

QUALITY CONTROL DATA BOOK

**Husky Energy
5964-3rd Ave.
Edson, AB
T7E 1T9**

**JOB#
2017-8840-01**

**Replacement Firetube
& End Plate**

**Location: Galloway, AB
LSD: 12-05-054-20 W5M**

Phase # : 2017-8840-01

Phase Title: Replacement Firetube & End Plate

TABLE OF CONTENTS

Title	Availability	
	Yes	No
1. Data Reports		N/A
2. CRN's		N/A
3. Nameplate Copy		N/A
4. Travel Sheet	X	
5. Impact Test Reports		N/A
6. Material Control		N/A
7. Material Reports		N/A
8. MTR's		N/A
9. NDE MPT	X	
LPT		N/A
RADIOGRAPHY	X	
ULTRA SONIC		N/A
10. Stress Relieve Charts	X	
11. Hydro Test Report(s)	X	
12. Hydro Chart		N/A
13. PSV & Valve Cert.		N/A

TRAVEL SHEET

Authorized Inspector (Signature) _____

Date _____

CUSTOMER / LOCATION		SERIAL NUMBER / UNIT		(A) NUMBER :			
HUSKY ENERGY		2017-8840-01		DRAWING NUMBER			
GALLOWAY, AB		LSD: 12-05-054-20 W5M		C-2017-8840-01-001/001			
ITEMS:		COMMENTS:		DATE FUNCTION IS COMPLETED AND INSPECTORS INITIALS			
REPLACEMENT FIRETUBE & END PLATE NPS 14 X 16'-6 1/8" LG				HOLD QC	CUSTOMER HOLD (AGENT)	HOLD A.I.	
Repair Procedure Approved							
Approved Drawings / CRN							
Material Checked / Heat Verified							
MTR Checked							
Impact Test							
Unit Layout							
Weld Procedure Approved		REVIEWED APR 17 2017					
Welder(s) Qualifications		REVIEWED MAY 01 2017					
Fit-Up: Shell & Heads							
Nozzles & Fittings							
Internals							
Externals		MAY 18 2017					
Connections: Location							
Rating							
Internal Inspection		MAY 17 2017					
Internals Installed							
Weld Profile, Sizes & ID		CHECKED MAY 18 2017					
Radiographs		RT 100% MAY 18 2017					
Other NDE		BEVELS / WFMT BEF & AFT PWHT MAY 18 2017					
Stamping		CHECKED MAY 18 2017					
External Upon Completion		CHECKED MAY 18 2017					
Other Test		HARDNESS TEST MAY 18 2017					
PWHT Charts Checked		1150°F FOR 1 HOUR MAY 05 2017					
Hydrostatic Test		15 PSIG GAGE# MAY 18 2017					
MDR							
Nameplate							
PART	MATERIAL SPEC	THICKNESS	HEAT NO.	PART	MATERIAL SPEC	THICKNESS	HEAT NO.
Heads				Repads			
Shell	SA53B ERW	0.375"					
				Tubes			
Tubesheet							

* INDICATES HOLD POINTS TO BE SIGNED OFF BY THE APPLICABLE INSPECTOR.

ALCO GAS & OIL

PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY ENERGY		DESCRIPTION: 14" REPLACEMENT FIRETUBE FOR 48" X 18' HEATER		ALCO JOB NUMBER: 2017-8840-01	
DATE: APRIL 25 2017		TECHNIQUE # USED: MPT P#1 REV 0		CODE: SECTION VIII DIV 1	
MATERIAL:		MAT'L THICKNESS: .375"		EDITION: 2015	
<input checked="" type="checkbox"/> PRE HEAT TREATMENT		<input type="checkbox"/> POST HEAT TREATMENT		<input type="checkbox"/> POST HYDRO TEST:	
TEST EQUIPMENT- Y6 YOKE 43530 TAG# 128		<input checked="" type="checkbox"/> BLACK LIGHT - 957536 TAG# 136		<input checked="" type="checkbox"/> B/L METER - DM-365X 1094460 TAG# 135	
BLACK ON WHITE CONTRAST - MAGNAFLUX		WCP BATCH #		7HF PREPARED BATH #	
<input type="checkbox"/> DRY	<input checked="" type="checkbox"/> WET	<input checked="" type="checkbox"/> FLOURESCENT	<input type="checkbox"/> RED	<input type="checkbox"/> GREY	<input type="checkbox"/> B/WHITE
<input checked="" type="checkbox"/> YOKE	<input type="checkbox"/> PROD	<input type="checkbox"/> COIL	<input checked="" type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input checked="" type="checkbox"/> CONTINUOUS
BASE METAL		<input checked="" type="checkbox"/> GROUND	<input type="checkbox"/> MACHINED	<input type="checkbox"/> PAINTED	<input type="checkbox"/> SHOT BLASTED
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		<input type="checkbox"/> AMBIENT	<input type="checkbox"/> TROUBLE LIGHT	<input type="checkbox"/> FLASHLITE	<input type="checkbox"/> W/L METER

