.6250" OD, Straight 144" Length 16BWG Gauge / W.Thk SA214 Rolled Tube Sheet
Insp: 70 .75" X 16UNF THD'D SA105 Plug Sheet

VESSEL EXEMPT FROM IMPACT TESTING PER UG-20 (F)

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship on this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certification of Authorization No. 4241 expires 12/31 2005

Date 12-14-04 Company Name Air-X-Changers, A Harsco Company Signed Neilrah Helt
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Air-X-Changers, A Harsco Company at Tulsa, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Oklahoma and employed by OneBeacon America Insurance Company have inspected the components described in this Manufacturer's Data Report on 12/7, 20 04 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or loss of any kind arising from or connected with this inspection.

Date: 12/14/04 Signed: [Signature] Commissions: UB# 11672A / OK# 765
(Authorized Inspector) (Nat'l Board (Inc. endorsements), State, Prov. and No.)

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

MAX. DESIGN PRESS. 14 PSI @ 300 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 50 PSI
SER. NO. 045571.1.2 CRN
YEAR 2004 HYDRO. 65 PSI ITEM E-JW-TAN

47528

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

HT

MAX. DESIGN PRESS. 645 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 645 PSI
SER. NO. 045571.3 CRN R0816.213
YEAR 2004 HYDRO. 839 PSI ITEM IC-1

47070

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

HT

MAX. DESIGN PRESS. 645 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 645 PSI
SER. NO. 045558.4 CRN R8857.213
YEAR 2004 HYDRO. 839 PSI ITEM IC2

47530

CERTIFIED BY
air-x-changers TULSA, OKLAHOMA U.S.A.
a harsco company

W

MAX. DESIGN PRESS. 1292 PSI @ 350 F
MAX. DESIGN PRESS. PSI @ F
MIN. DESIGN METAL TEMP. -20 F @ 1292 PSI
SER. NO. 045571.5 CRN R8537.213
YEAR 2004 HYDRO. 1680 PSI ITEM AC



Air-X-Changers

Harsco

CERTIFICATE OF HYDROSTATIC TEST

CERTIFICATE NUMBER: 045571C7378

AXC JOB # 045571 **DATE:** 12/7/2004 **YEAR BUILT:** 2004

ITEM DESCRIPTION: EJW/TAW

AXC SERIAL #: 045571.1.2

DESIGN PRESSURE: 14/50 **@** 300/-20 **°F** **TEST PRESSURE:** 65

This is to certify that above air cooled heat exchanger section was hydrostatically tested in accordance with ASME section VIII, Division 1, UG-99 and/or the customer requirements, at no less than 1.3 times the working pressure for a time no less than one (1) hour.

HYDROSTATIC TEST CERTIFIED BY: **Deborah DeWitt**

Witnessed By Client Representative (if applicable) _____

TSI Heat Treating Certification

Order No.: 85846

Date: 12/03/2004

Entry Date: 12/02/2004

Page: 1 of 1

To:

