

KOOTENAY INDUSTRIES LTD.
Quality Control Manual

Revision Number: 1.0

Revision Date: January 15, 2009

Section: 24 Page: 3 of 4

EXHIBIT 24.1 INDIRECT FIRED HEATER COIL TRAVEL SHEET

DO NOT START CONSTRUCTION WITHOUT AI REVIEW						TRAVEL SHEET REVISION NO.:			
AI REVIEW: Lauren Bedard Oct 18/12			REVIEW DATE: Oct. 16/12						
SERIAL NO.: 12-031 -CB JOB NO.: 12-031-033-CB			COIL TYPE: Coil Bundle						
DRAWING NO.: 12-031-B		DWG. REVISION NO.: 0		TRAVEL SHEET INITIATION BY: I.O.					
Seq.	Item	Comments	Q.C.I.	Date	A.I. Hold Points	A.I.	Date	Owner	Date
1.	Calculations in File		1.0.	16-10-12	*	MM	APR 15 2013		
2.	Release of App'd Dwg.		1.0.	16-10-12	*	LGB	Oct 18/12		
3.	Materials Examined		1.0.	02-11-12					
4.	Heat Numbers Recorded		1.0.	15-11-12	*	TD	MAR 19 2013		
5.	MTRs Checked		1.0.	02-11-12	*	MM	APR 15 2013		
6.	W.P.S. Checked		1.0.	16-10-12	*LGB	LGB	Oct 18/12		
7.	Welders Qualified		1.0.	16-10-12	*	MM	APR 15 2013		
8.	Thicknesses Verified and Recorded		1.0.	12-11-12	*	MM	APR 15 2013		
9.	Fit-up Examination(s) - Fit-up Acceptable		1.0.	12-11-12		TD	MAR 19 2013		
9.	Impact Tests	Exempt Per B31.3 para 225.2.2			N/A				
11.	Welds Examined		1.0.	15-11-12					
12.	Welder I.D. Checked		1.0.	15-11-12					
13.	Final External Inspection		1.0.	19-03-13	*	TD	MAR 19 2013		
14.	Radiography	100% (Normal)	1.0.	14-11-12	*	MM	APR 15 2013		
15.	Other N.D.E.	RIR							
16.	Final Ext. Prior to P.W.H.T.		1.0.	15-11-12	*				
17.	PWHT Chart Checked	60 min @ 1150°F	1.0.	19-11-12	*	MM	APR 15 2013		
18.	Hydrostatic Test	Coil No. 1 Gauge # 11 4945 PSI	1.0.	19-03-13	**	TD	MAR 19 2013		
		Coil No. 2 Gauge # 26 4945 PSI	1.0.	19-03-13	**	TD	MAR 19 2013		
19.	CRN Drawing	CRN# W0429.2	1.0.	24-01-13	*	MM	APR 15 2013		
20.	N.C.R. #								
21.	Nameplate Stamping		1.0.	12-04-13	*	MM	APR 15 2013		
22.	Data Report (AB-28) completed		1.0.	12-04-13	*	MM	APR 15 2013		
23.	Nameplate Installation								

The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

* Denotes an A.I. Inspection Point ** Denotes an A.I. Hold Point

KOOTENAY INDUSTRIES LTD.
Quality Control Manual

Revision Number: 1.0

Revision Date: January 15, 2009

Section: 24 Page: 3 of 4

EXHIBIT 24.1 INDIRECT FIRED HEATER COIL TRAVEL SHEET

DO NOT START CONSTRUCTION WITHOUT AI REVIEW						TRAVEL SHEET REVISION NO.:			
AI REVIEW: Lauren Bodard Oct 18/12						REVIEW DATE: Oct. 16/12			
SERIAL NO.: 12-032-CB JOB NO.: 12-031-033-CB COIL TYPE: Coil Bundle									
DRAWING NO.: 12-031-B DWG. REVISION NO.: 0						TRAVEL SHEET INITIATION BY: I.O.			
Seq.	Item	Comments	Q.C.I.	Date	A.I. Hold Points	A.I.	Date	Owner	Date
1.	Calculations in File		I.O.	16-10-12	*	MA	APR 15 2013		
2.	Release of App'd Dwg.		I.O.	16-10-12	*	LG-B	Oct 18/12		
3.	Materials Examined		I.O.	02-11-12					
4.	Heat Numbers Recorded		J.K.	23-11-12	*	TD	MAR 15 2013		
5.	MTRs Checked		I.O.	02-11-12	*	MA	APR 15 2013		
6.	W.P.S. Checked		I.O.	16-10-12	*	LG-B	Oct 18/12		
7.	Welders Qualified		I.O.	16-10-12	*	MA	APR 15 2013		
8.	Thicknesses Verified and Recorded		I.O.	23-11-12	*	MA	APR 15 2013		
9.	Fit-up Examination(s) - Fit-up Acceptable		I.O.	23-11-12		TD	MAR 15 2013		
9.	Impact Tests	Exempt per B31.3 para 323.2.2			N/A				
11.	Welds Examined		J.K.	23-11-12					
12.	Welder I.D. Checked		J.K.	23-11-12					
13.	Final External Inspection		I.O.	15-03-13	*	TD	MAR 15 2013		
14.	Radiography	100% (Normal)	I.O.	22-11-12	*	MA	APR 15 2013		
15.	Other N.D.E.	RIR							
16.	Final Ext. Prior to P.W.H.T.		J.K.	23-11-12					
17.	PWHT Chart Checked	60min @ 1150°F	I.O.	28-11-12	*	MA	APR 15 2013		
18.	Hydrostatic Test	Coil No. 1 Gauge # 11	I.O.	15-03-13	**	TD	MAR 15 2013		
		Coil No. 2 Gauge # 26	I.O.	15-03-13	**	TD	MAR 15 2013		
19.	CRN Drawing	CRN# W0429.2	I.O.	24-01-13	*	MA	APR 15 2013		
20.	N.C.R. #								
21.	Nameplate Stamping		I.O.	12-04-13	*	MA	APR 15 2013		
22.	Data Report (AB-28) completed		I.O.	12-04-13	*	MA	APR 15 2013		
23.	Nameplate Installation								

The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

* Denotes an A.I. Inspection Point ** Denotes an A.I. Hold Point

KOOTENAY INDUSTRIES LTD.
Quality Control Manual

Revision Number: 1.0

Revision Date: January 15, 2009

Section: 24 Page: 3 of 4

EXHIBIT 24.1 INDIRECT FIRED HEATER COIL TRAVEL SHEET

DO NOT START CONSTRUCTION WITHOUT AI REVIEW						TRAVEL SHEET REVISION NO.:			
AI REVIEW: Lauren Barclay		Oct 18/12		REVIEW DATE: Oct. 16/12					
SERIAL NO.: 12-033-CB		JOB NO.: 12-031-033-CB		COIL TYPE: Coil Bundle					
DRAWING NO.: 12-031-B		DWG. REVISION NO.: 0		TRAVEL SHEET INITIATION BY: J.O.					
Seq.	Item	Comments	Q.C.I.	Date	A.I. Hold Points	A.I.	Date	Owner	Date
1.	Calculations in File		1.0.	16-10-12	*	MA	APR 15 2013		
2.	Release of App'd Dwg.		1.0.	16-10-12	*	LGB	Oct 18/12		
3.	Materials Examined		1.0.	02-11-12					
4.	Heat Numbers Recorded		1.0.	03-01-13	*	MA	APR 08 2013		
5.	MTRs Checked		1.0.	02-11-12	*	MA	APR 15 2013		
6.	W.P.S. Checked		1.0.	16-10-12	*	LGB	Oct 18/12		
7.	Welders Qualified		1.0.	16-10-12	*	MA	APR 15 2013		
8.	Thickesses Verified and Recorded		1.0.	21-12-12	*	MA	APR 15 2013		
9.	Fit-up Examination(s) - Fit-up Acceptable		1.0.	21-12-12	*	MA	APR 08 2013		
9.	Impact Tests	Exempt per B31.3 para 323.2.2			N/A				
11.	Welds Examined		1.0.	04-01-13					
12.	Welder I.D. Checked		1.0.	04-01-13					
13.	Final External Inspection		1.0.	08-04-13	*	MA	APR 08 2013		
14.	Radiography	100% (Normal)	1.0.	04-01-13	*	MA	APR 15 2013		
15.	Other N.D.E.	RIR							
16.	Final Ext. Prior to P.W.H.T.		1.0.	08-01-13					
17.	PWHT Chart Checked	60min @ 1150°F	1.0.	07-01-13	*	MA	APR 15 2013		
18.	Hydrostatic Test	Coil No. 1 Gauge # 11	1.0.	08-04-13	*	MA	APR 08 2013		
		Coil No. 2 Gauge # 26	1.0.	08-04-13	*	MA	APR 08 2013		
19.	CRN Drawing	CRN# W0429.2	1.0.	04-01-13	*	MA	APR 15 2013		
20.	N.C.R. #								
21.	Nameplate Stamping		1.0.	12-04-13	*	MA	APR 15 2013		
22.	Data Report (AB-28) completed		1.0.	12-04-13	*	MA	APR 15 2013		
23.	Nameplate Installation								

The Authorized Inspector shall be presented with the Travel Sheet prior to construction so that he can designate additional inspection points and/or Hold Points. Any revisions shall be marked with a delta symbol with revision number and described at the bottom of this page.

* Denotes an A.I. Inspection Point ** Denotes an A.I. Hold Point



MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL A# 627366
 Manufactured By: Koolenay Industries Ltd. 5982-86 Ave. S.E. Calgary, AB T2C 4L7
 Manufactured For: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Ultimate Owner: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Location of Installation: Stock, 5982-86 Ave. S.E. Calgary, AB

Manufacturer's Serial No.	Construction Drawing No.	CODE: ASME B31.3			Year Built
		Edition	2010	Addenda	
12-031-CB	12-031-B REV.0				2013

CONSTRUCTION

Coil ID/Purpose	Design Pressure	Design Temp	Design Minimum Temp	Corrosion Allowance	Registered Drawing No.	CRN
a PRE-HEAT COIL (COIL 1)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
b RE-HEAT COIL (COIL 2)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
c						
d						
e						

COIL

	Tubes			End Closures			Openings			
	Mat'l Spec.	Diameter	Thickness	Return Bend		Flanges		Mat'l Spec.	Size/Type	Rating
				Mat'l Spec.	Thickness	Mat'l Spec.	Rating			
a	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
b	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
c										
d										
e										

HEADERS/MANIFOLDS

	Purpose	Size	Shell		Ends			Openings		
			Mat'l Spec.	Thickness	Mat'l Spec.	Thickness	No	Mat'l Spec.	Size/Type	Rating
f										
g										

TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

	Hydrostatic Test Pressure	Radiography (100% or % Random)	Other NDE (MT) (PT) (UT)	Postweld Heat Treatment		Overall Length	Heating Surface	Volume
				Temp.	Time			
a	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Min.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
b	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Min.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
c								
d								
e								
f								
g								

IMPACT TESTING: EXEMPT AS PER B31.3 PARA. 323.2.2

REMARKS: (SOUR SERVICE)

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 12/13 Signed Lucy Old For Koolenay Industries Ltd.
 (Representative) (Manufacturer)

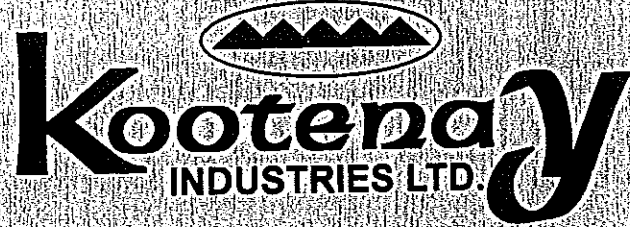
CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date APR 15 2013 Signed Nilanjan Nag

W
RT-100%
HT

CERTIFIED BY



Serial No. 12-031-CB Date MFG'S 2013

Coil Size No. 1 4" Sch. XXH CRN. No. W0429.2

Coil Size No. 2 4" Sch. XXH CRN. No. W0429.2

Coil Size No. 3 _____ Sch. _____ CRN. No. _____

Coil Size No. 4 _____ Sch. _____ CRN. No. _____

Coil MWP PSI No. 1 5020 No. 2 5020 No. 3 _____
No. 4 _____ at 29/93 °C

Coil Test No. 1 7975 No. 2 7975

Pressure PSI No. 3 _____ No. 4 _____

PROV. REG  627366

5982 - 86 AVE. S.E. CALGARY, CANADA

Job # 12-031



MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL A# 627367
 Manufactured By: Kootenay Industries Ltd. 5982-86 Ave. S.E. Calgary, AB T2C 4L7
 Manufactured For: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Ultimate Owner: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Location of Installation: Stock, 5982-86 Ave. S.E. Calgary, AB

Manufacturer's Serial No.	Construction Drawing No.	CODE: ASME B31.3		Year Built
		Edition	Addenda	
12-032-CB	12-031-B REV.0	2010		2013

CONSTRUCTION

Coil ID/Purpose	Design Pressure	Design Temp	Design Minimum Temp	Corrosion Allowance	Registered Drawing No.	CRN
a PRE-HEAT COIL (COIL 1)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
b RE-HEAT COIL (COIL 2)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
c						
d						
e						

COIL

	Tubes			End Closures			Openings			
	Mat'l Spec.	Diameter	Thickness	Return Bend		Flanges		Mat'l Spec.	Size/Type	Rating
				Mat'l Spec.	Thickness	Mat'l Spec.	Rating			
a	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
b	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
c										
d										
e										

HEADERS/MANIFOLDS

	Purpose	Size	Shell		Ends			Openings		
			Mat'l Spec.	Thickness	Mat'l Spec.	Thickness	No	Mat'l Spec	Size/Type	Rating
f										
g										

TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

	Hydrostatic Test Pressure	Radiography (100% or % Random)	Other NDE (MT) (PT) (UT)	Postweld Heat Treatment		Overall Length	Heating Surface	Volume
				Temp.	Time			
a	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Mn.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
b	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Mn.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
c								
d								
e								
f								
g								

IMPACT TESTING: EXEMPT AS PER B31.3 PARA. 323.2.2

REMARKS: (SOUR SERVICE)

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 12/13 Signed *Nancy Osh* For Kootenay Industries Ltd.
 (Representative) (Manufacturer)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date APR 15 2013 Signed *Nilanjan Nag*

CERTIFIED BY



Kootenay
INDUSTRIES LTD.

W
RT-100%
HT

Serial No. 12-032-CB Date MFG'S 2013

Coil Size No. 1 4" Sch. XXH CRN. No. W0429.21

Coil Size No. 2 4" Sch. XXH CRN. No. W0429.21

Coil Size No. 3 _____ Sch. _____ CRN. No. _____

Coil Size No. 4 _____ Sch. _____ CRN. No. _____

Coil MWP PSI No. 1 5020 No. 2 5020 No. 3 _____

No. 4 _____ at -29/93 °C

Coil Test No. 1 7975 No. 2 7975

Pressure PSI No. 3 _____ No. 4 _____

Ⓐ 627367

PROV. REG

5982 - 86 AVE. S.E. CALGARY, CANADA

Job # 12-032



MANUFACTURER'S DATA REPORT FOR INDIRECT FIRED HEATER COILS

AB-28 2011-08

PARTIAL A# 627368
 Manufactured By: Kootenay Industries Ltd. 5982-86 Ave. S.E. Calgary, AB T2C 4L7
 Manufactured For: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Ultimate Owner: Sinopec Daylight Energy Ltd. 2700, 112-4 Ave. S.W. Calgary, AB T2P 0H3 Account# 028185
 Location of Installation: Stock, 5982-86 Ave. S.E. Calgary, AB

Manufacturer's Serial No.	Construction Drawing No.	CODE: ASME B31.3			Year Built
12-033-CB	12-031-B REV.0	Edition	2010	Addenda	2013

CONSTRUCTION

Coil ID/Purpose	Design Pressure	Design Temp	Design Minimum Temp	Corrosion Allowance	Registered Drawing No.	CRN
a PRE-HEAT COIL (COIL 1)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
b RE-HEAT COIL (COIL 2)	5020 PSIG	200°F	-20°F	0.076"	12-031-B REV.0	W0429.2
c						
d						
e						

COIL

	Tubes			End Closures			Openings			
	Mat'l Spec.	Diameter	Thickness	Return Bend Mat'l Spec.	Thickness	Flanges Mat'l Spec.	Rating	Mat'l Spec.	Size/Type	Rating
a	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
b	SA-333-6	4"	0.674"	SA-420-WPL6	0.674"	SA-350-LF2 CL.1	CL2500			
c										
d										
e										

HEADERS/MANIFOLDS

	Purpose	Size	Shell		Ends			Openings		
			Mat'l Spec.	Thickness	Mat'l Spec.	Thickness	No	Mat'l Spec.	Size/Type	Rating
f										
g										

TEST PRESSURE, NDE, POSTWELD HEAT TREATMENT AND SIZE

	Hydrostatic Test Pressure	Radiography (100% or % Random)	Other NDE (MT) (PT) (UT)	Postweld Heat Treatment		Overall Length	Heating Surface	Volume
				Temp.	Time			
a	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Min.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
b	7975 PSIG	100%	N/R	1150°F	1 Hr 15 Min.	24'-0"	193.8 Sq. Ft.	6.65 Cu. Ft.
c								
d								
e								
f								
g								

IMPACT TESTING: EXEMPT AS PER B31.3 PARA. 323.2.2

REMARKS: (SOUR SERVICE)

CERTIFICATE OF COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this coil bundle are in accordance with the above Provincial Registered Design.