NOTES: MAGNETIC PARTICLE EXAMINATION OF ALL BEVELLED EDGES.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

ALL BEVELLED EDGES - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN  LEVEL III ASNT: ☒ CGSB

TIME: 1 HOUR

 / HR.

TOTAL COST:

ALCO GAS & OIL

PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY ENERGY		DESCRIPTION: 14" REPLACEMENT FIRETUBE FOR 48" X 18' HEATER		ALCO JOB NUMBER: 2017-8840-01	
DATE: MAY 1 2017		TECHNIQUE # USED: MPT P#1 REV 0		CODE: SECTION VIII DIV 1	
MATERIAL:		MAT'L THICKNESS: .375"		EDITION: 2015	
<input checked="" type="checkbox"/> PRE HEAT TREATMENT		<input type="checkbox"/> POST HEAT TREATMENT		<input type="checkbox"/> POST HYDRO TEST:	
TEST EQUIPMENT- Y6 YOKE 43530 TAG# 128		<input checked="" type="checkbox"/> BLACK LIGHT - 957536 TAG# 136		<input checked="" type="checkbox"/> B/L METER - DM-365X 1094460 TAG# 135	
BLACK ON WHITE CONTRAST - MAGNAFLUX		WCP BATCH #		7HF PREPARED BATH #	
<input type="checkbox"/> DRY	<input checked="" type="checkbox"/> WET	<input checked="" type="checkbox"/> FLOURESCENT	<input type="checkbox"/> RED	<input type="checkbox"/> GREY	<input type="checkbox"/> B/WHITE
<input checked="" type="checkbox"/> YOKE	<input type="checkbox"/> PROD	<input type="checkbox"/> COIL	<input checked="" type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input checked="" type="checkbox"/> CONTINUOUS
BASE METAL		<input checked="" type="checkbox"/> GROUND	<input type="checkbox"/> MACHINED	<input type="checkbox"/> PAINTED	<input type="checkbox"/> SHOT BLASTED
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		<input type="checkbox"/> AMBIENT	<input type="checkbox"/> TROUBLE LIGHT	<input type="checkbox"/> FLASHLITE	<input type="checkbox"/> W/L METER
		<input type="checkbox"/> RESIDUAL	<input type="checkbox"/> CENTRAL COND.		

NOTES: MAGNETIC PARTICLE EXAMINATION OF ALL WELDS PRIOR TO PWHT.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

ALL WELDS PRIOR TO PWHT - ACCEPTED

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN  LEVEL III ASNT: ☒ CGSB

TIME: 1 HOUR

 / HR.

TOTAL COST:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

NDT REPORT - MPI

CUSTOMER: HUSKY ENERGY		DESCRIPTION: 14" REPLACEMENT FIRETUBE FOR 48" X 18' HEATER		ALCO JOB NUMBER: 2017-8840-01	
DATE: MAY 18 2017		TECHNIQUE # USED: MPT P#1 REV 0		CODE: SECTION VIII DIV 1 EDITION: 2015	
MATERIAL:		MAT'L THICKNESS: .375"		ACCEPTANCE: APPENDIX 6	
<input type="checkbox"/> PRE HEAT TREATMENT		<input checked="" type="checkbox"/> POST HEAT TREATMENT		<input checked="" type="checkbox"/> POST HYDRO TEST:	
TEST EQUIPMENT- Y6 YOKE 43530 TAG# 128		<input checked="" type="checkbox"/> BLACK LIGHT - 957536 TAG# 136		<input checked="" type="checkbox"/> B/L METER - DM-365X 1094460 TAG# 135	
BLACK ON WHITE CONTRAST - MAGNAFLUX		WCP BATCH #		7HF PREPARED BATH #	
<input type="checkbox"/> DRY	<input checked="" type="checkbox"/> WET	<input checked="" type="checkbox"/> FLOURESCENT	<input type="checkbox"/> RED	<input type="checkbox"/> GREY	<input type="checkbox"/> B/WHITE
<input checked="" type="checkbox"/> YOKE	<input type="checkbox"/> PROD	<input type="checkbox"/> COIL	<input checked="" type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input checked="" type="checkbox"/> CONTINUOUS
BASE METAL		<input checked="" type="checkbox"/> GROUND	<input type="checkbox"/> MACHINED	<input type="checkbox"/> PAINTED	<input type="checkbox"/> SHOT BLASTED
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		<input type="checkbox"/> AMBIENT	<input type="checkbox"/> TROUBLE LIGHT	<input type="checkbox"/> FLASHLITE	<input type="checkbox"/> W/L METER