AIR - X - CHANGERS
P O BOX 1804

Purchase Order No.: 1010175

Packing List No.: 20765

TULSA

OK 74101

24611

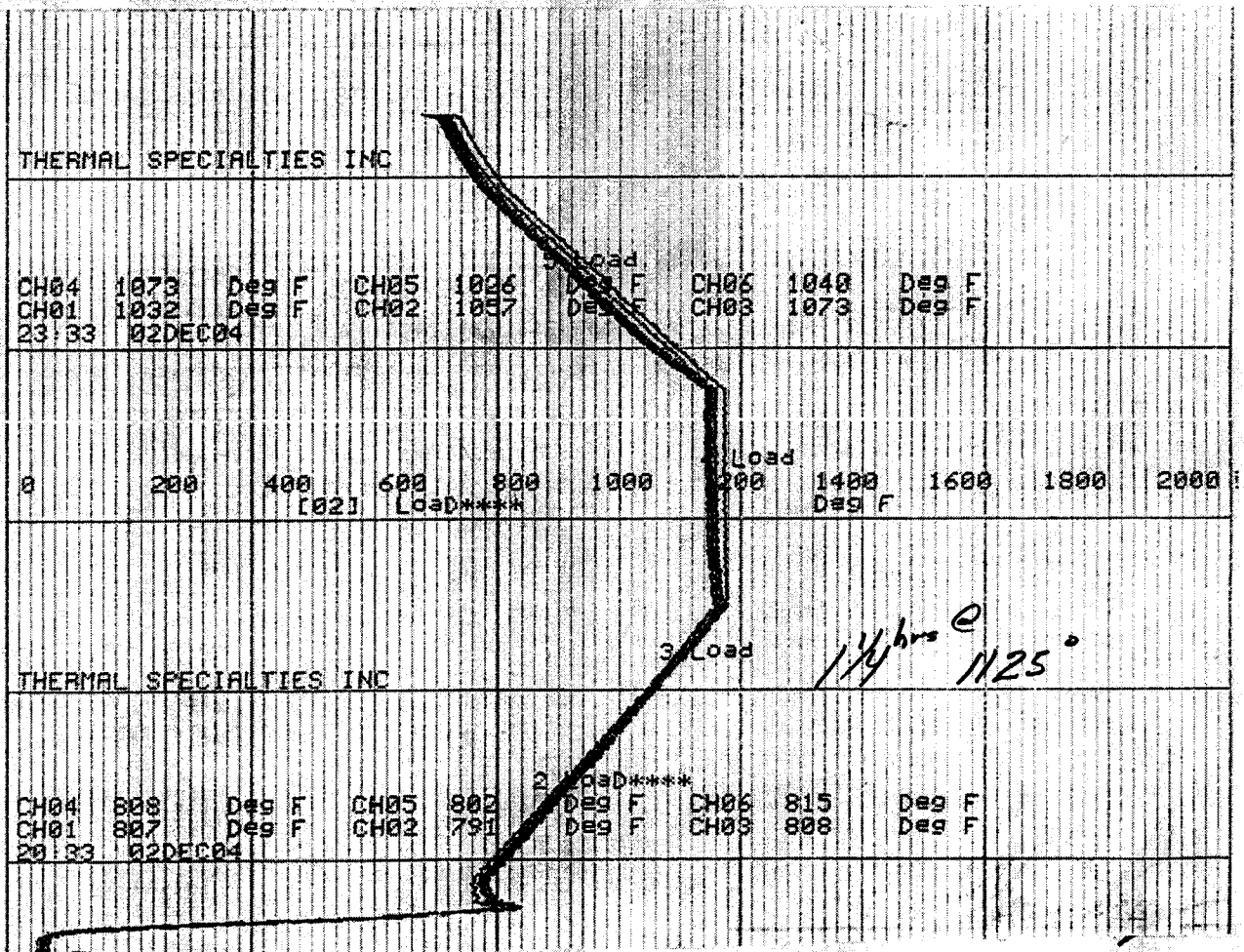
FURNACE NUMBER: 25 RECORDER: H42 CALIBRATION DATE: Nov. 04, 2004