Date April 12/13 Signed [Signature] For Kootenay Industries Ltd.
 (Representative) (Manufacturer)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, a duly authorized boiler and pressure vessel inspector employed by ABSA of Alberta have inspected the above Heater Coils and state that, to the best of my knowledge and belief, the constructed is in accordance with the Alberta Safety Codes Act and Regulations. By signing this certificate, neither the inspector nor his or her employer makes any warranty, expressed or implied, concerning the vessel described in this manufacturer's data report. Furthermore, neither the inspector nor his or her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date APR 15 2013 Signed Nilanjan Nag

RT-100%
HT

CERTIFIED BY



Kootenay
INDUSTRIES LTD

Serial No. 12-036-CB Date MFG'S 2013

Coil Size No. 1 4" Sch. XXH CRN. No. W0429.2

Coil Size No. 2 4" Sch. XXH CRN. No. W0429.2

Coil Size No. 3 _____ Sch. _____ CRN. No. _____

Coil Size No. 4 _____ Sch. _____ CRN. No. _____

Coil MWP Kpa No. 1 5020 No. 2 5020 No. 3 _____
No. 4 _____ at -29/93 °C

Coil Test No. 1 7975 No. 2 7975

Pressure No. 3 _____ No. 4 _____

Ⓐ 27368 627368

PROV. REG

5982 - 86 AVE. S.E. CALGARY, CANADA

Job # 12-033

WPS Number: KIL-5

PQR Number: KIL-1-1, KIL-2-2, KIL-3-1

QUALIFIED FOR

Material P Number: P1 Group 1 & 2 to P1 Group 1 & 2
Material Type (typical): SA-106-B, SA-105, SA-234 WPB, SA-516-70

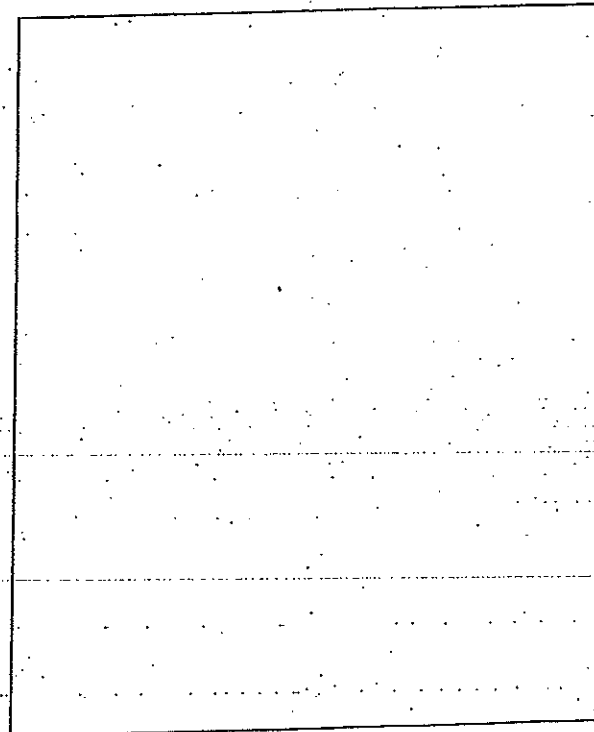
Process: SMAW / SAW
Position: All Positions
Diameter: All Diameters
Joint Design: All Groove and Fillet Welds

AWS Classification: E-6010, E-7018-1, F7A6-EM12K

Thickness: With PWHT: 3/16" to 8"

As Welded: 3/16" to 8"

ALBERTA BOILERS SAFETY ASSOCIATION	
PROVINCE OF ALBERTA	
SAFETY CODES ACT	
WELDING PROCEDURE	
Reg. No. WP	2940.2
Spec No.	KIL-5
Weld Process	SMAW/SAW
Matl. Gr. P No.	1 to P. No. 1
Elec. Gr. F No.	31446 A No. 1
Th. Qual. For	203mm PWHT YES/NO
Yr. Mo. Day	12 23 Signed
R. ROSEBERG, P.ENG. WELDING SPECIALIST	



WPS Number: KIL-6

PQR Number: KIL-2-1, KIL-2-2

QUALIFIED FOR

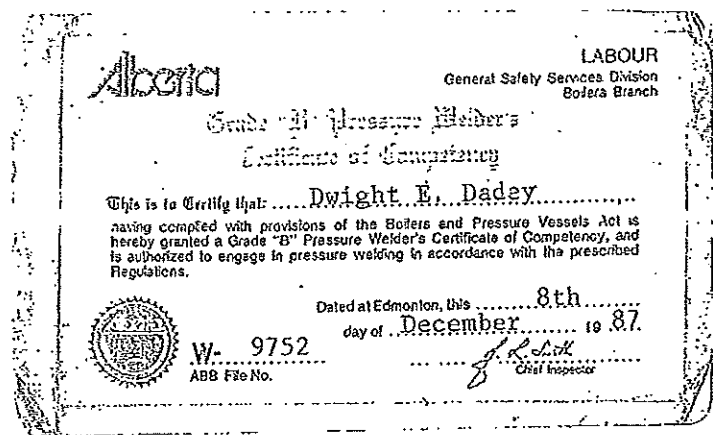
Material P Number: P1 Group 1 & 2 to P1 Group 1 & 2
Material Type (typical): SA-106-B, SA-105, SA-234 WPB, SA-516-70

Process: GMAW / SMAW / SAW
Position: All Positions
Diameter: All Diameters
Joint Design: All Groove and Fillet Welds
AWS Classification: ER-70S-X, E-7018-1, F7A6-EM12K

Thickness: With PWHT: 3/16" to 8"

As Welded: 3/16" to 8"

ALBERTA BOILERS SAFETY ASSOCIATION	
PROVINCE OF ALBERTA	
SAFETY CODES ACT	
WELDING PROCEDURE	
Reg. No. WP	2940.2
Spec No.	KIL-6
Weld Process	GMAW / SMAW / SAW
Matl. Gr. P No.	1 to P No. 1
Elec. Gr. F No.	6+4+6 A No. 1
Th. Qual. For	203mm PWHT YES/NO
Yr. 08, Mo. 12, Day 23 Signed: R. ROSEBERG, P. ENG. WELDING SPECIALIST	



Kootenay INDUSTRIES LTD.
 A.O.Q.P. No. 7255
WELDER PERFORMANCE QUALIFICATION CARD
 NAME: Dwight Dadey ABSA FILE NO.: W-9752
 This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.
 Date of Test: Sept 20, 2010 Signature of Welder or Machine Welding Operator: Dwight Dadey
 This performance qualification is valid for two years from date of test unless extended inside the card.
 Welding Examiner (Print/Type): Travis Parker Card No.: 0043

PERFORMANCE QUALIFICATION
 Process(es) SMAW SMAW Material (P-No.) P1
 Filler Metal F3 F4 Min. Outside Pipe Diameter 1.0"
 Group (F-No.)
 Max. Deposited Weld Metal 0.250" Max Position(s) Qualified All
 Backing without with Backing Gas N/A
 Progression Uphill Uphill
 P.Q. Expiry Date: Sept 20, 2012 Welding Examiner Signature: Travis Parker Certification No.: E-00344

Kootenay INDUSTRIES LTD.
 A.O.Q.P. No. 7255
WELDER PERFORMANCE QUALIFICATION CARD
 NAME: Dwight Dadey ABSA FILE NO.: W-9752
 This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.
 Date of Test: Sept 20, 2010 Signature of Welder or Machine Welding Operator: Dwight Dadey
 This performance qualification is valid for two years from date of test unless extended inside the card.
 Welding Examiner (Print/Type): Travis Parker Card No.: 0044

PERFORMANCE QUALIFICATION
 Process(es) GMAW SMAW Material (P-No.) P1
 Filler Metal F6 F4 Min. Outside Pipe Diameter 1.0"
 Group (F-No.) FG: SPO-45
 Max. Deposited Weld Metal 0.110" 0.465" Position(s) Qualified Flat
 Backing without with Backing Gas without
 Progression Downhill N/A
 P.Q. Expiry Date: Sept 20, 2012 Welding Examiner Signature: Travis Parker Certification No.: E-00344

Kootenay INDUSTRIES LTD.
 A.O.Q.P. No. 2255
WELDER PERFORMANCE QUALIFICATION CARD
 NAME: Dwight Dadey ABSA FILE NO.: W-9752
 This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.
 Date of Test: 1/30/13 Signature of Welder or Machine Welding Operator: Dwight Dadey
 This performance qualification is valid for two years from date of test unless extended inside the card.
 Welding Examiner (Print/Type): M.J. BOENMAN Card No.: 0097

PERFORMANCE QUALIFICATION
 Process(es) SAW Material (P-No.) 1-11
 Filler Metal F6 Min. Outside Pipe Diameter 2 7/8" OD
 Group (F-No.)
 Max. Deposited Weld Metal MTBW Position(s) Qualified 1/2
 Backing with Backing Gas N/A
 Progression N/A
 P.Q. Expiry Date: 1/30/15 Welding Examiner Signature: M.J. BOENMAN Certification No.: 10600332

'E'

Card No.: 0044

P.Q. EXPIRY DATE EXTENSION

In accordance with the Pressure Vessels Regulation Sect. 8(9)

Welding Examiner Signature	Date Continuity Confirmed	Welding Examiner Certification Number	Expiry Date (8 months from confirmation)
[Signature]	SEPT 12 12	W1400332	MAR 12 13
[Signature]	SEPT 12 12	W1400332	MAR 11 13
[Signature]	SEPT 12 12	W1400332	SEPT 11 13

Card No.: 0043

P.Q. EXPIRY DATE EXTENSION

In accordance with the Pressure Vessels Regulation Sect. 8(9)

Welding Examiner Signature	Date Continuity Confirmed	Welding Examiner Certification Number	Expiry Date (8 months from confirmation)
[Signature]	SEPT 12 12	W1400332	MAR 12 13
[Signature]	SEPT 12 12	W1400332	MAR 11 13
[Signature]	SEPT 12 12	W1400332	SEPT 11 13

(E)

Alberta MUNICIPAL AFFAIRS ABSA

WELDING PERFORMANCE QUALIFICATION

ROBERT S. LEBLANC

is qualified as a Grade B Pressure Welder. This card is issued pursuant to the Safety Codes Act and Pressure Welders Regulation, subject to the limitations on the reverse side.

Nov 24/11

[Signature]

Safety Codes Office No. W-29389

PERFORMANCE QUALIFICATION
(In accordance with Section IX, A.S.M.E. Code)
Form No. AB-118 Rev (10/2008)

Process	SMAW	SMAW	Material	P1 to P1
Max Deposited Weld Metal	6 mm	16 mm	Minimum Pipe Dia.	NPS 2 1/2
Filler Metal Group	F3	F4	Position Qualified	All
Backing	No	Yes	Progression	Full

Nov 24/13

[Signature]

Date of Expiry Signature of Safety Codes Officer

Kootenay INDUSTRIES LTD. A.O.Q.P. No. 0255

WELDER PERFORMANCE QUALIFICATION CARD

NAME: ROBERT LEBLANC ABSA FILE NO.:

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

11/29/11

[Signature]

Date of Test Signature of Welder or Machine Welding Operator

This performance qualification is valid for two years from date of test unless extended inside the card.

M.J. BRAUNMAN Card No.: 0074

Welding Examiner (Print/Type)

PERFORMANCE QUALIFICATION

Process(es)	SMAW SMAW	Material (P-No.)	1-11
Filler Metal Group (F-No.)	3 1-4 inch	Min. Outside Pipe Diameter	1" OD
Max. Deposited Weld Metal	0.200" MTBW	Position(s) Qualified	All
Backing	Without With	Backing Gas	N/A
Progression	Partial Full		

11/29/13

[Signature]

P.Q. Expiry Date Welding Examiner Signature Certification No. W60332

Kootenay INDUSTRIES LTD. A.O.Q.P. No. 0255

WELDER PERFORMANCE QUALIFICATION CARD

NAME: ROBERT LEBLANC ABSA FILE NO.: W09389

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

2/13/12

[Signature]

Date of Test Signature of Welder or Machine Welding Operator

This performance qualification is valid for two years from date of test unless extended inside the card.

M.J. BRAUNMAN Card No.: 0079

Welding Examiner (Print/Type)

PERFORMANCE QUALIFICATION

Process(es)	6MAW SMAW	Material (P-No.)	1-11
Filler Metal Group (F-No.)	6 4	Min. Outside Pipe Diameter	1" OD
Max. Deposited Weld Metal	0.110" 0.488"	Position(s) Qualified	5F30/14
Backing	Without With	Backing Gas	N/A
Progression	Partial N/A		

2/13/14

[Signature]

P.Q. Expiry Date Welding Examiner Signature Certification No. W60332

'K'

Alberta
Municipal Affairs
and Housing
22216

ABSA

the pressure equipment safety authority

Grade "II" Pressure Welder's
Certificate of Competency

This is to certify that Saeid Reza Bashiri Majid
having complied with provisions of the Safety Codes Act, is authorized to engage
in pressure welding in accordance with the prescribed Regulations.

Dated at Edmonton
September 04, 2008



W-26682
File no.

[Signature]
Chief Inspector and Administrator

Kootenay INDUSTRIES LTD.
A.O.Q.P. No. 0255
WELDER PERFORMANCE QUALIFICATION CARD

NAME: SABIR MARIO ABSA FILE NO.: W26682

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

Date of Test: 8/9/11 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

M.J. BRENNAN Welding Examiner (Print/Type) Card No.: 0059

PERFORMANCE QUALIFICATION

Process(es)	<u>GMAW SMAW</u>	Material (P-No.)	<u>1-11</u>
Filler Metal Group (F-No.)	<u>6 1-4</u>	Min. Outside Pipe Diameter	<u>1" OD</u>
Max. Deposited Weld Metal	<u>0.110" 0.488"</u>	Position(s) Qualified	<u>1G</u>
Backing	<u>WITHOUT WITH</u>	Backing Gas	<u>N/A</u>
Progression	<u>DAVID HILL FIAT</u>	P.O. Expiry Date	<u>8/9/13</u>
Welding Examiner Signature	<u>[Signature]</u>	Certification No.	<u>W400332</u>

Kootenay INDUSTRIES LTD.
A.O.Q.P. No. 0255
WELDER PERFORMANCE QUALIFICATION CARD

NAME: SABIR MARIO ABSA FILE NO.: W26682

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

Date of Test: 8/9/11 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

M.J. BRENNAN Welding Examiner (Print/Type) Card No.: 0060

PERFORMANCE QUALIFICATION

Process(es)	<u>SMAW SMAW</u>	Material (P-No.)	<u>1-11</u>
Filler Metal Group (F-No.)	<u>3 1-4</u>	Min. Outside Pipe Diameter	<u>1" OD</u>
Max. Deposited Weld Metal	<u>0.200" 0.488"</u>	Position(s) Qualified	<u>6H</u>
Backing	<u>WITH OR WITHOUT WITH</u>	Backing Gas	<u>N/A</u>
Progression	<u>DAVID HILL DENISE</u>	P.O. Expiry Date	<u>8/9/13</u>
Welding Examiner Signature	<u>[Signature]</u>	Certification No.	<u>W400332</u>

Kootenay INDUSTRIES LTD.
A.O.Q.P. No. 0255
WELDER PERFORMANCE QUALIFICATION CARD

NAME: SABIR MARIO ABSA FILE NO.: W26682

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

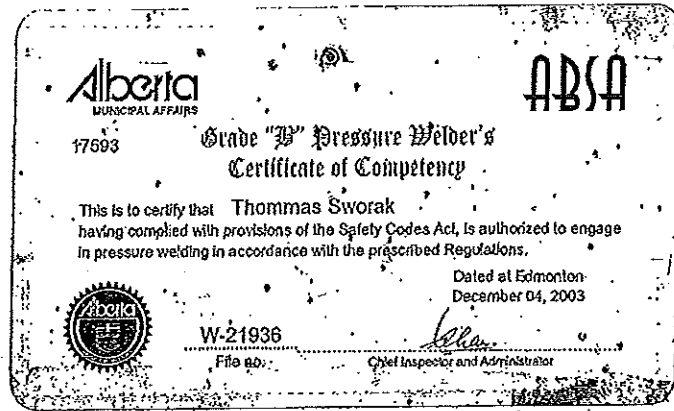
Date of Test: 11/5/12 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

M.J. BRENNAN Welding Examiner (Print/Type) Card No.: 0094

PERFORMANCE QUALIFICATION

Process(es)	<u>SAW</u>	Material (P-No.)	<u>1-11</u>
Filler Metal Group (F-No.)	<u>6</u>	Min. Outside Pipe Diameter	<u>27/8" OD</u>
Max. Deposited Weld Metal	<u>MTBW</u>	Position(s) Qualified	<u>1G</u>
Backing	<u>WITH</u>	Backing Gas	<u>N/A</u>
Progression	<u>N/A</u>	P.O. Expiry Date	<u>11/5/14</u>
Welding Examiner Signature	<u>[Signature]</u>	Certification No.	<u>W400332</u>

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Kootenay INDUSTRIES LTD. A.O.Q.P. No. _____
WELDER PERFORMANCE QUALIFICATION CARD

NAME: Thomas Sworak ABSA FILE NO.: W-21936

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

Date of Test: Apr 25, 2008 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

Welding Examiner (Print/Type): Dan Nguyen Card No.: 0001

PERFORMANCE QUALIFICATION

Process(es)	<u>SMAW SMAW</u>	Material (P-No.)	<u>PI</u>
Filler Metal Group (F-No.)	<u>F3 F4</u>	Min. Outside Pipe Diameter	<u>10in. O.D.</u>
Max. Deposited Weld Metal	<u>0.250" MAX</u>	Position(s) Qualified	<u>All</u>
Backing	<u>without with</u>	Backing Gas	<u>N/A</u>
Progression	<u>uphill uphill</u>		
P.Q. Expiry Date	<u>Apr 25, 2010</u>	Welding Examiner Signature	<u>[Signature]</u>
		Certification No.	<u>E-00286</u>

Kootenay INDUSTRIES LTD. A.O.Q.P. No. _____
WELDER PERFORMANCE QUALIFICATION CARD

NAME: Thomas Sworak ABSA FILE NO.: W-21936

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

Date of Test: Apr 28, 2008 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

Welding Examiner (Print/Type): Dan Nguyen Card No.: 0002

PERFORMANCE QUALIFICATION

Process(es)	<u>GMAW SMAW</u>	Material (P-No.)	<u>PI</u>
Filler Metal Group (F-No.)	<u>F6 F4</u>	Min. Outside Pipe Diameter	<u>10in. O.D.</u>
Max. Deposited Weld Metal	<u>0.110" 0.488"</u>	Position(s) Qualified	<u>Flat with or</u>
Backing	<u>without with</u>	Backing Gas	<u>without</u>
Progression	<u>downhill N/A</u>		
P.Q. Expiry Date	<u>Apr 28, 2010</u>	Welding Examiner Signature	<u>[Signature]</u>
		Certification No.	<u>E-00286</u>

Kootenay INDUSTRIES LTD. A.O.Q.P. No. _____
WELDER PERFORMANCE QUALIFICATION CARD

NAME: Thomas Sworak ABSA FILE NO.: W-21936

This card is issued pursuant to the Alberta Safety Codes Act and the Pressure Welders Regulations. The performance qualification is in accordance with Section IX of the ASME Code and subject to the limitations on the reverse side.