NOTES: MAGNETIC PARTICLE EXAMINATION OF ALL WELDS AFTER PWHT.

NO RELEVANT INDICATIONS WERE FOUND AT TIME OF EXAMINATION.

ALL WELDS AFTER HYDROTEST AND PWHT - ACCEPTED

SKETCH:

COSTING

PAGE: 1 OF 1 INSPECTOR: BARRY RASMUSSEN  LEVEL III ASNT: ☒ CGSB

TIME: 1 HOUR

/ HR.

TOTAL COST: _____

GAS & OIL

RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER: HUSKY ENERGY	DESCRIPTION: 14" FIRETUBE FOR 48" X 18' HEATER	ALCO JOB NUMBER: 2017-8840-01
DATE: APRIL 26 2017	TECHNIQUE # USED: RT P#1 REV # 0	CODE: B31.3
MATERIAL: P1	MAT'L THICKNESS: 3/8"	EDITION: 2014 ACCEPTANCE: 100% NORMAL

1 NO. OF FILMS PER CASSETTE						
LEGEND:						
* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input checked="" type="checkbox"/>	SINGLE WALL EXPOSURE	
IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input type="checkbox"/>	DOUBLE WALL EXPOSURE	
BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING	
IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING	

[illegible]

COSTING

SOURCE TYPE:	IR 192			HRS.
STRENGTH:	50 Ci			8" FILM
SOD:	6.625"		4	17" FILM
OFD:	.375"			PIPE
FILM TYPE:	AGFA D4 CLASS 1			PIPE
FOCAL SPOT SIZE:	113"			PIPE
				PIPE

[illegible]

COMMENTS	TOTAL EXPOSURES	1	\$0.00
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TOTAL COSTS

PRODUCTION EQUIPMENT LTD.

CUSTOMER: HUSKY ENERGY	DESCRIPTION: 14" FIRETUBE FOR 48" X 18' HEATER	ALCO JOB NUMBER: 2017-8840-01
DATE: APRIL 27 2017	TECHNIQUE # USED: RT P#2 REV # 0	CODE: B31.3
MATERIAL: P1	MAT'L THICKNESS: 3/8"	EDITION: 2014 ACCEPTANCE: 100% NORMAL

1 NO. OF FILMS PER CASSETTE									
LEGEND:		* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input type="checkbox"/>	SINGLE WALL EXPOSURE		
		IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input checked="" type="checkbox"/>	DOUBLE WALL EXPOSURE		
		BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING		
		IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING		

[illegible]

COSTING

SOURCE TYPE:	IR 192			HRS.
STRENGTH:	50 Ci			8" FILM
SOD:	13.625"		4	17" FILM
OFD:	375"			PIPE
FILM TYPE:	AGFA D4 CLASS 1			PIPE
FOCAL SPOT SIZE:	.113"			PIPE
				PIPE

[illegible]

COMMENTS	TOTAL EXPOSURES:	4	\$0.00
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TOTAL COSTS

ALCO 

GAS & OIL

RADIOGRAPHY REPORT

PRODUCTION EQUIPMENT LTD.