CHART DIVISION: 60 minutes

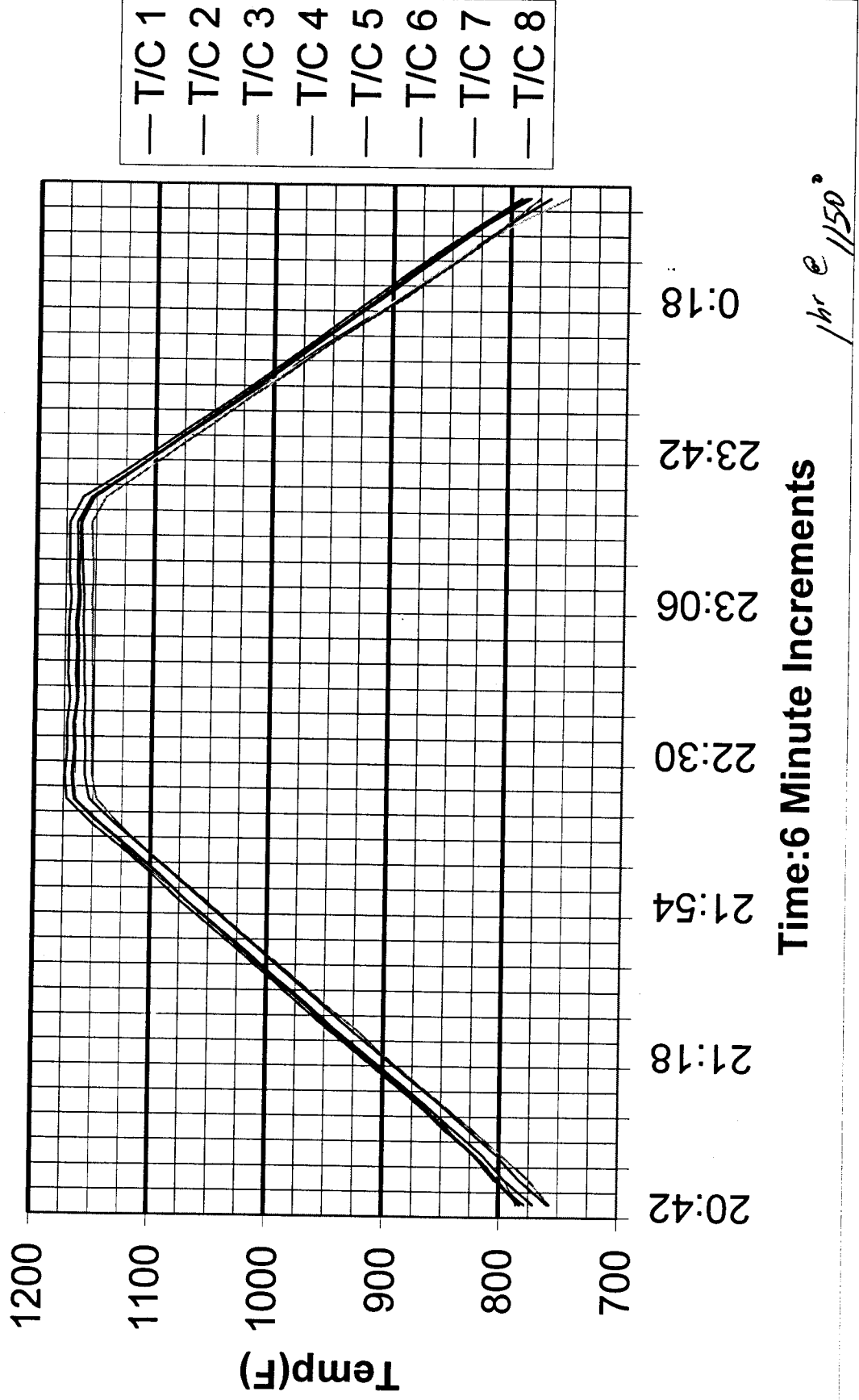
APPROVED BY: [Signature]

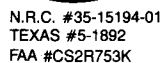
DATE: 12-5-04

Quantity	Part Number / Part Name / Part Description	Pounds
1	HEADER 045571.3 FRONT	220
1	HEADER 045571.3 BACK JOB# 045571 93AUI	220



Bodycote Thermal Processing Fce#2001





8441 SOUTH UNION • TULSA, OKLAHOMA 74132 • (918) 446-1696

PAGE 1 OF 1

GSX ASSUMES NO RESPONSIBILITY FOR LOSSES OF ANY KIND DUE TO INTERPRETATION.



TULSA GAMMA RAY, INC.

1127 SOUTH LEWIS AVENUE
TULSA, OKLAHOMA 74104-3900
918 / 585-3228 • FAX 918 / 584-5598
1 - 800 - 625-9288

CUSTOMER DATA	
NAME	<u>AXC Weld</u>
ADDRESS	
ATTENTION	<u>QC</u>
WORK ORDER	<u>045571</u>
JOB LOCATION	<u>AXCW Shop</u>
DESCRIPTION	<u>RD Insp</u>
PURCHASE ORDER	
ZIP	

ULTRASONIC INSPECTION REPORT FORM #1

DATE 12/3/04 DAY Fri

INSPECTION DESCRIPTION: WELD ✓
LAMINAR REFLECTOR

PIPE
OTHER ✓ Noz & cap attach.