Date of Test: May 21, 2008 Signature of Welder or Machine Welding Operator: [Signature]
This performance qualification is valid for two years from date of test unless extended inside the card.

Welding Examiner (Print/Type): Dan Nguyen Card No.: 0003

PERFORMANCE QUALIFICATION

Process(es)	<u>SAW (Machine)</u>	Material (P-No.)	<u>PI</u>
Filler Metal Group (F-No.)	<u>F6</u>	Min. Outside Pipe Diameter	<u>WPS Limits</u>
Max. Deposited Weld Metal	<u>MAX</u>	Position(s) Qualified	<u>Flat</u>
Backing	<u>with</u>	Backing Gas	<u>N/A</u>
Progression	<u>N/A</u>		
P.Q. Expiry Date	<u>May 21, 2010</u>	Welding Examiner Signature	<u>[Signature]</u>
		Certification No.	<u>E-00286</u>

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Card No: 0003

P.Q. EXPIRY DATE EXTENSION

In accordance with the Pressure Welders Regulation Sect. 8(6)

Welding Examiner Signature	Welding Examiner Certification Number	Date Continuity Confirmed	Expiry Date (6 months from confirmation)
[Signature]	E-00328	APRIL 25, 2010	SEPT 25, 2010
[Signature]	E-00328	Sept 25, 2010	Sept 25, 2010
[Signature]	E-00286	March 25, 2011	March 25, 2011
[Signature]	E-00344	March 25, 2011	Sept 25, 2011
[Signature]	[Blank]	SEPT 12, 11	SEPT 12, 11
[Signature]	W400332	MAR 12, 12	MAR 12, 12
[Signature]	[Blank]	MAR 12, 12	MAR 12, 12
[Signature]	W400332	SEPT 12, 12	SEPT 12, 12
[Signature]	[Blank]	SEPT 12, 12	SEPT 12, 12
[Signature]	W400332	MAR 12, 13	MAR 12, 13
[Signature]	[Blank]	MAR 11, 13	MAR 11, 13
[Signature]	W400332	SEPT 11, 13	SEPT 11, 13

Card No: 0002

P.Q. EXPIRY DATE EXTENSION

In accordance with the Pressure Welders Regulation Sect. 8(6)

Welding Examiner Signature	Welding Examiner Certification Number	Date Continuity Confirmed	Expiry Date (6 months from confirmation)
[Signature]	E-00328	APRIL 25, 2010	SEPT 25, 2010
[Signature]	E-00328	Sept 25, 2010	Sept 25, 2010
[Signature]	E-00286	March 25, 2011	March 25, 2011
[Signature]	E-00344	March 25, 2011	Sept 25, 2011
[Signature]	[Blank]	SEPT 12, 11	SEPT 12, 11
[Signature]	W400332	MAR 12, 12	MAR 12, 12
[Signature]	[Blank]	MAR 12, 12	MAR 12, 12
[Signature]	W400332	SEPT 12, 12	SEPT 12, 12
[Signature]	[Blank]	SEPT 12, 12	SEPT 12, 12
[Signature]	W400332	MAR 12, 13	MAR 12, 13
[Signature]	[Blank]	MAR 11, 13	MAR 11, 13
[Signature]	W400332	SEPT 11, 13	SEPT 11, 13

Card No: 0001

P.Q. EXPIRY DATE EXTENSION

In accordance with the Pressure Welders Regulation Sect. 8(6)

Welding Examiner Signature	Welding Examiner Certification Number	Date Continuity Confirmed	Expiry Date (6 months from confirmation)
[Signature]	E-00328	APRIL 25, 2010	SEPT 25, 2010
[Signature]	E-00328	Sept 25, 2010	Sept 25, 2010
[Signature]	E-00286	March 25, 2011	March 25, 2011
[Signature]	E-00344	March 25, 2011	Sept 25, 2011
[Signature]	[Blank]	SEPT 12, 11	SEPT 12, 11
[Signature]	W400332	MAR 12, 12	MAR 12, 12
[Signature]	[Blank]	MAR 12, 12	MAR 12, 12
[Signature]	W400332	SEPT 12, 12	SEPT 12, 12
[Signature]	[Blank]	SEPT 12, 12	SEPT 12, 12
[Signature]	W400332	MAR 12, 13	MAR 12, 13
[Signature]	[Blank]	MAR 11, 13	MAR 11, 13
[Signature]	W400332	SEPT 11, 13	SEPT 11, 13

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18091

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031 CB DATE: 12/10/26
 ISOTOPE: IRIIDIUM 192 SOURCE# 84457B

TECH #1 PRESSURE VESSELS SW DW FILM: GAVERT D4 D5 D7 OTHER _____
 TECH #2 PRESSURE PIPING SW DW MATERIAL: C/S OTHER _____
 CODE: ASME SECTION VIII DIV I
 UW51 EFSS: 402
 UW52
 B31: 3 N S
 OTHER: _____
 FILM CLASS: 1 2 DENSITY 2.5

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X1		E	4"	XXH	4.5	4	3/16	4.5	.999	<input checked="" type="checkbox"/>		
X2										<input checked="" type="checkbox"/>		
X3										<input checked="" type="checkbox"/>		
X4										<input checked="" type="checkbox"/>		
X5												Reshoot 8709"

INSPECTOR: *JG* CLIENT REPRESENTATIVE: *Tracy*
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # **Nº 18095**

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/10/29 ISOTOPE: IRIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS SW <input type="checkbox"/> DW <input type="checkbox"/> FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____ FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	TECH #2 PRESSURE PIPING SW <input type="checkbox"/> DW <input checked="" type="checkbox"/> MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____ DENSITY: <u>2.5</u>	CODE: ASME SECTION VIII DIV I UW51 <input type="checkbox"/> EFSS: <u>4.2</u> UW52 <input type="checkbox"/> B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> OTHER: _____
DWV <input checked="" type="checkbox"/> SWV <input type="checkbox"/>	NO. OF FILM (S) PER CASSETTE: <u>1</u>	

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X6		E	4"	XXH	4.5	4	3/16	4.5	1.048	✓		
X7										✓		
X8										✓		
X9										✓		
X10										✓		
X11										✓		
X12										✓		
X13										✓		
X14		Y								✓		
X15		Y								✓		
X16		E								✓		
X17		Y								✓		
X5	8709"	E	4"	XXH	4.5	1	3/16	4.5	1.048	✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18100

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/10/30 ISOTOPE: IRIDIUM 192 SOURCE# 84547B

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S OTHER _____
 FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
 UWS1 EFSS: 4.2
 UWS2
 B31: 3 N S
 OTHER: _____
 DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD				OK	REJ	REMARKS
X18		E	4"	XXH	4.5	4	3/16	4.5	1.048				✓		Job # 12-032-CB
X19		b											✓		Job # 12-032-CB
X20		b											✓		Job # 12-032-CB
X21		K									H/L		✓		127013"
X22		y											✓		
X23		y											✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18103

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-031CB DATE: 12/10/31 ISOTOPE: IRIIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS SW DW FILM: GAVERT D4 D5 D7 OTHER FILM CLASS: 1 2 DENSITY 2.5

TECH #2 PRESSURE PIPING SW DW MATERIAL: C/S OTHER

CODE: ASME SECTION VIII DIV 1 UWS1 EFSS: 4.2 UWS2 B31: 3 N S OTHER:

DWV SWV NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R.	SOD	SSOFD	OK	REJ	REMARKS
X24		Y	4"	XXH	4.5	4	3/16	4.5	1.048	✓		
X25		Y								✓		
X26		K								✓		
X27										✓		P @6 1/2"
X28										✓		Job # 12-032-CB
X29										✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]

ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # N^o 18107

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-03/CB DATE: 12/1/11 ISOTOPE: IRIIDIUM 192 SOURCE# 845498

TECH #1 PRESSURE VESSELS DW FILM: GAVERT D4 D5 D7 OTHER _____
 TECH #2 PRESSURE PIPING DW MATERIAL: C/S OTHER _____

CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 4.2
 UW52
 B31: 3 N S
 OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)

W.R. - WELD REINFORCEMENT	MIN SOD - SOURCE TO OBJECT DISTANCE	MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION	P - POROSITY	BT - BURN THROUGH
IP - INCOMPLETE PENETRATION	I - ICICLES	C - CRATER
	HL - HIGH LOW	S - SLAG
	LC - LOW COVER	W - WINDOWS
		UC - UNDERCUT
		CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X30		Y	4"	XXH	4.5	4	3/16	4.5	1.048		P	✓		@6"
X31		Y	Y	Y	Y	Y	Y	Y	Y			✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]

ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18111

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/12 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1	TECH #2		CODE: ASME SECTION VIII DIV 1
PRESSURE VESSELS	PRESSURE PIPING		UW51 <input type="checkbox"/> EFSS: <u>4.2</u>
SW <input type="checkbox"/>	SW <input type="checkbox"/>		UW52 <input type="checkbox"/>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	MATERIAL: C/S <input checked="" type="checkbox"/>	B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	OTHER _____		OTHER: _____
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY <u>2.5</u>		
DWV <input checked="" type="checkbox"/>	SWV <input type="checkbox"/>		
NO. OF FILM (S) PER CASSETTE: <u>1</u>			

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X32		Y	4"	XXH	4.5	4	3/16	4.5	1048	<input checked="" type="checkbox"/>		
X31	0-2"	Y	4"	XXH	4.5	1	3/16	4.5	1048	<input checked="" type="checkbox"/>		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18118

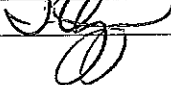
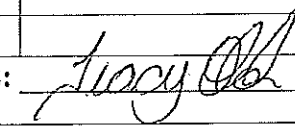
CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/15 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 PRESSURE VESSELS SW DW FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5
 TECH #2 PRESSURE PIPING SW DW MATERIAL: C/S OTHER _____
 CODE: ASME SECTION VIII DIV 1 UWS1 EFSS: 4.2 UWS2 B31: 3 S OTHER: _____
 DWV SWV NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X33		Y	4"	XxH	4.5	4"	3/16	4.5	1.048			✓		
X34		Y	Y	Y	Y	Y	Y	Y	Y	IF			X	0.70 1/2" (Root)

INSPECTOR:  CLIENT REPRESENTATIVE: 
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131

INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18120

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/16 ISOTOPE: IRIDIUM 192 SOURCE# 84549B

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S CODE: ASME SECTION VIII DIV 1
 FILM: GAVERT D4 D5 D7 OTHER _____ OTHER _____ UW51 EFSS: 402
 FILM CLASS: 1 2 DENSITY 2.5 UW52 B31: 3 N S
 OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD				OK	REJ	REMARKS
X34R	OTD 1/2"	Y	4"	XXH	4.5	1	2/16	4.5	1.098				<input checked="" type="checkbox"/>		

INSPECTOR: _____ CLIENT REPRESENTATIVE: Tracy
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT #No 18125

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/8 ISOTOPE: IRIIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS	TECH #2 PRESSURE PIPING	CODE: ASME SECTION VIII DIV 1
SW <input type="checkbox"/>	SW <input type="checkbox"/>	UW51 <input type="checkbox"/> EFSS: <u>4.2</u>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	UW52 <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	MATERIAL: C/S <input checked="" type="checkbox"/>	B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY <u>2.5</u>	OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X35		Y	4"	XXH	4.5	4	3/16	4.5	1.048		P	<input checked="" type="checkbox"/>		@12"
X36		↳	↳	↳	↳	↳	↳	↳	↳		IF		<input checked="" type="checkbox"/>	@8" (Root)
X37		↳	↳	↳	↳	↳	↳	↳	↳			<input checked="" type="checkbox"/>		

INSPECTOR: CLIENT REPRESENTATIVE:
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18132

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/9
 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S OTHER _____
 FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
 UWS1 EFSS: 4.2
 UWS2
 B31: 3 ND S
 OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X38		Y	4"	XXH	4.5	4	3/16	4.5	1.048			<input checked="" type="checkbox"/>		
X36R	@8"	Y	4"	XXH	4.5	1	3/16	4.5	1.048	C			X	@8"

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA
 CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # **No** 18136

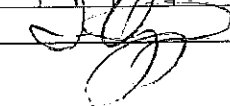
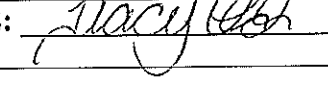
CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031 CB DATE: 12/11/12 ISOTOPE: IRIDIUM 192 SOURCE# 845493

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S OTHER: _____
 FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
 DWV SWV UW51 EFSS: 4.2
 NO. OF FILM (S) PER CASSETTE: 1 UW52 B3I: 3 N S OTHER: _____

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	REMARKS	OK	REJ
X39		Y	4"	XXH	4.5	4	3/16	4.5	1.048		<input checked="" type="checkbox"/>	
X40		Y	4"	Y	4	4	4	4	4		<input checked="" type="checkbox"/>	
X36R2	@B"	Y	4"	XXH	4.5	1	3/16	4.5	1.048	W		X 7 3/4 TO 8" (Root)

INSPECTOR:  CLIENT REPRESENTATIVE: 
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: JAN CHIZMAZIA

CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
(403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # NO 18141

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-031CB DATE: 12/11/13 ISOTOPE: IRIIDIUM 192 SOURCE# 84549B

TECH #1 _____ TECH #2 _____
PRESSURE VESSELS _____ PRESSURE PIPING _____
SW DW MATERIAL: C/S OTHER _____
DW DW MATERIAL: C/S OTHER _____
FILM: GAVERT D4 D5 D7 OTHER _____
FILM CLASS: 1 2 DENSITY 2.6
DWV SWV NO. OF FILM(S) PER CASSETTE: 1

CODE: ASME SECTION VIII DIV 1
UW51 EFSS: 402
UW52
B31: 3 N/A S
OTHER: _____

ABBREVIATIONS: (LEGENDS)

W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD				OK	REJ	REMARKS
X3624	7 3/4" - 8"	Y	4"	XXII	4.5	1	3/16	45	1.048				<input checked="" type="checkbox"/>		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
ASNT II HOURS _____ REG _____ COMMENTS _____
ASNT III O.T. _____
CGSB II MILEAGE _____ KM _____
CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.

BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5

(403) 934-3131

INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18104

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-032CB DATE: 12/10/31 SOURCE# 84549B

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING

SW SW
 DW DW MATERIAL: C/S OTHER _____

FILM: GAVERT D4 D5 D7 OTHER _____ OTHER: _____

FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 4.2
 UW52
 B31: 3 N S
 OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X1		K	4"	XxH	4.5	4	3/16	4.5	1.048	✓		
X2		K								✓		
X3		E								✓		
X4										✓		
X5										✓		

INSPECTOR: _____ CLIENT REPRESENTATIVE: Tracy

ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____

CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # **18108**

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-032CB DATE: 12/11/11 ISOTOPE: IRIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS SW <input type="checkbox"/> DW <input type="checkbox"/> FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____ FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> DENSITY <u>2.5</u>	TECH #2 PRESSURE PIPING SW <input type="checkbox"/> DW <input checked="" type="checkbox"/> MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____	CODE: ASME SECTION VIII DIV 1 UW51 <input type="checkbox"/> BFSS: <u>4.2</u> UW52 <input type="checkbox"/> B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> OTHER: _____
DWV <input checked="" type="checkbox"/> SWV <input type="checkbox"/> NO. OF FILM (S) PER CASSETTE: <u>1</u>		

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X6		K	4"	XXH	4.5	4	3/16	4.5	0.549	✓		
X7		E								✓		
X8		K								✓		@5"
X9		L								✓		@12"
X10		L									X	4706" (Root)
X11		E								✓		
X12		K									X	@2"
X13		K								✓		
X14		K								✓		
X15		E								✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: JAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
(403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18110

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

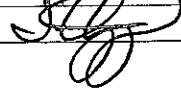
JOB#: 12-032CB DATE: 12/11/12 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 TECH #2
PRESSURE VESSELS PRESSURE PIPING
SW SW
DW DW MATERIAL: C/S OTHER _____
FILM: GAVERT D4 D5 D7 OTHER _____ OTHER _____
FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
UW51 EFSS: 4.2
UW52
B31: 3 N S
OTHER: _____

DWV SWV
NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X16		K	4"	XXH	4.5	4	3/16	4.5	1.048		P	✓		@2"
X10R	4T06"	K	4"	XXH	4.5	1	3/16	4.5	1.048			✓		
X12R	@2"	Y	Y	Y	Y	Y	Y	Y	Y		P	✓		@1 1/2"

INSPECTOR:  CLIENT REPRESENTATIVE: Lincy
ASNT II HOURS _____ REG _____ COMMENTS _____
ASNT III MILEAGE _____ O.T. _____
CGSB II TECH: IAN CHIZMAZIA
CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18142

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-0320 DATE: 12/11/13 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1	TECH #2		
PRESSURE VESSELS	PRESSURE PIPING		
SW <input type="checkbox"/>	SW <input type="checkbox"/>		
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	MATERIAL: <u>C/S</u>	
FILM: <u>GAVERT D4</u>	<u>D5</u> <input type="checkbox"/> <u>D7</u> <input type="checkbox"/> OTHER	OTHER	
FILM CLASS: <u>1</u> <input checked="" type="checkbox"/> <u>2</u> <input type="checkbox"/>	DENSITY <u>2.5</u>		

CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 402
 UW52
 B31: 3 N S
 OTHER:

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X17		4	4"	XXI	4.5	4	3/16	45	1.048			<input checked="" type="checkbox"/>		
X18		4	4"	Y	4	4	4	4	4			<input checked="" type="checkbox"/>		

INSPECTOR: J. [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
 ASNT II HOURS REG COMMENTS
 ASNT III O.T.
 CGSB II MILEAGE KM
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.

BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5

(403) 934-3131

INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18147

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-03208 DATE: 12/11/14 ISOTOPE: IRIIDIUM 192 SOURCE# B4549B

TECH #1 TECH #2
PRESSURE VESSELS PRESSURE PIPING
SW SW
DW DW MATERIAL: C/S
FILM: GAVERT D4 D5 D7 OTHER OTHER
FILM CLASS: 1 2 DENSITY 2.5
CODE: ASME SECTION VIII DIV 1
UW51 EFSS: 4.2
UW52
B31: 3 N S
OTHER:

DWV SWV
NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD				OK	REJ	REMARKS
X19		u	4"	XXH	4.5	4	3/16	4.5	1.048				<input checked="" type="checkbox"/>		
X20		h	h	h	h	h	h	h	h				<input checked="" type="checkbox"/>		
X21		h	h	h	h	h	h	h	h				<input checked="" type="checkbox"/>		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
ASNT II HOURS REG COMMENTS
ASNT III O.T.
CGSB II MILEAGE KM
CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT #No 18148

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-032CB DATE: 12/11/15 ISOTOPE: IRIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS SW DW FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5

TECH #2 PRESSURE PIPING SW DW MATERIAL: C/S OTHER _____

CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 402
 UW52
 B31: 3 N S
 OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD				OK	REJ	REMARKS
X22		4	4"	XXH	4.5	4	3/16	4.5	1.048				<input checked="" type="checkbox"/>		
X23		4	4"	Y	4	4	4	4	4				<input checked="" type="checkbox"/>		

INSPECTOR: _____ CLIENT REPRESENTATIVE: Tracy
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18150



CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-032CB DATE: 12/11/16 ISOTOPE: IRIIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS SW <input type="checkbox"/> DW <input type="checkbox"/> FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____ FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> DENSITY: 2.5	TECH #2 PRESSURE PIPING SW <input type="checkbox"/> DW <input checked="" type="checkbox"/> MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____ OTHER: _____ DWC <input checked="" type="checkbox"/> SWV <input type="checkbox"/> NO. OF FILM (S) PER CASSETTE: 1	CODE: ASME SECTION VIII DIV 1 UW51 <input type="checkbox"/> EFSS: 402 UW52 <input type="checkbox"/> B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/> OTHER: _____
--	---	--

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X24		U	4"	XX14	4.5	4	3/16	45	1.048			✓		
X25		Y	Y	Y	Y	Y	Y	Y	Y			✓		

INSPECTOR:  CLIENT REPRESENTATIVE: 

ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

CERT. NUMBER: 997

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT #No 18154

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-032CB DATE: 12/11/19 ISOTOPE: IRIIDIUM 192 SOURCE# 84549B

TECH #1 PRESSURE VESSELS
TECH #2 PRESSURE PIPING
DW FILM: GAVERT D4 D5 D7 OTHER _____
FILM CLASS: 1 2 DENSITY 2.5
MATERIAL: C/S OTHER _____
DWV NO. OF FILM (S) PER CASSETTE: 1

CODE: ASME SECTION VIII DIV 1
UW51 EFSS: 4.2
UW52
B31: 3 N S
OTHER: _____

ABBREVIATIONS: (LEGENDS)
W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X26		6	4"	XX14	4.5	4	3/16	4.5	1048	✓		
X27		1	1	1	1	1	1	1	1	✓		
X28		1	1	1	1	1	1	1	1	✓		
X29		1	1	1	1	1	1	1	1	✓		

INSPECTOR: J. [Signature] CLIENT REPRESENTATIVE: Nancy [Signature]
ASNT II HOURS _____ REG _____ COMMENTS _____
ASNT III O.T. _____
CGSB II MILEAGE _____ KM _____
CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT # **No 18160**

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-032CB DATE: 12/11/20 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW DW MATERIAL: C/S
 DW DW OTHER
 FILM: GAVERT D4 DS D7 OTHER
 FILM CLASS: 1 2 DENSITY 2.05 OTHER:

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X30		U	4"	XXH	4.5	4	3/16	45	1.048	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
X31		Y	5"	Y	Y	Y	Y	Y	Y	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18167

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-032CB DATE: 12/11/21
 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1	TECH #2	CODE: ASME SECTION VIII DIV 1
PRESSURE VESSELS	PRESSURE PIPING	
SW <input type="checkbox"/>	SW <input type="checkbox"/>	UW51 <input type="checkbox"/> EFSS: <u>402</u>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	UW52 <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____	B31: 3 <input checked="" type="checkbox"/> NC <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY: <u>2.5</u>	OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
<u>X32</u>		<u>U</u>	<u>4"</u>	<u>XYH</u>	<u>4.5</u>	<u>4</u>	<u>3/16</u>	<u>4.5</u>	<u>1.048</u>	<input checked="" type="checkbox"/>		

INSPECTOR: _____	CLIENT REPRESENTATIVE: _____	COMMENTS: _____
ASNT II <input type="checkbox"/>	HOURS _____	REG _____
ASNT III <input checked="" type="checkbox"/>	MILEAGE _____	O.T. _____
CGSB II <input checked="" type="checkbox"/>	TECH: <u>IAN CHIZMAZIA</u>	
CERT. NUMBER: <u>997</u>		

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 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # No 18112

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-033CB DATE: 12/11/12 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S CODE: ASME SECTION VIII DIV 1
 FILM: GAVERT D4 D5 D7 OTHER _____ OTHER _____ UWS1 EFSS: 4.2
 FILM CLASS: 1 2 DENSITY 2.5 B31: 3 N S
 DWV SWV OTHER: _____
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X1		E	4"	XXH	4.5	4	3/16	4.5	1.048			✓		FOM 4 TO 6"
X2		K										✓		
X3		E										✓		
X4		E										✓		
X5		K								P		X		1/2" TO 1"
X6		E										✓		
X7		K										✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA

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 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # N^o 18116

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-033 CB DATE: 12/11/5 ISOTOPE: IRIDIUM 192 SOURCE# 84549B

TECH #1	TECH #2		
PRESSURE VESSELS	PRESSURE PIPING	CODE: ASME SECTION VIII DIV 1	
SW <input type="checkbox"/>	SW <input type="checkbox"/>	UW51 <input type="checkbox"/>	EFSS: <u>402</u>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	UW52 <input type="checkbox"/>	
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	MATERIAL: C/S <input checked="" type="checkbox"/>	B31: 3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/>	
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY <u>2.05</u>	OTHER: _____	
DWV <input checked="" type="checkbox"/> SWV <input type="checkbox"/>			
NO. OF FILM (S) PER CASSETTE: <u>1</u>			

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X8		E	4"	XXH	4.5	4	3/16	4.5	1.048			✓		
X9		K										✓		
X10												✓		
X11												✓		
X12										P		✓		@ 1 1/2"
X13												✓		
X14		E										✓		
X15		K										✓		
X16		K										✓		
X17		E										✓		
X18		K										✓		
X5R	1/2 TO 1"	K	4"	XXH	4.5	1	3/16	4.5	1.048	P		✓		@ 1"

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III MILEAGE _____ O.T. _____
 CGSB II TECH: IAN CHIZMAZIA
 CERT. NUMBER: 997

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 INDUSTRIAL RADIOGRAPHY REPORT

REPORT # N^o 18121


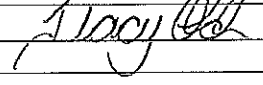
CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-033CB DATE: 12/11/16 ISOTOPE: IRIIDIUM 192 SOURCE#: 84549B

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW MATERIAL: C/S OTHER _____
 FILM: GAVERT D4 D5 D7 OTHER _____
 FILM CLASS: 1 2 DENSITY: 2.5
 CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 402
 UW52
 B31: 3 N/A S
 OTHER: _____
 DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD			OK	REJ	REMARKS
X19		K	4"	XXH	4.5	4	3/16	4.5	1.048			✓		
X20		Y	Y	Y	Y	Y	Y	Y	Y					

INSPECTOR:  CLIENT REPRESENTATIVE: 
 ASNT II HOURS REG O.T. COMMENTS
 ASNT III
 CGSB II MILEAGE KM
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT #N^o 18201

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-033CB DATE: 12/12/10 ISOTOPE: IRIDIUM 192 SOURCE# 845498

TECH #1 TECH #2
PRESSURE VESSELS PRESSURE PIPING

SW SW

DW DW

FILM: GAVERT D4 D5 D7 OTHER _____

FILM CLASS: 1 2 DENSITY 2.5

MATERIAL: CS ~~2~~

OTHER _____

CODE: ASME SECTION VIII DIV 1

UW51 EFSS: 1.2

UW52

B31: 3 N S

OTHER: _____

DWV SWV
NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)

W.R. - WELD REINFORCEMENT

MIN SOD - SOURCE TO OBJECT DISTANCE

MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE

IF - INCOMPLETE FUSION

P - POROSITY

BT - BURN THROUGH

HL - HIGH LOW

S - SLAG

UC - UNDERCUT

IP - INCOMPLETE PENETRATION

I - ICICLES

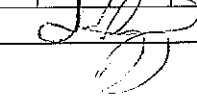
C - CRATER

LC - LOW COVER

W - WINDOWS

CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X21		U	4"	XXH	4.5	4	3/16	4.5	1.098	<input checked="" type="checkbox"/>		
X22		V	7	7	7	7	7	7	7	<input checked="" type="checkbox"/>		

INSPECTOR:  CLIENT REPRESENTATIVE: Tracy
ASNT II HOURS _____ REG _____ COMMENTS _____
ASNT III O.T. _____
CGSB II MILEAGE _____ KM _____
CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT # **Nº 18205**

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

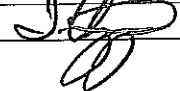
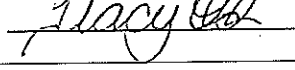
JOB#: 12-033 CB DATE: 12/12/11 ISOTOPE: IRIDIUM 192 SOURCE#: 90447B

TECH #1	TECH #2	CODE: ASME SECTION VIII DIV 1
PRESSURE VESSELS	PRESSURE PIPING	UW51 <input type="checkbox"/> EFSS: <u>1/2</u>
SW <input type="checkbox"/>	SW <input type="checkbox"/>	UW52 <input type="checkbox"/>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	B31: 3 <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____	OTHER: _____
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY: <u>2.5</u>	

DWV SWV
NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD										OK	REJ	REMARKS		
X23		u	4"	XxH	4.5	4	3/16	4.5	1.048										✓				
X24		b	b	b	b	b	b	b	b										✓				
X25		b	b	b	b	b	b	b	b										✓				

INSPECTOR:  CLIENT REPRESENTATIVE: 

ASNT II HOURS _____ REG _____ COMMENTS _____
 ASNT III O.T. _____
 CGSB II MILEAGE _____ KM _____

CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

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INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18221

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-033 EB DATE: 12/12/14 ISOTOPE: IRIIDIUM 192 SOURCE# 90447B

TECH #1 PRESSURE VESSELS SW <input type="checkbox"/>	TECH #2 PRESSURE PIPING SW <input type="checkbox"/>	MATERIAL: C/S <input checked="" type="checkbox"/> OTHER _____	CODE: ASME SECTION VIII DIV 1 UW51 <input type="checkbox"/>	BFSS: <u>4.2</u>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>		UW52 <input type="checkbox"/>	B31: 3 <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>		DENSITY: <u>2.5</u>	OTHER: _____

DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X28		0	4"	XXH	4.5	4	3/16	4.5	1.048	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
X29		7	7	7	7	7	7	7	7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS REG COMMENTS
 ASNT III MILEAGE O.T.
 CGSB II TECH: IAN CHIZMAZIA
 CERT. NUMBER: 997

GAMMATECH INSPECTION SERVICES LTD.
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(403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT # 18226

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE#

JOB#: 12-033CB DATE: 12/12/17

ISOTOPE: IRIIDIUM 192 SOURCE# 90447B
TECH #1 TECH #2
PRESSURE VESSELS PRESSURE PIPING
SW DW MATERIAL: C/S
FILM: GAVERT D4 D5 D7 OTHER
FILM CLASS: 1 2 DENSITY: 2.5
DWW SWV
NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X30		U	4"	XxH	4.5	4		3/16	4.5/048	<input checked="" type="checkbox"/>		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: Tracy [Signature]
ASNT II HOURS _____ REG _____ COMMENTS _____
ASNT III O.T. _____
CGSB II MILEAGE _____ KM _____
CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-033CB DATE: 12/12/20 ISOTOPE: IRIDIUM 192 SOURCE# 90447B

TECH #1	TECH #2	CODE: ASME SECTION VIII DIV 1
PRESSURE VESSELS	PRESSURE PIPING	UW51 <input type="checkbox"/> EFSS: <u>4.2</u>
SW <input type="checkbox"/>	SW <input type="checkbox"/>	UW52 <input type="checkbox"/>
DW <input type="checkbox"/>	DW <input checked="" type="checkbox"/>	B31:3 <input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> S <input type="checkbox"/>
FILM: GAVERT D4 <input checked="" type="checkbox"/> D5 <input type="checkbox"/> D7 <input type="checkbox"/> OTHER _____	MATERIAL: C/S <input checked="" type="checkbox"/>	OTHER: _____
FILM CLASS: 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/>	DENSITY <u>2.5</u>	
DWV <input checked="" type="checkbox"/>	SWV <input type="checkbox"/>	
NO. OF FILM (S) PER CASSETTE: <u>1</u>		

ABBREVIATIONS: (LEGENDS)

W.R. - WELD REINFORCEMENT	MIN SOD - SOURCE TO OBJECT DISTANCE	MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
IF - INCOMPLETE FUSION	P - POROSITY	BT - BURN THROUGH
IP - INCOMPLETE PENETRATION	I - ICICLES	C - CRATER
		HL - HIGH LOW
		S - SLAG
		UC - UNDERCUT
		W - WINDOWS
		CR - CRACK

FILM#	LOCATION	WID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X31		4	4"	XXH	4.5	4	3/16	4.5	1.048	<input checked="" type="checkbox"/>		
X32		5	5	5	5	5	5	5	5	<input checked="" type="checkbox"/>		@1 1/2"
X33		5	5	5	5	5	5	5	5	<input checked="" type="checkbox"/>		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]

ASNT II <input type="checkbox"/>	HOURS	REG	COMMENTS
ASNT III <input checked="" type="checkbox"/>		O.T.	
CGSB II <input checked="" type="checkbox"/>	MILEAGE	KM	

CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

GAMMATECH INSPECTION SERVICES LTD.
 BOX 7 SITE 20 RR2 STRATHMORE, ALBERTA T1P 1K5
 (403) 934-3131
INDUSTRIAL RADIOGRAPHY REPORT

REPORT #Nº 18237

CLIENT: KOOTENAY IND LTD JOB LOCATION: CALGARY INVOICE# _____

JOB#: 12-033CB DATE: 12/1/13 ISOTOPE: IRIDIUM 192 SOURCE# 90447B

TECH #1 TECH #2
 PRESSURE VESSELS PRESSURE PIPING
 SW SW
 DW DW
 FILM: GAVERT D4 D5 D7 OTHER _____ MATERIAL: C/S OTHER _____
 FILM CLASS: 1 2 DENSITY 2.5 CODE: ASME SECTION VIII DIV 1
 UW51 EFSS: 4.2
 UW52
 B31: 3 N S
 OTHER: _____
 DWV SWV
 NO. OF FILM (S) PER CASSETTE: 1