CUSTOMER:
HUSKY ENERGY

DESCRIPTION:	14" FIRETUBE FOR 48" X 18' HEATER
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ALCO JOB NUMBER:
2017-8840-01

DATE:
APRIL 25 2017

TECHNIQUE # USED: RT P#1 REV # 0

CODE:
B31.3

MATERIAL:
P1

MAT'L THICKNESS:	3/8"
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EDITION: 2014

ACCEPTANCE: 100% NORMAL

1	NO. OF FILMS PER CASSETTE
LEGEND:	<ul style="list-style-type: none"> * - WELDER SYMBOL IP - INCOMPLETE PENETRATION BT - BURN THROUGH IC - INTERNAL CONCAVITY

HL - HI LO

S - SLAG

CRACK

☒

SINGLE WALL EXPOSURE

IP - INCOMPLETE PENETRATION

LC - LOW COVER

P - POROSITY

(1) SLIGHT

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DOUBLE WALL EXPOSURE

BT - BURN THROUGH

UC - UNDER CUT

1 - ICICLE

(2) MEDIUM

☒

SINGLE WALL VIEWING

IC - INTERNAL CONCAVITY

AS - ARC STRIKE

C - CRATER

(3) SEVERE

1

DOUBLE WALL VIEWING

[illegible]

COSTING

SOURCE TYPE:	IR 192		HRS.
STRENGTH:	50 Ci		8" FILM
SOD:	6.625"	8	17" FILM
OFD:	.375"		PIPE
FILM TYPE:	AGFA D4 CLASS 1		PIPE
FOCAL SPOT SIZE:	.113"		PIPE
			PIPE

[illegible]

COMMENTS	TOTAL EXPOSURES:	2	\$0.00
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TOTAL COSTS

PRODUCTION EQUIPMENT LTD.

CUSTOMER: HUSKY ENERGY	DESCRIPTION: 14" FIRETUBE FOR 48" X 18' HEATER	ALCO JOB NUMBER: 2017-8840-01
DATE: MAY 17 2017	TECHNIQUE # USED: RT P#1 REV # 0	CODE: B31.3
MATERIAL: P1	MAT'L THICKNESS: 3/8"	EDITION: 2014 ACCEPTANCE: 100% NORMAL

1 NO. OF FILMS PER CASSETTE						
LEGEND:	* - WELDER SYMBOL	HL - HI LO	S - SLAG	CRACK	<input checked="" type="checkbox"/>	SINGLE WALL EXPOSURE
	IP - INCOMPLETE PENETRATION	LC - LOW COVER	P - POROSITY	(1) SLIGHT	<input type="checkbox"/>	DOUBLE WALL EXPOSURE
	BT - BURN THROUGH	UC - UNDER CUT	I - ICICLE	(2) MEDIUM	<input checked="" type="checkbox"/>	SINGLE WALL VIEWING
	IC - INTERNAL CONCAVITY	AS - ARC STRIKE	C - CRATER	(3) SEVERE	<input type="checkbox"/>	DOUBLE WALL VIEWING

[illegible]

COSTING

SOURCE TYPE:	IR 192			HRS.
STRENGTH:	40 Ci			8" FILM
SOD:	13.625"		8	17" FILM
OFD:	375"			PIPE
FILM TYPE:	AGFA D4 CLASS 1			PIPE
FOCAL SPOT SIZE:	113"			PIPE

[illegible]

COMMENTS	TOTAL EXPOSURES:	2	\$0.00
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TOTAL COSTS

NDT REPORT - BHN

CUSTOMER: HUSKY ENERGY		DESCRIPTION: 14"OD REPLACEMENT FIRETUBE FOR 48" HEATER		ALCO JOB NUMBER: 2017-8840-01	
DATE: MAY 5 2017		TECHNIQUE # USED: TIME TH 130 USED BH SCALE		CODE: SECTION VIII DIV 1 EDITION: 2015	
MATERIAL: P1		MAT'L THICKNESS: .375"		ACCEPTANCE: UW-51	
<input type="checkbox"/> PRE HEAT TREATMENT		<input checked="" type="checkbox"/> POST HEAT TREATMENT		<input type="checkbox"/> POST HYDRO TEST:	
TEST EQUIPMENT- TIME TH 130 BH SCALE		BLACK LIGHT -		B/L METER -	
BLACK ON WHITE CONTRAST - MAGNAFLUX		WCP BATCH #		7HF PREPARED BATH #	
<input type="checkbox"/> DRY	<input type="checkbox"/> WET	<input type="checkbox"/> FLOURESCENT	<input type="checkbox"/> RED	<input type="checkbox"/> GREY	<input type="checkbox"/> B/WHITE
<input type="checkbox"/> Yoke	<input type="checkbox"/> PROD	<input type="checkbox"/> COIL	<input type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input type="checkbox"/> CONTINUOUS
BASE METAL		<input type="checkbox"/> GROUND	<input type="checkbox"/> MACHINED	<input type="checkbox"/> PAINTED	<input type="checkbox"/> SHOT BLASTED
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		<input type="checkbox"/> SHOP LIGHTS	<input type="checkbox"/> TROUBLE LIGHT	<input type="checkbox"/> FLASHLITE	<input type="checkbox"/> W/L METER

NOTES: BRINELL HARDNESS READINGS WERE TAKEN ON BASE MATERIAL, WELD, AND HEAT AFFECTED ZONE AFTER PWHT.