APPLICABLE CODE: ASME Sec V, Sec VIII, Div 1 app 12

EQUIPMENT MANUFACTURER: KBI

MODEL NUMBER: USN50

TRANSDUCERS: LONGITUDINAL MHZ 1) 225 3 /2)

SIZE 1) 1" 1/2 /2)

SINGLE ✓ DUAL

ANGLE 1) 70 45 /2)

SHEAR: MHZ 1) 225 /2)

SIZE 1) 1/2 /2)

SURFACE: MHZ 1) /2)

SIZE 1) /2)

CALIBRATION: LONGITUDINAL - REFERENCE LEVEL 21/32 (db) SCANNING LEVEL +6 (db)

SHEAR - BLOCK TYPE FCW2 / ASME Ref Bk

REFERENCE LEVEL 43/56 (db) SCANNING LEVEL +6 (db)

COUPLANT: CELLULOSE ✓ GLYCERIN ✓ OIL ✓ WATER ✓ OTHER

SCANNING: CONTACT ✓ IMMERSION ✓ MANUAL ✓ AUTOMATIC

SPEED < 6" per sec

100% OF SURFACE ✓ GRID OR SPOT (SIZE)

SURFACE - INSIDE ✓ OUTSIDE ✓

VERTICLE ✓ HORIZONTAL ✓

DIRECTIONS - PARALLEL ✓ PERPENDICULAR ✓ OPPOSING ✓

- FOR WELD A ✓ B ✓ C ✓ SURFACE(S)

PART IDENTIFICATION - COMMENTS RD Insp

Job # 045571 . 5 FK/SK 25-1,2,3,4, EB-1, EB-2, Noz & cap attach, Noz Butts Weld

RESULTS: Acceptable

TECHNICIAN HOURS 1 ASST. HOURS 1 TRAVEL HOURS 1 MILEAGE 1 PERDIEM 1

TECHNICIAN: Delia LEVEL II FORM 1A ut-2

SUPERVISED BY: Pam LEVEL II (GRAPHIC DEPICTION)

CUSTOMER REPRESENTATIVE Pam TOTAL TIME 1.0

MATERIAL TRACEABILITY RECORD

Job No. 045571

PIPE ☒ PLATE ☐ TUBES ☐ BY RM DATE 11/30/04 CUST. ENERFLEX

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
<u>13</u> 1009621 1009393 1008003	1. 4" S180 GRB SA106	336117
	2. 4" S180 RFWN 300# SA105	223A3
	3. 1" CPLG FULL 6000# SA105	35J
1008385	1. 1.5" TOL 6000# SA105	56003
	2.	
	3.	
<u>15</u> 1008195 1009456 1008003	1. 2" S160 GRB SA106	336108
	2. 2" S160 RFWN 600# SA105	310A3
	3. 1" CPLG FULL 6000# SA105	35J
1008385	1. 1.5" TOL 6000# SA105	56003
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

MATERIAL TRACEABILITY RECORD

Job No. 045571

PIPE ☐

PLATE ☒

TUBES ☐

BY 4

DATE 12-1-04

CUST. Enerflex

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
.3	1. Sq Tube 1x8.5x8.5 SA106-C	J4K3260
	2.	
	3. SA516-70N .625 Burns	812C35760 ✓
	1.	
	2.	
	3.	
.5	1. SA516-70N 1 Jindal	500269 ✓
	2. SA516-70N .75 LSG	813D62390 ✓
	3. SA516-70N .625 Burns	812C35760 ✓
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

MATERIAL TRACEABILITY RECORD

Job No. 045571X

PIPE ☐ PLATE ☐ TUBES ☒ BY LY DATE 12/02/04 CUST. ENER FLEX

MTL. P.O. NO. SECTION NO.	MATERIAL DESCRIPTION	HEAT OR CERTIFICATION NO.
1009198	1. 12' - 5/8 x .060 SA-214	A-41878
	2.	
-1.22.3.4	3.	WEB CO
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	
	1.	
	2.	
	3.	

NOTE: ALL MATERIAL OF SAME DESCRIPTION IN A SECTION MUST BE OF SAME HEAT NO.