ABBREVIATIONS: (LEGENDS)
 W.R. - WELD REINFORCEMENT MIN SOD - SOURCE TO OBJECT DISTANCE MAX SSOFD - SOURCE SIDE OBJECT TO FILM DISTANCE
 IF - INCOMPLETE FUSION P - POROSITY BT - BURN THROUGH HL - HIGH LOW S - SLAG UC - UNDERCUT
 IP - INCOMPLETE PENETRATION I - ICICLES C - CRATER LC - LOW COVER W - WINDOWS CR - CRACK

FILM#	LOCATION	W ID#	SIZE	THICK	DIA	#EXP	W.R	SOD	SSOFD	OK	REJ	REMARKS
X34		U	4"	XYff	4.5	4	3/16	4.5	1.048	✓		
X35		✓	✓	✓	✓	✓	✓	✓	✓	✓		
X36		✓	✓	✓	✓	✓	✓	✓	✓	✓		

INSPECTOR: [Signature] CLIENT REPRESENTATIVE: [Signature]
 ASNT II HOURS REG COMMENTS
 ASNT III O.T.
 CGSB II MILEAGE KM
 CERT. NUMBER: 997 TECH: IAN CHIZMAZIA

KOOTENAY INDUSTRIES LTD.
Quality Control Manual

Revision Number: 3.0

Revision Date: December 15, 2011

Section: 14 Page: 2 of 2

EXHIBIT 14.1 HEAT TREATMENT INSTRUCTIONS

HEAT TREATMENT INSTRUCTIONS

JOB NO.: 12-031-CB		CUSTOMER: Daylight Energy		DATE: Nov. 16/12	
COMPONENT DESCRIPTION: Coil Bundle					
DWG. NO. AND LINE NO.	DIAMETER	THICKNESS	MATERIAL	LENGTH	WEIGHT
12-031-B Rev. 0	4"	0.674"	SA-350-LF2CL1	24'-0"	11750 LBS
			SA-333-6/SA-36		
			SA-420-WPL6		
TYPE OF HEAT TREATMENT: PRESSURE VESSEL STRESS RELIEF P-No. 1					
<p>HEATING Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of <u>400</u> °F (<u>222</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 400°F (222°C) PER HOUR. [Calculated rate = 400 degrees F/hr. (222 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]</p>					
<p>HOLDING Temperature to be held at 1150°F (621°C) plus or minus 25°F (14°C) for <u>60</u> minutes. [Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]</p>					
<p>COOLING Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of <u>500</u> °F (<u>278</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 500°F (278°C) PER HOUR. [Calculated rate = 500 degrees F/hr. (278 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]</p> <p>From 800°F (427°C) items may be cooled in still air.</p>					
<p>Additional requirements:</p> <ul style="list-style-type: none"> • Job number and description required on heat treatment charts along with the operator's signature & date. • Reporting of thermocouple attachment method and location, and verification of furnace thermocouple calibration is required. • A sufficient number of thermocouples shall be located to control and maintain uniform distribution of temperature on all vessels and parts. Thermocouples shall be directly attached to the item or provision shall be made for thermocouple placement at bottom, centre and top of the furnace charge in accordance with the ASME Code. • During the heating period, there shall not be a greater variation in temperature throughout the portion of the vessel being heated than 250°F (139°C) within any 15 ft. (4.6 m) interval of length. An adequate number of thermocouples must be used to ensure this Code requirement is met. This limitation is also applicable to the temperature variations between the different thicknesses of various vessel components. • During the holding period, there shall not be a greater difference than 150°F (83°C) between the highest and lowest temperature throughout the portion of the vessel being heat treated, except where the range is further limited by these instructions. • If Capacitor Discharge welding is used to attach thermocouples an ASME Code Section IX Welding Procedure Specification is required (WPS qualification is not required), and the energy output must be limited to 125 Watt-Seconds. No other welding is permitted on vessels or parts. [0.5 X Capacitance in farads X Voltage² = W-Sec.] • The method of thermocouple removal shall not damage the heat treated item. 					
Quality Control Inspector Signature: <i>Tracy</i>		Date: Nov. 16/12			
Thermocouple Attachment Method: CAPACITANCE		Location(s): TOP / MID / BOTTOM			
Furnace Heat Number: # 1-12-283					
Furnace Operator Signature: <i>[Signature]</i>		Date: NOVEMBER 16, 2012			



**INTEGRATED
METALLURGICAL SERVICES LTD.**

5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

Phone (403) 279-2666 Fax: 236-3677, e-mail: cpryde@nucleus.com\dolsen@nucleus.com

HEAT TREATING REQUIREMENTS

CUSTOMER : KOOTENAY INDUSTRIES LTD.

P.O.#: 12-034-CB

MATERIAL : SA-350 LF2 CL.1/SA-333 GR.6/SA-36/SA-420 WPL6

DESCRIPTION:

1-COIL BUNDLE

JOB #12-031-CB, DWG. #12-0131-B, REV.0

DAYLIGHT ENERGY

JOB NO: 12-0311-CB

LENGTH: 24'0" O/L MAX.

WEIGHT: 11,750#

DIA.: 4" O/D MAX.

WALL THK.: .674" MAX.

PROCEDURE

1. Furnace Temperature shall not exceed: 425 °C on loading.
2. Heat Rate: 150 °C per hour.
3. Holding Temperature: 621 ±10 or ±14 or +10\0 °C
4. Holding Time: 60 Minutes Minimum
5. Cooling Rate: 150 °C/Hr. Max. to 425 °C

Issued to FURNACE #: 1

FURNACE HEAT NUMBER: 1-12-283

DATE: November 16, 2012

ISSUED BY: C. PRYDE

Specializing in Pre & Post Weld Heat Treatment. Serving the Industry with the Finest and Most Modern Equipment Available.



INSTRUMENTS

Calibration - Traceable to NRC and NIST | Maintenance

Certificate of Calibration
Temperature Recorder

Company: Integrated Metallurgical Services Ltd.
Address: 5110A 77th Avenue S.E.
Calgary, Alberta T2C 2Z2

Date: September 11, 2012
Due: December 11, 2012
Tech: H Reding

Description: Furnace # 1 Temperature Recorder, Type K Thermocouple
Make: Honeywell
Model: Y15305816-06-01-2-000-002-(10)

Serial #: 04697247001
Range: 0 - 1200 °C

Calibration Data

Input Value °C	As Found °C	As Found Error °C	As Left °C	As Left Error °C	Allowable Error °C
50.0	50	0	50	0	±14
300.0	302	+2	302	+2	±14
600.0	600	0	600	0	±14
900.0	902	+2	902	+2	±14
1150.0	1157	+7	1157	+7	±14

Comments: Recorder is within customer specification of ±14°C.

The test accuracy ratio of this calibration is at least 4:1 unless otherwise indicated. This unit has been calibrated using equipment and standards traceable to the National Research Council of Canada (NRC), the National Institute of Standards and Technology (NIST), or derived from accepted values of natural physical constants. This calibration certificate applies only to the item described and shall not be reproduced, other than in full, without approval from Reding Instrument Services Ltd.

Calibration Standard(s) Used

Asset Used	Model Number	Serial Number	Asset Due Date
Fluke	725	1407008	August 16 2013

Technician

SEP 11 2012

Date

Sign Off (Customer)

SEPTEMBER 11, 2012

Date

KOOTENAY INDUSTRIES LTD.
Quality Control Manual

Revision Number: 3.0

Revision Date: December 15, 2011

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EXHIBIT 14.1 HEAT TREATMENT INSTRUCTIONS
HEAT TREATMENT INSTRUCTIONS

JOB NO.: 12-032-CB		CUSTOMER: Daylight Energy		DATE: Nov. 27/12	
COMPONENT DESCRIPTION: Coil Bundle					
DWG. NO. AND LINE NO.	DIAMETER	THICKNESS	MATERIAL	LENGTH	WEIGHT
12-031-B Rev. 0	4"	0.674"	SA-350-LF2a.1	24'-0"	11750 LBS
			SA-333-6/SA-36		
			SA-420-LPL6		
TYPE OF HEAT TREATMENT: PRESSURE VESSEL STRESS RELIEF P-No. 1					
HEATING					
Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of <u>400</u> °F (<u>222</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 400°F (222°C) PER HOUR. [Calculated rate = 400 degrees F/hr. (222 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]					
HOLDING					
Temperature to be held at 1150°F (621°C) plus or minus 25°F (14°C) for <u>60</u> minutes. [Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]					
COOLING					
Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of <u>500</u> °F (<u>278</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 500°F (278°C) PER HOUR. [Calculated rate = 500 degrees F/hr. (278 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]					
From 800°F (427°C) items may be cooled in still air.					
Additional requirements:					
<ul style="list-style-type: none"> • Job number and description required on heat treatment charts along with the operator's signature & date. • Reporting of thermocouple attachment method and location, and verification of furnace thermocouple calibration is required. • A sufficient number of thermocouples shall be located to control and maintain uniform distribution of temperature on all vessels and parts. Thermocouples shall be directly attached to the item or provision shall be made for thermocouple placement at bottom, centre and top of the furnace charge in accordance with the ASME Code. • During the heating period, there shall not be a greater variation in temperature throughout the portion of the vessel being heated than 250°F (139°C) within any 15 ft. (4.6 m) interval of length. An adequate number of thermocouples must be used to ensure this Code requirement is met. This limitation is also applicable to the temperature variations between the different thicknesses of various vessel components. • During the holding period, there shall not be a greater difference than 150°F (83°C) between the highest and lowest temperature throughout the portion of the vessel being heat treated, except where the range is further limited by these instructions. • If Capacitor Discharge welding is used to attach thermocouples an ASME Code Section IX Welding Procedure Specification is required (WPS qualification is not required), and the energy output must be limited to 125 Watt-Seconds. No other welding is permitted on vessels or parts. [0.5 X Capacitance in farads X Voltage² = W-Sec.] • The method of thermocouple removal shall not damage the heat treated item. 					
Quality Control Inspector Signature: <u>Tracy [Signature]</u>		Date: <u>Nov. 27/12</u>			
Thermocouple Attachment Method: <u>Capacitor</u>		Location(s): <u>Top/Mid/Bottom</u>			
Furnace Heat Number: <u>3-12-146</u>					
Furnace Operator Signature: <u>[Signature]</u>		Date: <u>Nov 27, 2012</u>			

**Certificate of Calibration
Temperature Recorder**

Company: Integrated Metallurgical Services Ltd. **Date:** September 11, 2012
Address: 5110A 77th Avenue S.E. **Due:** December 11, 2012
 Calgary, Alberta T2C 2Z2 **Tech:** H Reding

Description: Furnace # 3 Temperature Recorder, Type K Thermocouple
Make: Honeywell **Serial #:** 8926-5115378001
Model: 15303816-24-43-2-000-002-10-002-C300 **Range:** 0 - 1200 °C

Calibration Data

Input Value °C	As Found °C	As Found Error °C	As Left °C	As Left Error °C	Allowable Error °C
50.0	50	0	50	0	±14
300.0	300	0	300	0	±14
600.0	600	0	600	0	±14
900.0	900	0	900	0	±14
1150.0	1150	0	1150	0	±14

Comments: Recorder is within customer specification of ±14°C.

The test accuracy ratio of this calibration is at least 4:1 unless otherwise indicated. This unit has been calibrated using equipment and standards traceable to the National Research Council of Canada (NRC), the National Institute of Standards and Technology (NIST), or derived from accepted values of natural physical constants. This calibration certificate applies only to the item described and shall not be reproduced, other than in full, without approval from Reding Instrument Services Ltd.

Calibration Standard(s) Used

Asset Used	Model Number	Serial Number	Asset Due Date
Fluke	725	1407008	August 16, 2013

H Reding
Technician

SEP 11 2012

Date

[Signature]
Sign Off (Customer)

SEPTEMBER 11, 2012
Date



**INTEGRATED
METALLURGICAL SERVICES LTD.**

5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

Phone (403) 279-2666 Fax: 236-3677, e-mail: cpryde@nucleus.com\dolsen@nucelus.com

HEAT TREATING REQUIREMENTS

CUSTOMER : KOOTENAY INDUSTRIES LTD.

JOB#: 12-151-154-VS/12-032-CB

MATERIAL : SA-106-B/SA-105N/SA-36/SA-234 WPB
SA-350 LV2 CL.1/SA-333 GR.6/SA-420 WPL6

DESCRIPTION:

4-VESSELS, AIR ELIMINATORS

JOB #12-151-154-VS, DWG. #12-151-A, REV.1
HALL TECHNOLOGIES

1-COIL BUNDLE

JOB #12-032-CB, DWG. #12-031-B REV.0
DAYLIGHT ENERGY

JOB NO: 12-151-154-VS/12-032-CB

LENGTH: 5'-0" (a.e), 24'0"(c.b) O/L MAX.

WEIGHT: 2,400# total-(a.e)
11,750# (c.b)
14,150# TOTAL

DIA.: 18"(a.e), 4"(c.b) O/D MAX.

WALL THK.: .674" MAX.

PROCEDURE

1. Furnace Temperature shall not exceed: 425 °C on loading.
2. Heat Rate: 150 °C per hour.
3. Holding Temperature: 621 ±10 or ±14 or +10\ -0 °C
4. Holding Time: 60 Minutes Minimum
5. Cooling Rate: 150 °C/Hr. Max. to 425 °C

Issued to furnace #: 3

Furnace heat number: 3-12-146

Date: November 27, 2012

Issued by: C. PRYDE



INTEGRATED
METALLURGICAL SERVICES LTD.
5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

DATE: NOVEMBER 16, 2012
CUSTOMER: KOOTENAY INDUSTRIES LTD.
ORDER NO: 12-031-CB
JOB NO: 12-031-CB
PROCEDURE: P.W.H.T.
HEAT TREATING PER: A.S.M.E.
RATE OF RISE: MOD. To 425°C to 621°C at 150°C/Hr
HOLDING TEMP.: 621°C ±14°C
HOLDING TIME: 60 Min. Minimum
COOLING RATE: 621°C to 425°C at 150°C/Hr.
MATERIAL: SA-350-LF2 CL.1/SA-333 GR.6/SA-420 WPL6/SA-36
NOTES:
1- COIL BUNDLE
4"O/Dx24"O/Lx.674"wall MAX. 11,750#
JOB #12-031-CB, DWG. #12-031-B REV.0
DAYLIGHT ENERGY
OPERATOR: Collin Pryde Heat: #1-12-283
SIGNING: *[Signature]*
FOR I.M.S. LTD.: *[Signature]* Nov. 19/12