C1	C2	C3	C4	TS FILLET WELD	TS FILLET WELD
BASE 127	BASE 136	BASE 133	BASE 134	BASE 130	BASE 129
WELD 133	WELD 139	WELD 141	WELD 138	WELD 154	WELD 176
HAZ 150	HAZ 170	HAZ 176	HAZ 167		

SKETCH:

COSTING

PAGE 1 OF 1 INSPECTOR: BARRY RASMUSSEN  LEVEL III SNT II CGSB 235

TIME: 1 HOUR

 / HR.

TOTAL COST:

ALCO GAS & OIL PRODUCTION EQUIPMENT LTD.

NDT REPORT - BHN

CUSTOMER: HUSKY ENERGY		DESCRIPTION: 14"OD REPLACEMENT FIRETUBE FOR 48" HEATER		ALCO JOB NUMBER: 2017-8840-01	
DATE: MAY 18 2017		TECHNIQUE # USED: TIME TH 130 USED BH SCALE		CODE: SECTION VIII DIV 1 EDITION: 2015	
MATERIAL: P1		MAT'L THICKNESS: .375"		ACCEPTANCE: UW-51	
<input type="checkbox"/> PRE HEAT TREATMENT		<input checked="" type="checkbox"/> POST HEAT TREATMENT		<input checked="" type="checkbox"/> POST HYDRO TEST:	
TEST EQUIPMENT- TIME TH 130 BH SCALE		BLACK LIGHT -		B/L METER -	
BLACK ON WHITE CONTRAST - MAGNAFLUX		WCP BATCH #		7HF PREPARED BATH #	
<input type="checkbox"/> DRY	<input type="checkbox"/> WET	<input type="checkbox"/> FLOURESCENT	<input type="checkbox"/> RED	<input type="checkbox"/> GREY	<input type="checkbox"/> B/WHITE
<input type="checkbox"/> YOKE	<input type="checkbox"/> PROD	<input type="checkbox"/> COIL	<input type="checkbox"/> A/C	<input type="checkbox"/> D/C	<input type="checkbox"/> CONTINUOUS
BASE METAL		<input type="checkbox"/> GROUND	<input type="checkbox"/> MACHINED	<input type="checkbox"/> PAINTED	<input type="checkbox"/> SHOT BLASTED
VIEWING LIGHT SOURCE IN EXC ESS OF 100FC.		<input type="checkbox"/> SHOP LIGHTS	<input type="checkbox"/> TROUBLE LIGHT	<input type="checkbox"/> FLASHLITE	<input type="checkbox"/> W/L METER

NOTES: BRINELL HARDNESS READINGS WERE TAKEN ON BASE MATERIAL, WELD, AND HEAT AFFECTED ZONE AFTER PWHT.

C5	C6
BASE 148	BASE 149
WELD 156	WELD 148
HAZ 159	HAZ 155

SKETCH:

COSTING

PAGE: 1 OF 1 INSPECTOR: BARRY RASMUSSEN  LEVEL III SNT II CGSB 235

TIME: 1 HOUR

 / HR.

TOTAL COST:

ALCO GAS & OIL

PRODUCTION EQUIPMENT LTD.