N/A Not Applicable

air-x-changers

FINAL -- IN PROCESS INSPECTION CHECKLIST

Customer: **ENERFLEX** Job/Section No.: **045571** Date: **12/08/04**MODEL: **93 AVI** TAG NUMBER:

FINAL ASSEMBLY	Prod. Check	Lead	Hold Points Q. C.	Cust.	FINAL ASSEMBLY	Prod. Check	Lead	Hold Points Q. C.	Cust.
Dimensional Insp. Of Sub Columns					Manual and/or Air Motors	W/S 12-10-04	EA 12/10/04	AB 12-11-04	
Dimensional Insp. Of Base Holes	W/S 12-10-04	EA 12/10/04	B 12-11-04		Final Paint of Unit	W/S 12-10-04	EA 12/10/04	B 12-11-04	
Fan Blade Clearance	TD 12-10-04	EA 12/10/04	B 12-10-04		Final Paint of Ship Out Sections				
Fan Blade Pitch	W/S 12-10-04	EA 12/10/04	B 12-10-04		Clean Galvanizing				
Fan Shaft Clearance	TD 12-10-04	EA 12/10/04	B 12-10-04		All Bearings and/or Universals Greased	W/S 12-10-04	EA 12/10/04	B 12-11-04	
Idle Alignment	W/S 12-10-04	EA 12/10/04	B 12-10-04		Vibration Switches				
Electric Motor					Unit Name Plate	DK 12-11-04	EA 12/10/04	B 12-11-04	
Gear Box					Lifting Lug	DK 12-11-04	EA 12/10/04	B 12-11-04	
Bearing set screws Torque	TD 12-10-04	EA 12/10/04	B 12-11-04		Seal All Loose Parts Tagged	DK 12-11-04	EA 12/10/04	B 12-11-04	
Prevention of Rust	W/S 12-10-04	EA 12/10/04	B 12-11-04						
Flange Arrangement and Facing	W/S 12-10-04	EA 12/10/04	B 12-11-04		Name Plate Attachment	DK 12-11-04	EA 12/10/04	B 12-11-04	
Hail, Core, Fan Guards, Bug Screens					Run Test and Vibration Check				
Shutters Operate Correctly	W/S 12-10-04	EA 12/10/04	B 12-11-04		Megger Test on Motors				

Q. C. Review: *Joe Barden* 12/12/04

Q. C. Release For Shipment:

Comments:

air-x-changers

ADDITIONAL ENERFLEX SYSTEMS REQUIREMENTS, FINAL -- IN PROCESS INSPECTION CHECKLIST

Customer:	<i>Enerflex Systems</i>	Job/Section No.:	045571	Date:	12/08/04
MODEL:	93 AVI	TAG NUMBER:			

[illegible]

Q. C. Review: *Jill Cosper*

Q. C. Release For Shipment:

Comments:

QC - 'AS BUILT' DRAWING IS REQUIRED

Customer doc. packet to include: WARRANTY, SPEC. SHEET, U1A & NAMEPLATE COPIES FINAL W/AS BUILT"

NOZZLE LEVELNESS CHART

JOB # 045571 12/08/04

NOZZLE #1 NOZZLE #2 NOZZLE #3

SECTION #	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS	NOZZLE OUT OF LEVEL IN DEGREES	TWO HOLE LEVELNESS
1	.3 Bottom BK	3" pipe	.6 Top BK	3" pipe		
2	.6 Bottom BK	2" pipe	.1 Top BK	2" pipe		
3	.6 BK	.6	.8 FR	.1		
4	.3 BK	.1	.9 FR	.2		
5	.1 Top BK	.3	.6 Bottom BK	.1		
6						

QUALITY CONTROL *JB* and *AK* 12-11-04

Air-X-Changers

Harsco



PAINT -- IN PROCESS INSPECTION CHECKLIST			
MODEL:	93AUC	JOB NO.:	045571
DATE:		12-10-04	
INITIAL AND DATE ALL CHECKPOINTS	GROUP LEADER DWD	QUALITY CONTROL	
		REJECTED	ACCEPTED
Surface Cleaning Before Primer	DH20		
Surface Preparation Before Final Paint	LM		
Final Paint Accepted	DH		AB 12/12/04
Type of Primer:	9267		
Dry Mills Total::	1.5 - 2.0		
Type of Intermediate:			
Dry Mills Total:			
Type of Top Coat:	685		
Dry Mills Total:	3.0 - 4.0		
Comments:			

[illegible]