0700

TYPE K T/C 90

TYPE K T/C 90

0600

0520°F

TYPE K T/C 90

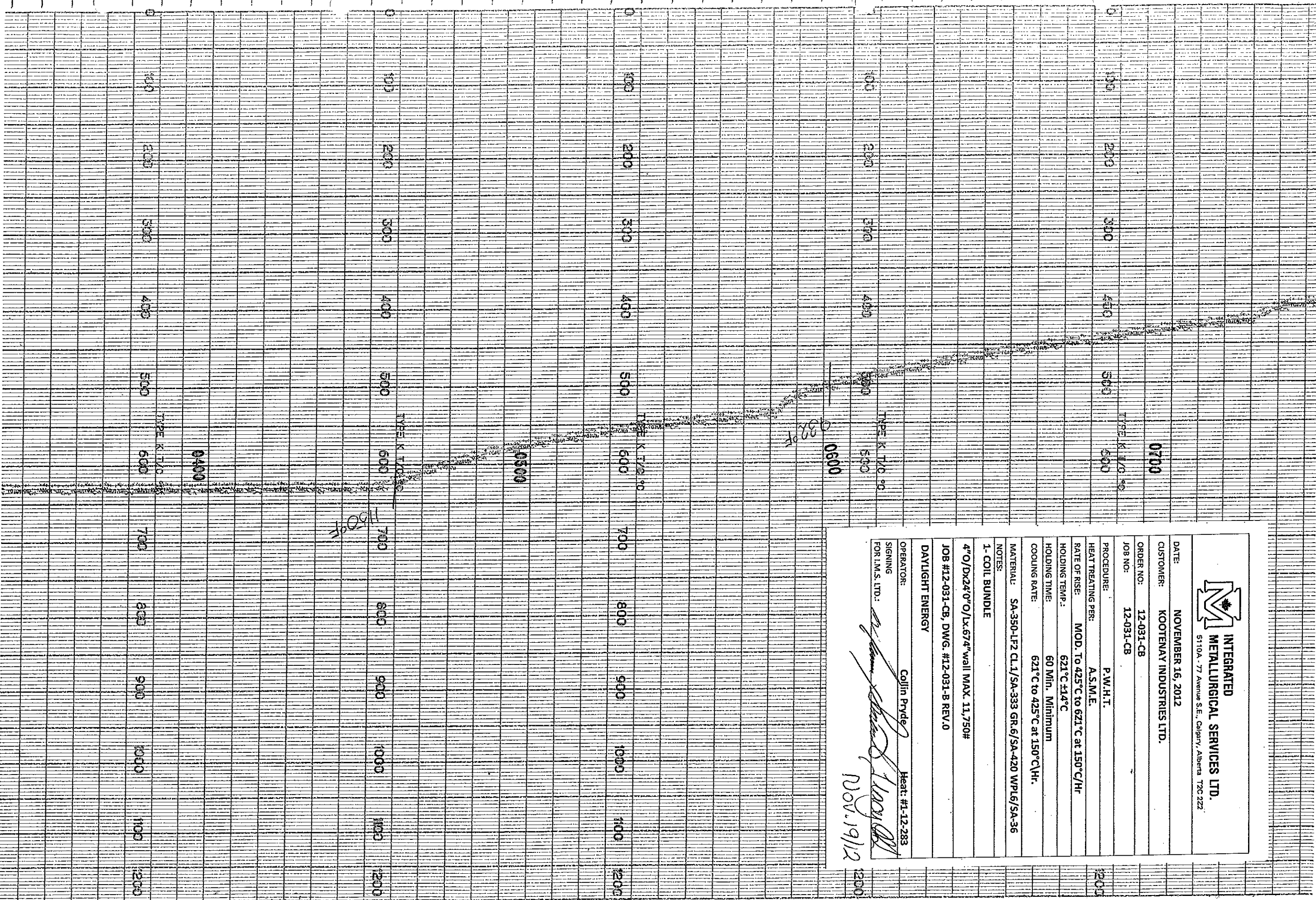
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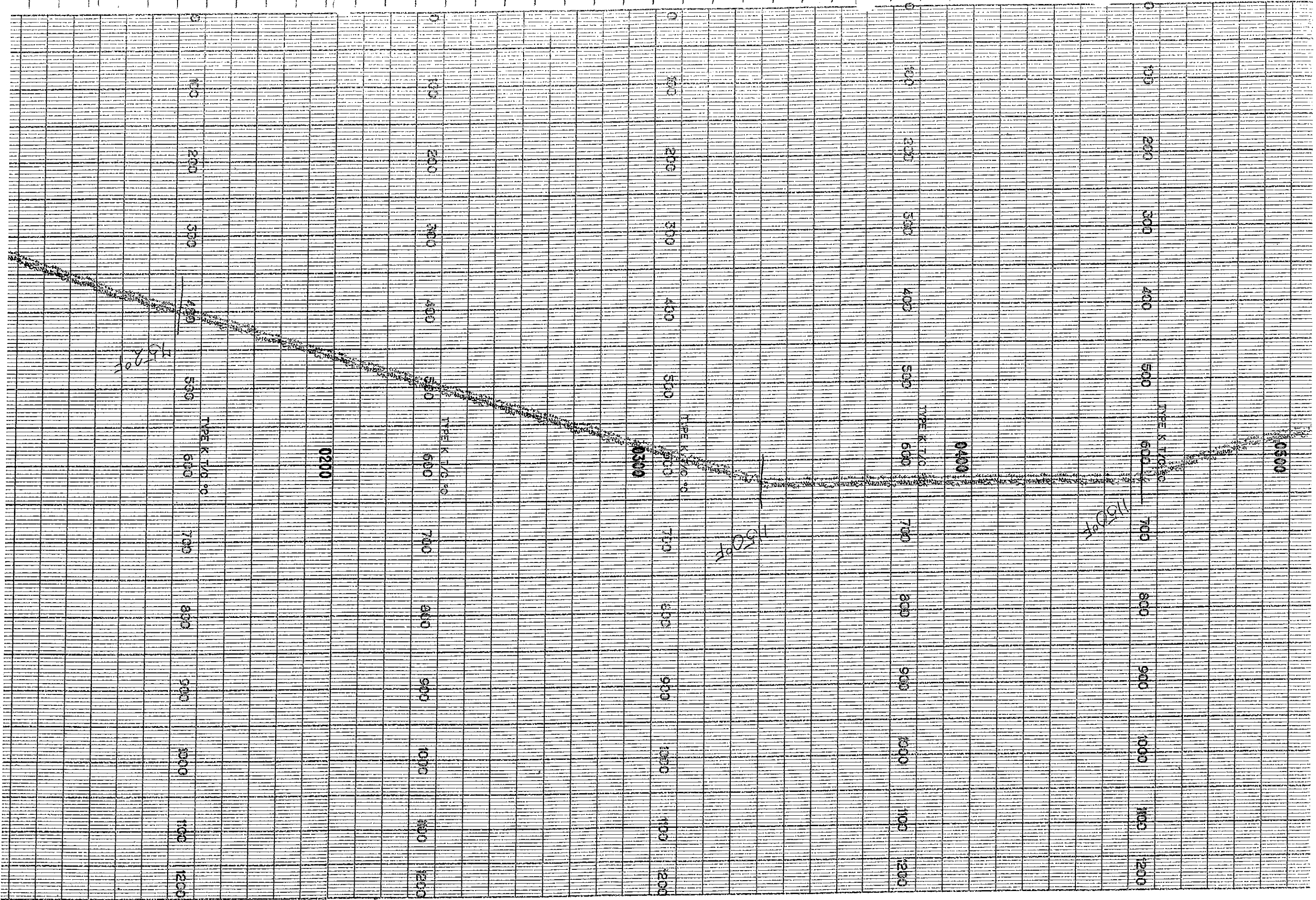
TYPE K T/C 90

1500°F

0400

TYPE K T/C





1620 F

0200

0300

0400

0500

1670 F

1620 F

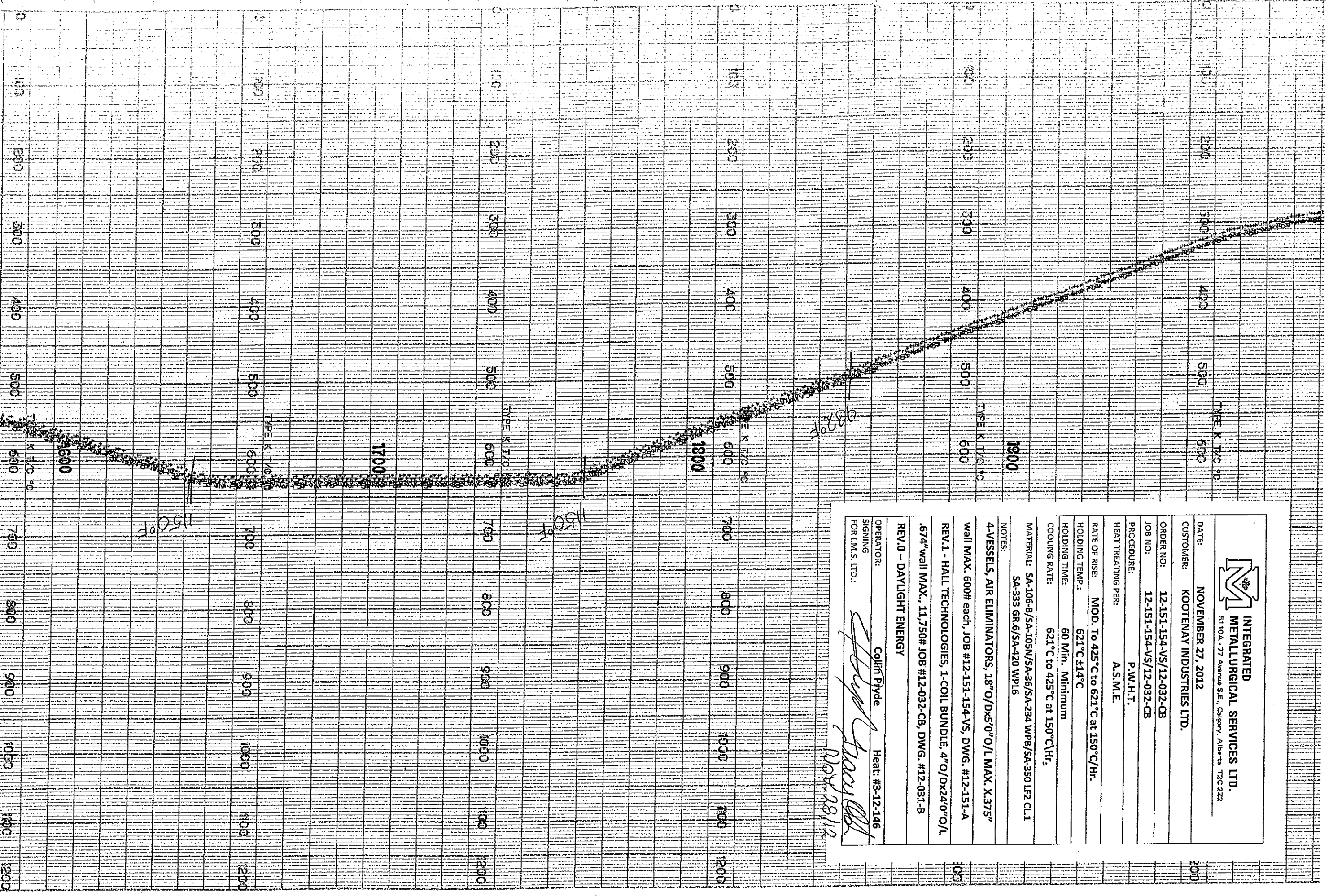


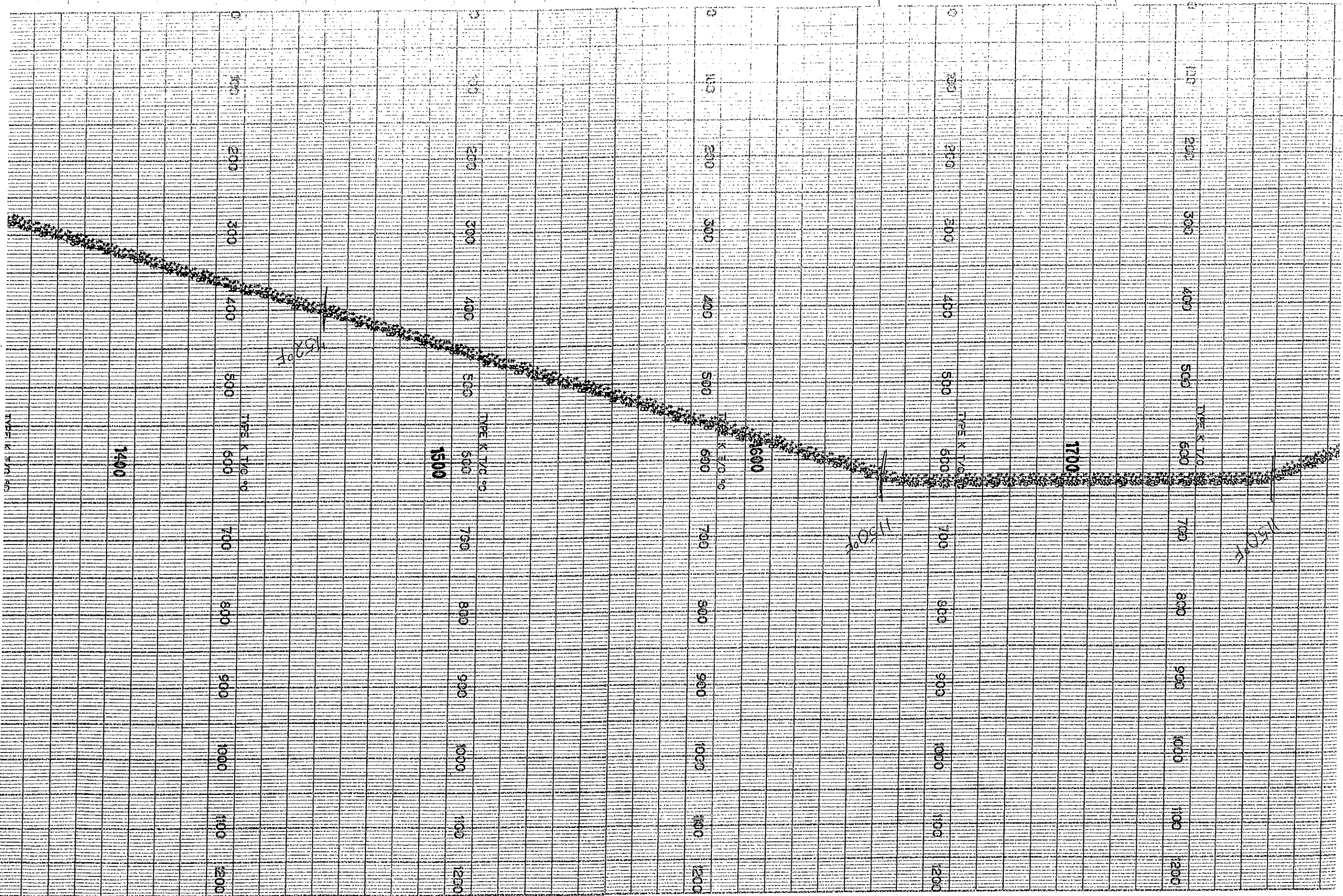
**INTEGRATED
METALLURGICAL SERVICES LTD.**
5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

DATE: NOVEMBER 27, 2012
CUSTOMER: KOOTENAY INDUSTRIES LTD.
ORDER NO: 12-151-154-VS/12-032-CB
JOB NO: 12-151-154-VS/12-032-CB
PROCEDURE: P.W./H.T.
HEAT TREATING PER: A.S./M.E.
RATE OF RISE: MOD. To 425°C to 621°C at 150°C/Hr.
HOLDING TEMP.: 621°C ±14°C
HOLDING TIME: 60 Min. Minimum
COOLING RATE: 621°C to 425°C at 150°C/Hr.
MATERIAL: SA-106-B/SA-105N/SA-36/SA-234 WPB/SA-350 LF2 CL1
SA-333 GR.6/SA-420 WP16
NOTES:
4-VESSELS, AIR ELIMINATORS, 18" O/Dx5'0" O/L MAX. X.375"
wall MAX. 600# each, JOB #12-151-154-VS, DWG. #12-151-A
REV.1 - HALL TECHNOLOGIES, 1-COIL BUNDLE, 4" O/Dx24" O/L
.574" wall MAX., 11,750# JOB #12-032-CB, DWG. #12-031-B
REV.0 - DAYLIGHT ENERGY

OPERATOR:
SIGNING
FOR L.M.S. LTD.:

Colin Pyde Heat: #3-12-146
Colin Pyde
NOV 28/12





KOOTENAY INDUSTRIES LTD.
Quality Control Manual

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EXHIBIT 14.1 HEAT TREATMENT INSTRUCTIONS

HEAT TREATMENT INSTRUCTIONS

JOB NO.: 12-033-CA CUSTOMER: Daylight Energy DATE: Jan. 8/13					
COMPONENT DESCRIPTION: Coil Bundle					
DWG. NO. AND LINE NO.	DIAMETER	THICKNESS	MATERIAL	LENGTH	WEIGHT
12-031-B Rev. 0	4"	0.674"	SA-350-LF2.ch.1	24'-0"	11 750 LBS
			SA-333-6/SA-36		
			SA-420-WPL6		
TYPE OF HEAT TREATMENT: PRESSURE VESSEL STRESS RELIEF P-No. 1					
<p>HEATING Temperature to be raised from 800°F (427°C) to 1150°F (621°C) at a maximum rate of <u>400</u> °F (<u>222</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 400°F (222°C) PER HOUR. [Calculated rate = 400 degrees F/hr. (222 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches]</p>					
<p>HOLDING Temperature to be held at 1150°F (621°C) plus or minus 25°F (14°C) for <u>60</u> minutes. [Holding time to be determined by Table UCS-56 for Nominal Thickness as specified in UW-40(f)]</p>					
<p>COOLING Temperature to be lowered from 1150°F (621°C) to 800°F (427°C) at a maximum rate of <u>500</u> °F (<u>278</u> °C) per hour. NOTE: THIS VALUE MUST NEVER EXCEED 500°F (278°C) PER HOUR. [Calculated rate = 500 degrees F/hr. (278 degrees C/hr.) Divided by the maximum metal thickness of the shell or head plate in inches] From 800°F (427°C) items may be cooled in still air.</p>					
<p>Additional requirements:</p> <ul style="list-style-type: none"> • Job number and description required on heat treatment charts along with the operator's signature & date. • Reporting of thermocouple attachment method and location, and verification of furnace thermocouple calibration is required. • A sufficient number of thermocouples shall be located to control and maintain uniform distribution of temperature on all vessels and parts. Thermocouples shall be directly attached to the item or provision shall be made for thermocouple placement at bottom, centre and top of the furnace charge in accordance with the ASME Code. • During the heating period, there shall not be a greater variation in temperature throughout the portion of the vessel being heated than 250°F (139°C) within any 15 ft. (4.6 m) interval of length. An adequate number of thermocouples must be used to ensure this Code requirement is met. This limitation is also applicable to the temperature variations between the different thicknesses of various vessel components. • During the holding period, there shall not be a greater difference than 150°F (83°C) between the highest and lowest temperature throughout the portion of the vessel being heat treated, except where the range is further limited by these Instructions. • If Capacitor Discharge welding is used to attach thermocouples an ASME Code Section IX Welding Procedure Specification is required (WPS qualification is not required), and the energy output must be limited to 125 Watt-Seconds. No other welding is permitted on vessels or parts. [0.5 X Capacitance in farads X Voltage² = W-Sec.] • The method of thermocouple removal shall not damage the heat treated item. 					
Quality Control Inspector Signature: <u>Lacey</u>			Date: <u>Jan. 8/13</u>		
Thermocouple Attachment Method: <u>CAPACITANCE</u>			Location(s): <u>TOP/MID/BOTTOM</u>		
Furnace Heat Number: <u>#1-13-004</u>					
Furnace Operator Signature: <u>[Signature]</u>			Date: <u>JANUARY 08, 2013</u>		



**INTEGRATED
METALLURGICAL SERVICES LTD.**

5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

Phone (403) 279-2666 Fax: 236-3677, e-mail: cpryde@nucleus.com\dolsen@nucleus.com

HEAT TREATING REQUIREMENTS

CUSTOMER : KOOTENAY INDUSTRIES LTD.