CONTRACTED OUT TO: BRIMSTONE

DATE MAY 4TH 2017

5203-75 Street, Edmonton, Alberta, Canada T6E 5S5 * Phone: (780) 465-9061 * Fax: (780) 466-8110

POST WELD HEAT TREATMENT INSTRUCTIONS

#	JOB NUMBER	HEAD	SHELL	NOM. DIA.	LENGTH	ITEM DESCRIPTION	WEIGHT IN LBS.	QC APPR.
→ 1	2017-8840-01	PIPE	.375"	14"OD	16'-12"	REPLACEMENT FIRETUBE	2,490	✓
1	2016-8801-21	.337"	.337"	4"	3'-6"	VERTICAL LEVEL BRIDLE	95	✓
1	2016-8801- 22	.237"	.237"	4"	4'-0"	VERTICAL LEVEL BRIDLE	65	✓
3	TOTAL NUMBER						TOTAL WEIGHT IN LBS.	2,650

TEMPERATURE: TO BE RAISED FROM 800°F TO 1150°F, ± 25°F AT A MAXIMUM RATE OF 400 °F BUT IN NO CASE MORE THAN 400°F/HR., DIVIDED BY THE MAXIMUM METAL THICKNESS WHEN GREATER THAN ONE INCH THICK.

TEMPERATURE: BE HELD AT 1150°F, ± 25°F FOR 60 MINUTES.

TEMPERATURE: TO BE LOWERED FROM 1150°F, ± 25°F AT A MAXIMUM RATE OF 500 °F, BUT IN NO CASE MORE THAN 500°F/HR. DIVIDED BY THE MAXIMUM THICKNESS OF THE MATERIAL, WHEN THE MATERIAL THICKNESS EXCEEDS 1 INCH.

THERMOCOUPLE ATTACHMENTS: THERMOCOUPLES ARE REQUIRED AT THE TOP, MIDDLE AND BOTTOM. SEE ATTACHED DRAWINGS FOR - SPECIFIC LOCATIONS OF THERMOCOUPLE ATTACHMENTS (WHEN APPLICABLE).

NOTE: ALL THERMOCOUPLES ARE TO BE ATTACHED BY FLASH WELDING ONLY.
ENSURE THAT ALL ALCO JOB NUMBERS ARE IDENTIFIED ON ALL HEAT CHARTS.
POST WELD HEAT TREATMENT IS TO BE DONE AS PER ASME CODE, SECTION VIII-1, Para. UCS-56.

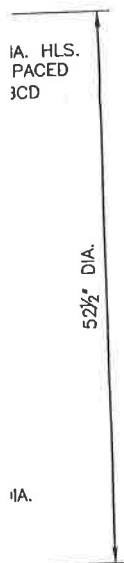
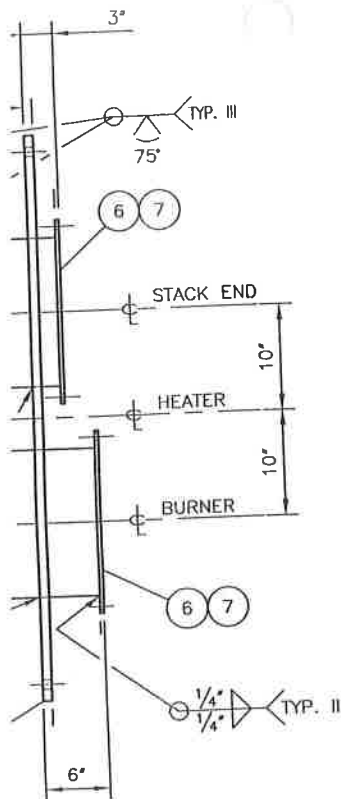
THE VESSEL AND PARTS THEREOF SHALL BE PROPERLY SUPPORTED AND PROTECTED FROM DIRECT FLAME IMPINGEMENT.
ALL GASKET SURFACES AND THREADED CONNECTIONS SHALL BE COATED WITH A SUITABLE PROTECTIVE MATERIAL.

ALCO ORDER NO. 146504 LOAD NO. MAY#1/2017

COPIES OF HEAT CHART REQUIRED BY ALCO QC DEPARTMENT 1


AUTHORIZED BY: 