MOORE FANS LLC

INSTALLATION MANUAL

800 S. MISSOURI AVENUE
MARCELINE, MO 64658 USA
TELEPHONE: (660) 376-3575
FACSIMILE: (660) 376-2909

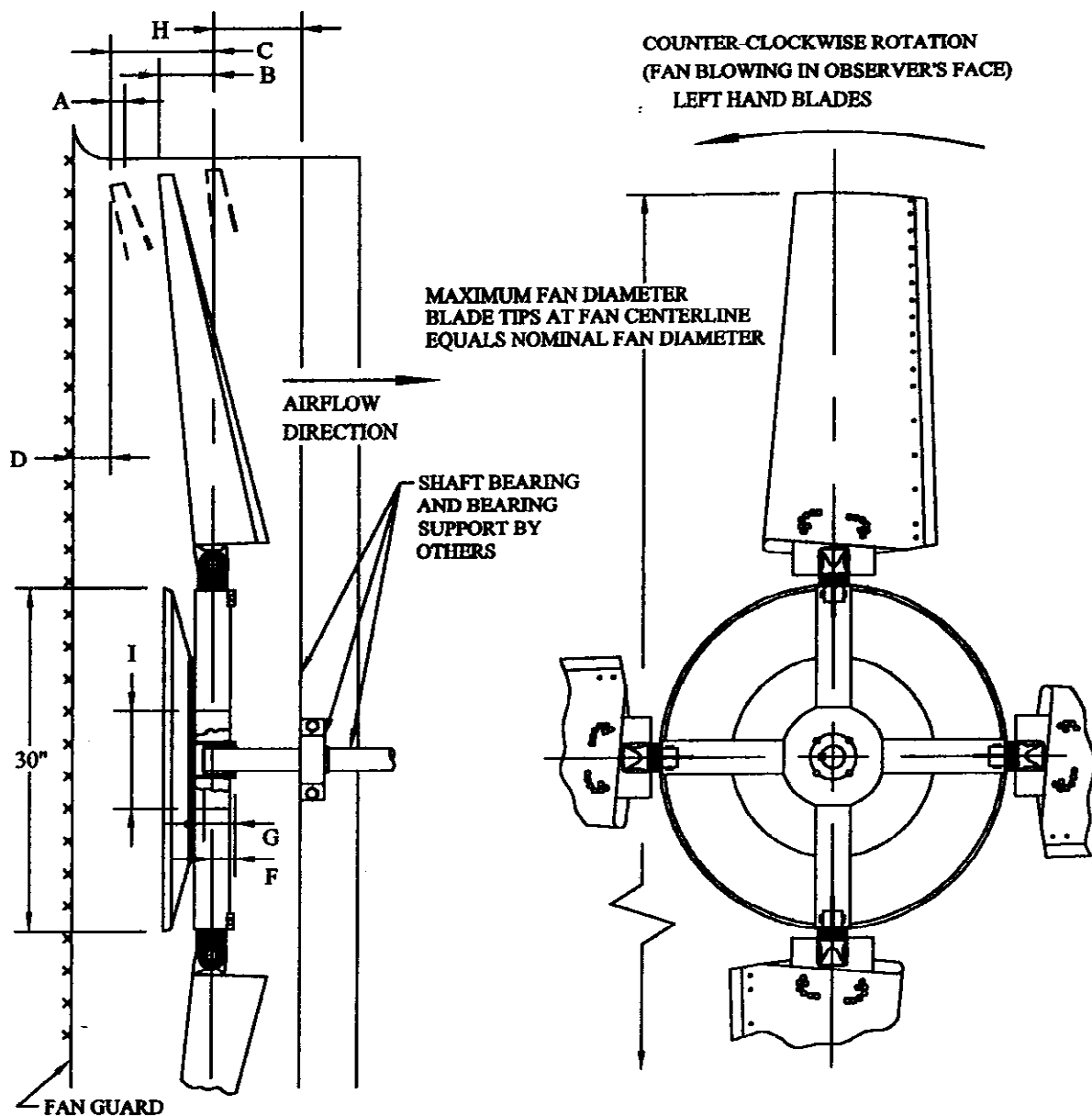
SOLD TO ¹⁵⁸ **AIR-X-CHANGERS**
ATTN: **ACCOUNTS PAYABLE**
PO BOX 1804
TULSA OK 74101-1804