P.O.: #12-033-CB

MATERIAL : SA-350 LFW CL.1/SA-333 GR.6/SA-36/SA-420 WPL6

DESCRIPTION:

1 - COIL BUNDLE
JOB #12-033-CB, DWG. #12-031-B REV.0

DAYLIGHT ENERGY

JOB NO: 12-033-CB

LENGTH: 24'0", 5'O/W O/L MAX.

WEIGHT: 11,750#

DIA.: 4" O/D MAX.

WALL THK.: .674" MAX.

PROCEDURE

1. Furnace Temperature shall not exceed: 425 °C on loading.
2. Heat Rate: 150 °C per hour.
3. Holding Temperature: 621 ±10 or ±14 or +10\ -0 °C
4. Holding Time: 60 Minutes Minimum
5. Cooling Rate: 150 °C/Hr. Max. to 425 °C

Issued to FURNACE #: 1

FURNACE HEAT NUMBER: 1-13-004

DATE: January 07, 2013

ISSUED BY: C. PRYDE

**Certificate of Calibration
Temperature Recorder**

Company: Integrated Metallurgical Services Ltd. **Date:** December 11, 2012
Address: 5110A 77th Avenue S.E. **Due:** March 11, 2013
 Calgary, Alberta T2C 2Z2 **Tech:** H Reding

Description: Furnace # 1 Temperature Recorder, Type K Thermocouple
Make: Honeywell **Serial #:** 04697247001
Model: Y15305816-06-01-2-000-002-(10) **Range:** 0 - 1200 °C

Calibration Data

Input Value °C	As Found °C	As Found Error °C	As Left °C	As Left Error °C	Allowable Error °C
50.0	48	-2	50	0	±14
300.0	300	0	300	0	±14
600.0	600	0	600	0	±14
900.0	903	+3	900	0	±14
1150.0	1157	+7	1151	+1	±14

Comments: Recorder is within customer specification of ±14°C.

The test accuracy ratio of this calibration is at least 4:1 unless otherwise indicated. This unit has been calibrated using equipment and standards traceable to the National Research Council of Canada (NRC), the National Institute of Standards and Technology (NIST), or derived from accepted values of natural physical constants. This calibration certificate applies only to the item described and shall not be reproduced, other than in full, without approval from Reding Instrument Services Ltd.

Calibration Standard(s) Used

Asset Used	Model Number	Serial Number	Asset Due Date
Fluke	725	1407008	August 16 2013

H Reding

Technician

DEC 11 2012

Date

[Signature]

Sign Off (Customer)

DECEMBER 11, 2012

Date



**INTEGRATED
METALLURGICAL SERVICES LTD.**
5110A - 77 Avenue S.E., Calgary, Alberta T2C 2Z2

DATE: **JANUARY 08, 2013**
CUSTOMER: **KOOTENAY INDUSTRIES LTD.**

ORDER NO: **12-033-CB**
JOB NO: **12-033-CB**

PROCEDURE: **P.W.H.T.**
HEAT TREATING PER: **A.S.M.E.**

RATE OF RISE: **MOD. To 425°C to 621°C at 150°C/Hr.**
HOLDING TEMP.: **621°C ±14°C**
HOLDING TIME: **60 Min. Minimum**
COOLING RATE: **621°C to 425°C at 150°C/Hr.**

MATERIAL: **SA-350 LF2 CL.1/SA-333 GR.6/SA-36/SA-420 WPB**
NOTES:

1 - COIL BUNDLE

4"O/Dx24"O/Lx5'0"/Wx.674" wall MAX. 11,750#

JOB #12-033-CB, DWG. #12-031-B REV.0

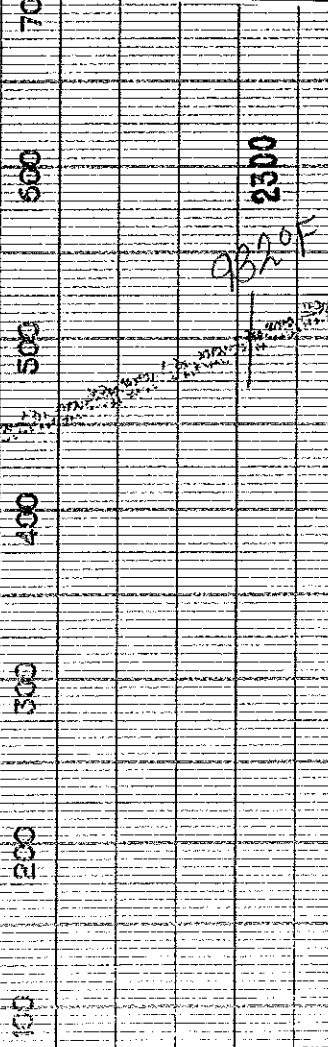
DAYLIGHT ENERGY

OPERATOR: **Collin Pryde** Heat: #1-13-004
SIGNING

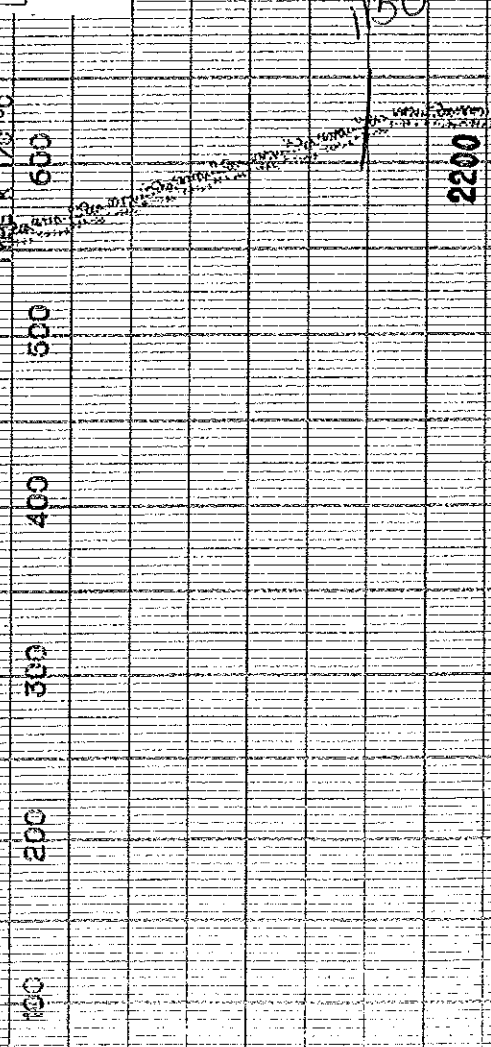
FOR I.M.S. LTD.:

Collin Pryde
Jan. 9/13

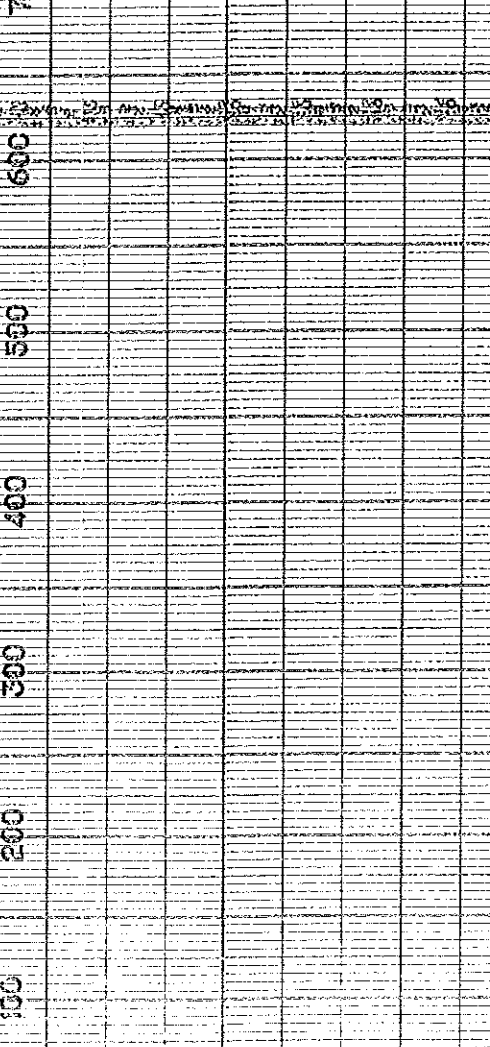
TYPE K T/C °C



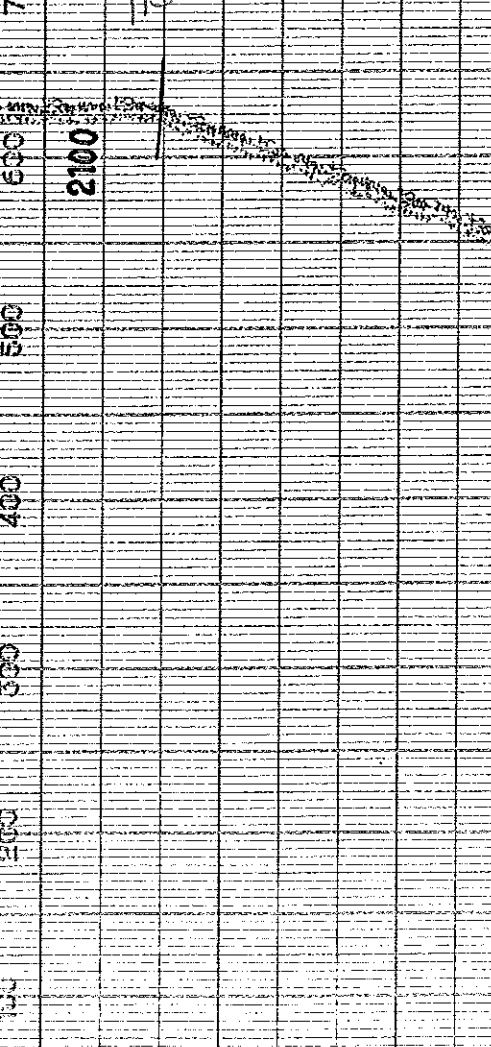
TYPE K T/C °C



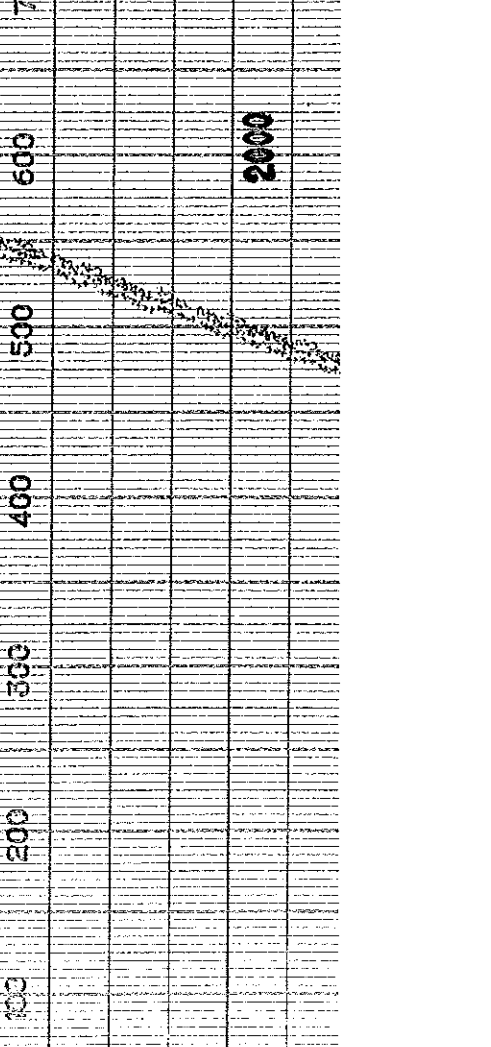
TYPE K T/C °C

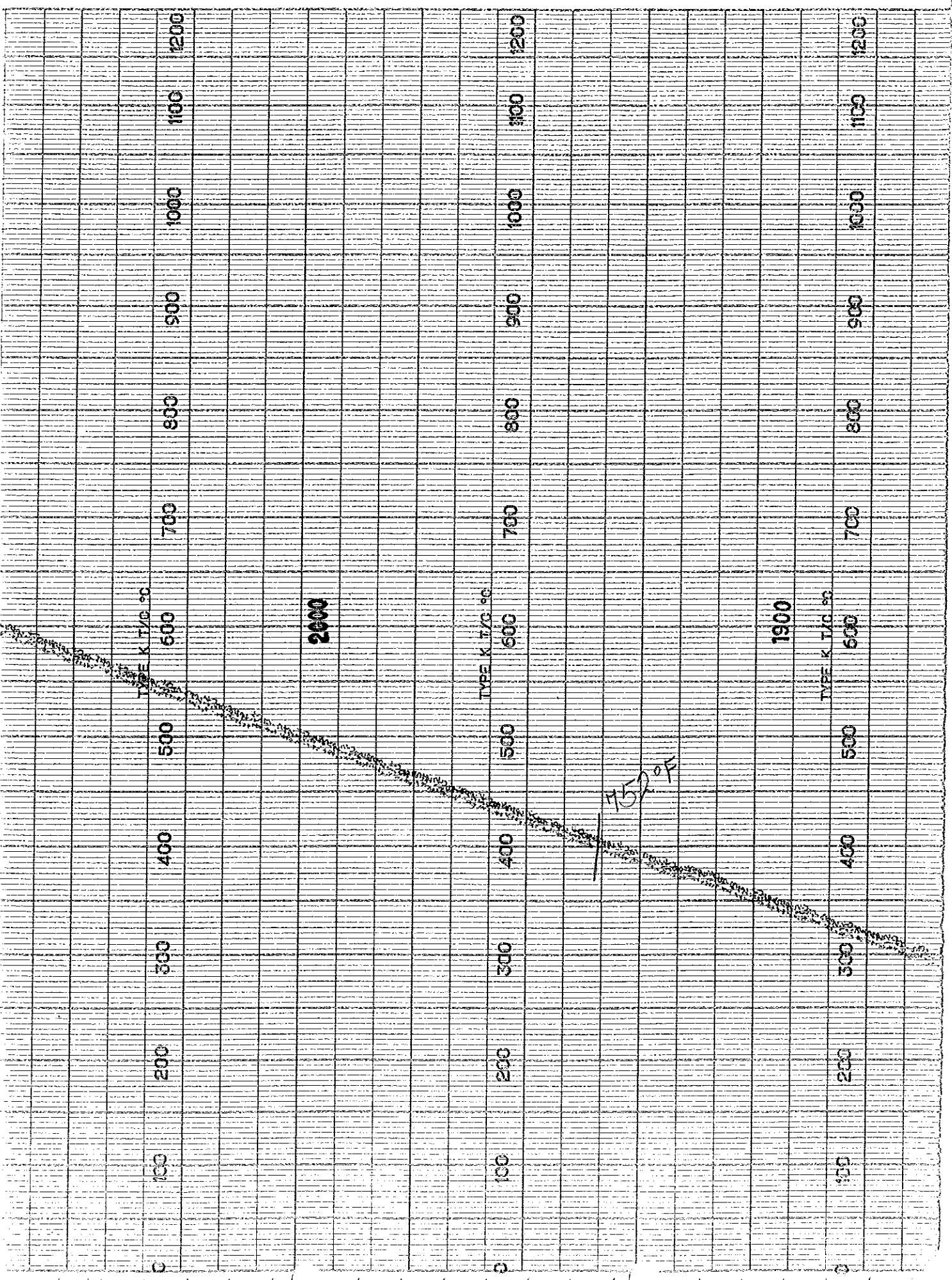


TYPE K T/C °C



TYPE K T/C °C







STAMPED TO A CAUDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANIA BRANCA (CI) - Italy
Via G. Pirelli, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.metalfarm.com

PRODOTTI INDUSTRIALI S.P.A.