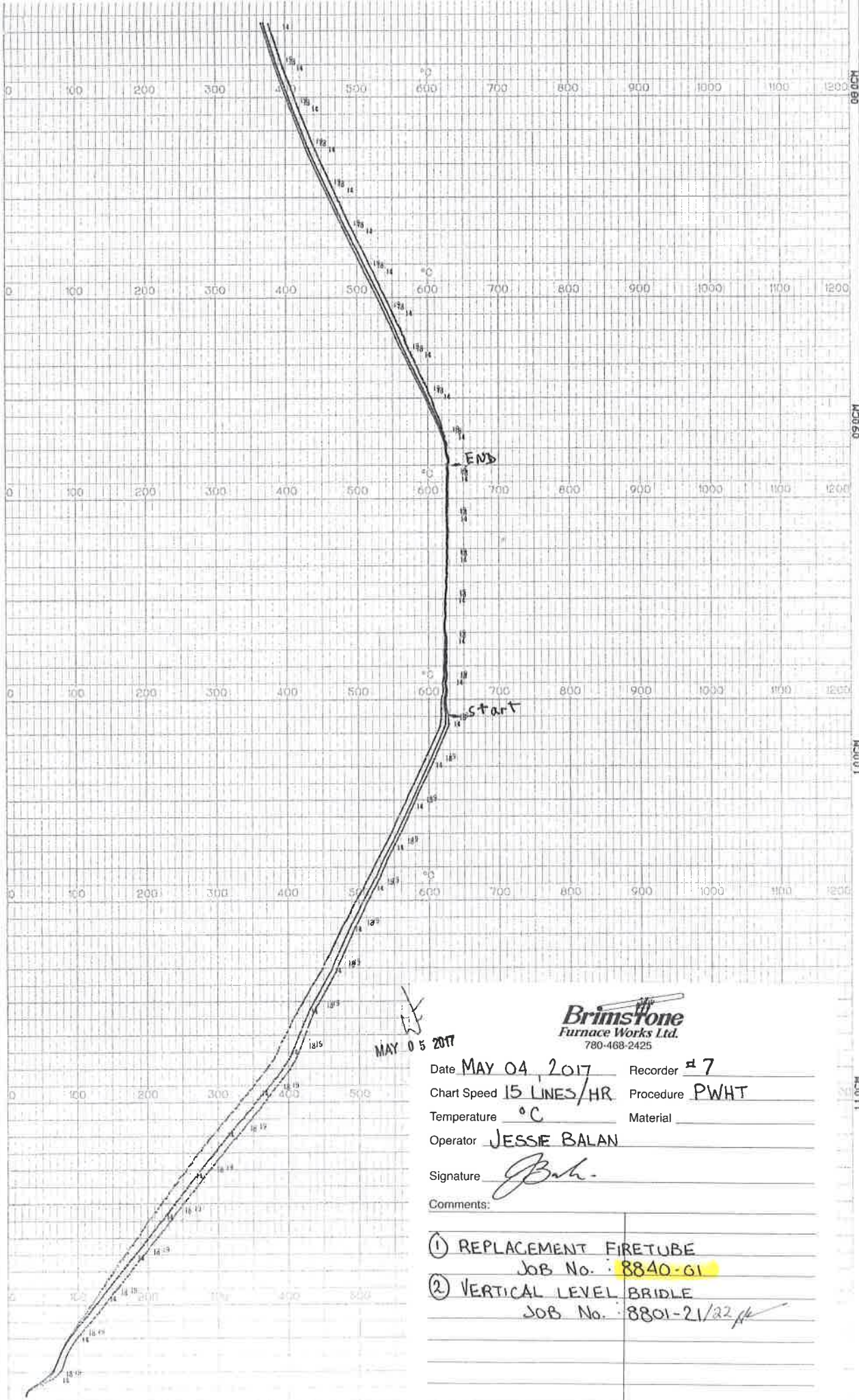
Bahr.



NOZZLES & COUPLINGS	PLATE FLANGES	CA-PIGIG2-SR-LT-R3	MC1-PIGIG2-SR-LT-R3
V AA-PIGIG2-SR-LT-R1 MC1-PIGIG2-SR-LT-R0	VI CA-PIGIG2-SR-LT-R3	VII FT-PIGIG2-AW TUBING JOINTS	VIII CAB-PIGIG2-SR-R3 MC1-PIGIG2-SR-LT-R0 COIL CIRCS.
MISCELLANEOUS WELD DETAILS			