JOB NO.: 81303

INVOICE DATE:
MODEL NO.: **CLASS 10000 HD**
PURCHASE ORDER NO: **1009803**
CUSTOMER JOB NO: **045571X**
SHIP REQUIRED: **12/01/2004**
PAYMENT TERMS: **NET 30 DAYS**
ROUTING: **MOORE TULSA**
F.O.B. POINT: **MARCELINE, MO.**
FREIGHT: **PREPAID**
CRATING: **STANDARD DOMESTIC**

SHIP TO **AIR-X-CHANGERS**
5555 BIRD CREEK ROAD
CATOOSA, OK 74015

QTY	DESCRIPTION
1	1036/073-U0-A/36L-VT-3-7.75-6
1	U BUSHING 2.438" BORE .625X.313 K/ H-2.719
6	WELD WING TIPS ON BLADES
1	PACK ALONE 1-FAN SERIES 33/40 MANUAL
 DISCOUNT Serial Nos.: F130851	
ASSEMBLY DATA	
SERIES: 36 BLADES: 6 ARRANGEMENT: 07 CLEVIS ANGLE: 0.0° HUB LENGTH C/L TO BASE: 1.50 DYNAMIC BALANCE HUB: YES 4 INCH HOLE IN AIR SEAL: NO	DIA.: 7.75 TYPE: MANUAL HD MOUNTS: Standard WEIGHT: Left Hand STOP DROOP: 4.10 CH TO TIP: 29.95 BALANCE WT.: BUSHING: U KEYWAY: 0.625" X 0.313" STD. BORE TOL.: +.001" - .000"
MATERIAL: ALUMINUM H DIM.: 2.710" BORE: 2.438" CUT DROOP COLOR CODE:	
AIR PERFORMANCE DATA	
ELEVATION: Ft. ACFM/FAN: STATIC PRESSURE: VELOCITY THROUGH FAN: BHP REQUIRED: THEORETICAL NO. OF BLADES:	AIR TEMPERATURE: ° RPM: "WG VELOCITY PRESSURE: FPM *MOTOR HP: *MAXIMUM APPLIED TORQUE: BLADE LOAD FACTOR:
DENSITY RATIO: INLET CORRECTION: "WG TOTAL PRESSURE: EFFICIENCY: FT.LBS.	
CAUTION: * MAXIMUM APPLIED TORQUE USING FACTOR OF NOMINAL TIMES (FACTORY SHOULD BE NOTIFIED IF MAX. APPLIED TORQUE OR MOTOR HP IS GREATER THAN THE VALUE SHOWN.)	
ADDITIONAL NOTES:	MARKS: P.O. NO. 1009803 1 - ITEM FA4818



- A = BLADE TIP THICKNESS @ 19° BLADE ANGLE
 B = RUNNING POSITION OF BLADES
 C = MAXIMUM BLADE TRAVEL
 D = MINIMUM OBSTACLE CLEARANCE AT INLET
 F = CENTERLINE OF FAN TO BASE OF BUSHING
 G = BUSHING OVERALL HEIGHT
 H = MINIMUM OBSTACLE CLEARANCE AT OUTLET
 I = NOMINAL MECHANICAL HUB DIAMETER
 L = MAX. BUSHING TORQUE FT. LBS.
 # = WITH S.A.E. STANDARD SQUARE KEYWAY
 * = WITH SHALLOW KEYWAY IN BUSHING
 ° = MAX METRIC BORE WITH STANDARD KEYWAY

WITH FAN OPERATING
 AT 12000 FT. : MINUTE
 BLADE TIP SPEED
 PERCENT BLADE
 LOADING

DIA	100%		75%		C	D	H	MAX BLADES	BUSHING TYPE	MAX # BORE	MAX ° BORE	MAX ° BORE	I	F	G	L
	A	B	A	B												
6'	4.6"	1.5"	1.3"	3.5"	2.0"	7.0"										
7'	4.2"	1.8"	1.5"	3.8"	2.0"	7.0"										
7.75'	3.8"	2.1"	1.8"	4.1"	2.0"	7.0"										
9'	3.4"	2.6"	2.1"	4.6"	2.0"	7.0"										
10'	3.0"	3.1"	2.4"	5.1"	2.0"	7.0"										
11'	2.6"	3.8"	3.1"	5.8"	2.0"	7.0"										
12'	2.2"	4.6"	3.6"	6.6"	2.0"	7.0"										



SERIES 36 FAN LEFT HAND ROTATION