S P E C I F I C A T I O N S	
REBOILER SHELL: -	HEADS: -
SURGE TANK SHELL: -	HEADS: -
FIRETUBE: 0.375" SA-53-B	HEATING SURFACE: 128 sq. ft.
STILL COLUMN: -	STACK: -
COIL HEATING AREA: -	
TUBING: -	
MISC. PLATE & SUPPORTS: SA-36	
WORKING PRESSURE: 14.9 PSIG	
TESTING: SEE NOTES	HYDROTEST COILS: -
CAPACITY: (REBOILER) -	
(SURGE) -	
EST. SHIPPING WEIGHT: 2490 Lbs.	
SURFACE PREPARATION: WHITE METAL BLAST SSPC-SP5	
PAIN: PRIMER: 1-1.5 mils DFT CLOVERDALE #83203 HI-HEAT SILICONE ALUMINUM.	
FINISH: NONE	
INSULATION: NONE	
NOTE: ALL BOLT HOLES TO BE EQUALLY SPACED STRADDLING NATURAL CL'S	
N O T E S	
1. 100% RADIOGRAPHY ON ALL CIRCUMFERENTIAL WELDS.	
2. PWHT 1150 ± 25°F 1 HOUR.	
3. HARDNESS TESTING, EACH WELD TO BE TESTED AS FOLLOWS:	
- (1) IN THE CENTER OF THE WELD	
- (1) ON EITHER SIDE OF HAZ	
- (1) ON EITHER SIDE OF PARENT MATERIAL	
4. ALL WELDS 100% WET FLOURESCENT MPI BEFORE & AFTER PWHT.	
5. ALL BEVELLED EDGES 100% WET FLOURESCENT MPI.	
6. INTERNAL HYDROTEST @ 15 PSIG FOR 1 HR.	
7. B-PRESSURE WELDER REQUIRED FOR ALL WELDS.	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <h1 style="margin: 0;">1 PIECE</h1> <p>ONE (1) UNIT REQUIRED</p> </div> <div style="text-align: right;"> <p>QUALITY CONTROL</p> <p>COPY FOR CONSTRUCTION</p> <p>DATE: APR 21 2017</p> </div> </div>	

			DRAWN	PGD	<div><div>ALCO</div><div></div><div>GAS & OIL</div><div>PRODUCTION EQUIPMENT LTD.</div><div><small>*GP of the ALCO GAS & OIL PRODUCTION EQUIPMENT LIMITED PARTNERSHIP.</small></div></div> <div><small>The information contained herein is the confidential property of Alco Gas and Oil Production Equipment Ltd., and is not for publication. The information is issued on the understanding that no part thereof shall be copied or communicated to a third party without authorization in writing from Alco Gas and Oil Production Equipment Ltd.</small></div>
			DATE	2017-04-19	
			SCALE	1' = 1'-0"	
			CHK'D	<i>RKL</i>	
			<div>14" O.D. REPLACEMENT FIRETUBE & END PLATE FOR 48" O.D. x 18'-0" LG. INDIRECT FIRED HEATER (BUILT UNDER SO #2001-6729-02)</div>		
			LOCATION: GALLOWAY, AB		
			CUSTOMER: HUSKY ENERGY		
			DWG/SHOP ORDER: C-2017-8840-01-001/001		
			REV. 0		



MAY 05 2017

Brimstone
Furnace Works Ltd.
780-468-2425

Date MAY 04, 2017 Recorder #7
Chart Speed 15 LINES/HR Procedure PWHT
Temperature °C Material _____
Operator JESSIE BALAN
Signature *J. Balan*
Comments: _____

- ① REPLACEMENT FIRETUBE
Job No. : 8840-G1
- ② VERTICAL LEVEL BRIDLE
Job No. : 8801-21/22



5203-75 Street,
Edmonton, Alberta, Canada T6E 5S5

CERTIFICATE OF PRESSURE TEST

SERIAL NUMBER: 2017-8840-01

DESCRIPTION: REPLACEMENT FIRETUBE

NAME OF AUTHORIZED INSPECTION AGENCY: N/A

TYPE OF TEST: HYDROSTATIC ☒
PNEUMATIC ☐
HYDROSTATIC-PNEUMATIC ☐

TEST PRESSURE: 15 psig

POSITION OF THE UNIT TESTED HORIZONTAL ☒
VERTICAL ☐

TEST FLUID: Water **TEST TEMPERATURE** > 60 F

TEST PROCEDURE: ALCO QCP-71

PRESSURE TEST CHART RECORDED: YES ☐ NO ☒

**WE CERTIFY THAT THE UNIT BEARING THE ABOVE SERIAL NUMBER
WAS PRESSURE-TESTED FOR A PERIOD OF 1 HOUR(S) AND NO
LEAKS OR OTHER DEFECTS WERE FOUND.**



QC INSPECTOR/ ALCO GAS & OIL

5/18/2017

DATE

3RD PARTY INSPECTOR

DATE

AUTHORIZED INSPECTOR

DATE