QUALITY CONTROL DEPARTMENT

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

4891292-00

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

Table with columns: Cert. N., Del/Dated, Fattura / Invoice N., Def/Dated, DOT / Del Note N., Del/Dated, No.Ord. / Our ref. N., Descr. / F.F.F. c/c CCTF - EDM, CASTLE HOUSE - STATION ROAD, ENS 1PE, NEW BARNET/HERTFORD, GB, 5407, 59 AVENUE, T88 3G2, EDMONTON, ALBERTA, CA

Page 2 - 4

Table with columns: COD. COL. COLATA, POS. ITEM, VS. ORDINE, YOUR REFERENCE, Q.T.A. DESCRIPTION, Q.T.Y. DESCRIPTION, DIM.IN ACC. A, DIM.IN ACCORDANCE TO, VISIVO E DIMENS., VS. & DIMENS., MATERIALE / MATERIAL, ASTM A350 LF2 CL.1/2, 1136613, 008, 3807/CCTF EDM, 51,00, WIN 2500 LRF 3" XXS SQ.CUT LF2CL1, 7580072, ASME/ANSI B16.5-2009, SATISFACTORY

Table with columns: COD. COL. COLATA, POS. ITEM, VS. ORDINE, YOUR REFERENCE, Q.T.A. DESCRIPTION, Q.T.Y. DESCRIPTION, DIM.IN ACC. A, DIM.IN ACCORDANCE TO, VISIVO E DIMENS., VS. & DIMENS., MATERIALE / MATERIAL, ASTM A350 LF2 CL.1/2, 560186, 009, 3807/CCTF EDM, 0,180, 0,220, 1,020, 1,005, 0,008, 0,050, 0,030, 0,010, 0,025, 0,040, 0,010, 0,001, 0,000, 0,003, 0,369, ASME/ANSI B16.5-2009, SATISFACTORY

Table with columns: COD. COL. COLATA, POS. ITEM, VS. ORDINE, YOUR REFERENCE, Q.T.A. DESCRIPTION, Q.T.Y. DESCRIPTION, DIM.IN ACC. A, DIM.IN ACCORDANCE TO, VISIVO E DIMENS., VS. & DIMENS., MATERIALE / MATERIAL, ASTM A350 LF2 CL.1/2, 560186, 009, 3807/CCTF EDM, 0,180, 0,220, 1,020, 1,005, 0,008, 0,050, 0,030, 0,010, 0,025, 0,040, 0,010, 0,001, 0,000, 0,031, 0,369, ASME/ANSI B16.5-2009, SATISFACTORY

Table with columns: COD. COL. COLATA, POS. ITEM, VS. ORDINE, YOUR REFERENCE, Q.T.A. DESCRIPTION, Q.T.Y. DESCRIPTION, DIM.IN ACC. A, DIM.IN ACCORDANCE TO, VISIVO E DIMENS., VS. & DIMENS., MATERIALE / MATERIAL, ASTM A350 LF2 CL.1/2, 126,60, 50,80, 1, 126,60, 50,80, 1, 343,0, 30,0, 59,0, 164,0 - 166,0, 164,0 - 166,0, 164,0 - 166,0, TRATTAMENTO TERMICO / HEAT TREATMENT, NORMALIZED AT 930 C - COOLED IN STILL AIR, TRATTAMENTO TERMICO / HEAT TREATMENT, NORMALIZED AT 930 C - COOLED IN STILL AIR, TRATTAMENTO TERMICO / HEAT TREATMENT, NORMALIZED AT 930 C - COOLED IN STILL AIR, OFFICIO CONTROLLO QUALITA' / QUALITY CONTROL DEPARTMENT, ENTE UFFICIALE DI COLLAUDO / INSPECTION AUTHORITY, MARCHIO PRODUZIONE / MANUFACTURER'S SYMBOL, MFF

ACCEPTED TO RIZ + BEVEL - ACCEPTED IN ACCORDANCE with ASME Sec II with ASME Sec II 2010 Ed 1.2011 add Date: 09/02/2012 Signed: J.O.

CLIENTE / Customer / Client
CCTF CORPORATION (EDMONTON)
 5407 - 53 AVENUE NW
 EDMONTON, AB T6B 3G2
 CANADA

CERTIFICADO DE INSPECCION
 Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
 ISO 10474 / 3.1

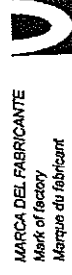


FECHA: 20/06/2012 N.º 149135
 Date: Page: 2

PRODUCTO: SU PEDIDO N.º 4891318-00
 Article - Produit: Votre Cde. N.º

DE 24/04/2012
 of - de

Bº Zúñiga, 3 - Apdo. 14
 20560 ONATI (Gipuzkoa) SPAIN
 Tel.: 34 - 943 760552
 Fax: 34 - 943 761808
 E-mail: ulma@ulmaping.com
 Packing List: 94112



MARCA DEL FABRICANTE
 Mark of factory
 Marque du fabricant

NORMAS APLICABLES: ASME B16.5-09
 Requirements - Normes Applicables

DEPARTAMENTO: QUALITY ASSURANCE
 Section: Département

MATERIAL CORRESPONDIENTE: AISA105N-11 // AISI350LF2CL1-11
 Material Correspondent - Qualité

MODELO DE FUSION (*)
 Steel Making - Elaboration de l'acier

E = Etc. Y = Origine básico

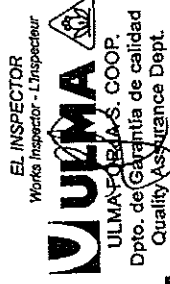
NACE MR0175/ISO15156-2-09 & MR0103-10
 Clause 7.2.1.4, Annex A.2 and SSC Region 3.
 CSA-Z245.12-09 GR248 CAT II - SS (WN & BLIND FLANGES ONLY)

PARTIDA Item Poste	CANTIDAD Quantity Quantités	DESCRIPCION Description	LOTE	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No N.º Caille	RESISTENCIA Y. Strength 0.2 % N/mm2	ALARGAMIENTO Elongation Lr: 4 g %	RESILIENCIA Impact test Résilience Joules	CHARPY V Impact Charpy V 10J/mm	DUREZA Hardness Dureté HBW				
52 7582780	24	BLIND 8 600LB RF A350LF2	1612	NE	300V2	508	32.10	50	40	51	47	-50	150	156
54 7586220	16	WN 4 900LB XS/80 RF A350LF2	1322	NE	233V2	520	32.90	37	43	45	42	-50	155	164
54 7586220	14	WN 4 900LB XS/80 RF A350LF2	942	NE	45V2	525	34.10	52	49	47	49	-50	148	154
62 7581234	32	WN 4 2500LB XSS RTJ A350LF2	1062	NE	173V2	529	30.10	46	60	64	57	-50	150	156
62 II	16	WN 4 2500LB XSS RTJ A350LF2	1102	NE	189V2	526	29.50	58	64	58	60	-50	151	156
7581490	24	WN 8 600LB XS/80 RF A350LF2	1492	NE	230M2	551	25.00	93	63	67	74	-50	162	162

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º Heat No N.º Caille	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mb %	V %	Cu %	Al %	Ti %	N %	CEq %
173V2	0.190	0.260	0.850	0.017	0.005	0.250	0.130	0.070	0.001	0.003	0.032	0.000	0.000	0.422
189V2	0.210	0.290	0.830	0.010	0.004	0.140	0.070	0.020	0.001	0.002	0.035	0.000	0.000	0.400
230M2	0.170	0.220	1.210	0.007	0.002	0.070	0.090	0.020	0.001	0.066	0.220	0.035	0.000	0.423
233V2	0.195	0.220	1.090	0.021	0.006	0.050	0.100	0.025	0.000	0.002	0.280	0.020	0.000	0.417
300V2	0.210	0.220	0.890	0.011	0.005	0.190	0.070	0.010	0.001	0.002	0.033	0.000	0.000	0.421
45V2	0.200	0.240	0.950	0.020	0.005	0.070	0.140	0.040	0.000	0.002	0.370	0.025	0.000	0.415

- Las dimensiones y la condición superficial se hallaron satisfactorias.
 - Dimension and surface condition were found acceptable.
 - Les dimensions et états de surface sont satisfaisants.
 - Los materiales cúbicos cumplen las normas aplicables.
 - Manufacturing requirements are satisfied.
 - Les normes applicables sont respectées.



EL INSPECTOR
 Works Inspector - L'inspecteur
 ULMA FORJAS, S.COOP.
 Dpto. de Garantía de calidad
 Quality Assurance Dept.

(*) OBSERVACIONES: N_ NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR
 Remarks Observations

ACCEPTED IN ACCORDANCE
 with ASME Sec II
 2010 Ed. 2011 add.
 Date: 20/06/2012 Signed: A.O.

TPCO
 Contract No. 2012SSG-CI-12-188
 Order P.O.No. Trans Am Piping Products Ltd., CI-12-188
 Material Standard ASTM A333 GR 6-10/ASME SA333 GR6-10, CSA Z446.1-07 Gr.280 Cat II SS, NACE MR0175-09/ISO 15156
 Quantity Pieces Meters Bundles Tons
 Delivery condition Hot rolling
 Sample No. 130-3-1812
 Tensile test(Mpa) 1* 2* 3* 4*
 Tem. °C
 T.S. Type Y.S. Elong. % Shrink %
 Impact test(J) AK1 share % AK2 share % AK3 share % AVE share %
 Size 10X10 58 100 62 100 54 100 58 100
 Tem. °C -45°C 58 100 62 100 54 100 58 100
 -45°C 58 100 62 100 54 100 58 100



ADD:JINTANG ROAD DONGLI
 DISTRICT,TIANJIN,CHINA
 TEL:86-22-24801139
 FAX:86-22-24801291

TIANJIN PIPE(GROUP)CORPORATION LTD.
TEST CERTIFICATE
 (EN10204 3.1)

L/C No.:
 No.: C12325892213

Contract No.	Product DIMENSION STANDARD	PIPE	O.D.*W.T.		Menu Method	SRL	Packing Total pieces	IN LOOSE									
			4"X3S(114.3X 17.12mm)	HOT ROLLING SEAMLESS													
1	2012SSG-CI-12-188	ASME B36.10															
2	310870	130-3-1812	A	393	38	A	58	100									
3	310870	130-3-1812	B			B	58	100									
Total																	
Heat No.	Lot No.	Sample No.	Hardness Brinell(HB)(line)				Hardness Brinell(HB)(outside)				NDE	Fla. test(1)	Fla. test(2)				
			1	2	3	4	1	2	3	4				AVE			
310870	130	130-3-1812	165	167	165	166	165	165	166	167	166	G	G				
Note: A=strip, L=bo, 2S=4, L=50																	
Heat No.	Steel specl.	Chemical composition%(L:Ladle analysis P:Product analysis)															
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B	Ti	Nb			
310870	A333 GR 6	L 0.16	0.29	1.28	0.013	0.008	0.07	0.02	0.05	0.01	0	0	0				
		P 0.16	0.29	1.28	0.012	0.008	0.06	0.01	0.01	0.01	0	0	0				
		L 0.16	0.29	1.28	0.012	0.008	0.06	0.01	0.05	0.01	0	0	0				
		P															
		L															
		P															
5	NDE(100%)	Visual and dimension	Hydro Test			Pipe end NDE			Pipe end bovellng			Residual mag Test		SSCC		HIC	
	G	G	G			G			G			G		G		G	
Note: Heat Treatment Condition For Pipe Normalized:900°C X 20MIN CE(CSA)=C+Fe(Mn8+S)(24+Cu15+Ni20+(Cr+Mo+V+Nb))/(5+5B) CE=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15 Remark:destl.=destination;tom.=temperature;steel specl.=steel specification;destl.=destination;Manu.=Manufacturer;G=Good																	

TPCO
 天津钢管集团有限公司
 460 北京路
 天津 300410

ACCEPTED IN ACCORDANCE
 with ASME Sec II
 2010 Ed.1 Roll add.
 Date 12/12/2012 Signed L.D.

1541 - 718 542 LF

HEAD NO. 100247
 TRADE NAME /
 SPECIFICATION /
 ORDER NO. /
 QTY. /
 WEIGHT /
 DIMENSIONS /
 STANDARD /
 MATERIAL /
 MANUFACTURER /
 ADDRESS /
 CONTACT /
 PHONE /
 FAX /
 E-MAIL /



ADD.: JINTANG ROAD DONGLI
 DISTRICT, TIANJIN, CHINA
 TEL: 86-22-24801139
 FAX: 86-22-24801291

TIANJIN PIPE(GROUP) CORPORATION LTD. TEST CERTIFICATE

(EN10204 3.1)

L/C No.:
 No.: C1283832544

Contract No.		2012SSG-CI-12-330		Product DIMENSION		4"XXS(14.3x 17.12mm)		Packing IN LOOSE		Total pieces 51											
Order P.O.No.		CI-12-330		STANDARD		ASME B36.10		Manu Method		HOT ROLLING SEAMLESS											
Material Standard		ASTM A333 GR 6-10/ASME SA333 GR6-10 ,CSA Z245.1-07 Gr.290 Cat II SS ,NACE MR0175-09/ISO 15156		Length range		SRL		Total weight		13.597MT											
Lot No.	Heat No.	Quantity		Delivery condition	Sample No.	Tensile test(M/Pipe)				Impact test(I)											
		Pieces	Meters			1* Tem. °C	T.S: Type	Y.S.	Elong. %	Shink %	2* Tem. °C	Size	AK1 share %	AK2 share %	AK3 share %	share %					
130	703097	51	13.597	Hot rolling	130-6-2217	A	589	430	36.5		A	-45°C	10X10	62	100	57	100	54	100	58	100
Total		51	13.597																		
Heat No.	Lot No.	Hardness Brinell (HB)(inside)				Hardness Brinell (HB)(outside)				Hardness Brinell (HB)		NDE	Fla. test(1)	Fla. test(2)							
		1	2	3	4	1	2	3	4	1	2										
703097	130	166	165	164	164	AVE	165	164	165	166	164	165	166	165	EMIL4	G	G				
Heat No.	Steel speci.	Chemical composition(L:Ladle analysis;P:Product analysis)																			
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B	Ti	Nb	CE						
		L	0.17	0.33	1.28	0.019	0.008	0.01	0.03	0.01	0.01	0.01	0	0	0	0.39					
		P	0.17	0.34	1.28	0.019	0.007	0.01	0.02	0.01	0.01	0.01	0	0	0	0.39					
Heat No.	Steel speci.	Ladle analysis																			
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B	Ti	Nb	CE						
		L	0.17	0.34	1.28	0.019	0.007	0.01	0.02	0.01	0.01	0.01	0	0	0	0.39					
		P	0.17	0.34	1.28	0.019	0.007	0.01	0.02	0.01	0.01	0.01	0	0	0	0.39					
Heat No.	Steel speci.	Product analysis																			
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B	Ti	Nb	CE						
		L	0.17	0.33	1.28	0.019	0.008	0.01	0.03	0.01	0.01	0.01	0	0	0	0.39					
		P	0.17	0.34	1.28	0.019	0.007	0.01	0.02	0.01	0.01	0.01	0	0	0	0.39					
Heat No.	Steel speci.	Product analysis																			
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B	Ti	Nb	CE						
		L	0.17	0.33	1.28	0.019	0.008	0.01	0.03	0.01	0.01	0.01	0	0	0	0.39					
		P	0.17	0.34	1.28	0.019	0.007	0.01	0.02	0.01	0.01	0.01	0	0	0	0.39					

Hydro Test (Psi/s)
 2755/5

Fla. test(1)
 G

Fla. test(2)
 G

CE(CSA)
 0.39

CE
 0.39

CE
 0.39

CE
 0.39

We hereby state that all pipes are manufactured and inspected according to above standards and order.

160

2012-6-21

2012-6-21

2012-6-21

2012-6-21

ACCEPTED IN ACCORDANCE with ASME Sec II
 2010, Ed.1.2011 add.
 Date Nov 2/12 Signed LO

673

1842

70.65

160

2012-6-21

2012-6-21

2012-6-21

2012-6-21



2012-6-21


17-031-033

9881

4 - XXH LB 180 BW RETURN BEND
 4420-WPL6

PO# 9881
 Order # 1033
 Item # 1
 Reorder by: SB
 5
 6

		erne fittings gmbh A-6824 Schilfs Hauptstrasse 4B Austria/Europe Telefon +43/5524 501-0 Telefax +43/5524 501-980 12 100 3084		Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1		Artikelbezeichnung [designation] elbows LR-180-S-WPL6-4"-XXS	
Kunde [customer] TRANS AM Piping Products Ltd. Attn: Svava 9335 Endeavor Drive S.E. CDN-T3S 0A1 Calgary, Alberta		Zeugnis Nr. [cert. no.] 032448/12-SD Rev. 24/07/2012 Code-Nr. [code no.] 356637 Ident Nr. [ident no.] 1417901H-0060 / 114446 Unsere Auftrags-Nr./Art.Nr. [our order no./item no.] 1417901H-0060 / 114446 Ihre Bestell Nr. [your order no.] CI-12-387 Menge [quantity] 30		Datum [date] 24/07/2012 Ident Nr. [ident no.] 1417901H-0060 / 114446		Anforderungen der Bestellung [requirements of the order] ASME B16.9-2007 LR, material:WPL6, TR-fitting:ASTM A 420/A 420M-10, ASME SA-420M-Ed.07, TR-add fit fitting:NACE MR0175/ISO15156-2:2003A.2, NACE MR0103-2007 2.1 and 4, certificate:EN 10204/3.1, end preparation:ASME B16.9-2007 Tab. 12(a), rust protection:Millsstandard, execution:Seamless	
Vormaterial [base material] seamless pipe		1 = Schmelzanalyse [heat analysis] Schmelze Nr. [heat no.] Y C 0.15 Si 0.17 Mn 0.92 P 0.014 S 0.001 Cr 0.07 Mo 0.01 Ni 0.02 Cu 0.01		J-Faktor CEQ [CEQ]: V 0.001 Nb 0.001 Cu 0.01 Ni 0.02 Mo 0.01 Ni 0.02 Cu 0.01		(SI + Mn) * (P + Sn) * 10000 C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15 0.008 0.004 0.008 0.322	
Proben Nr. [test no.] 6388 12		Zugversuch [tensile test] Temp. +20 °C Dehngr. [yield str.] Rp 0.2 381 Zugfestigkeit [tensile strength] Rm (MPa) 481		Kerbschlagbiegeversuch [notched bar impact test] Form: ISO-V Querschnitt [cross sec.] 80 Temp. -50 °C PR-Lage [pos. of sample] LNZ Dehnung [elongation] 35 PR-Lage [pos. of sample] LNZ		Härteprüfung [hardness test] Kerbschlagarbeit [impact values] (J) 135-147 HB Wärmebehandlung [heat treatment] quenched and tempered temperature 940 °C / 640 °C Cooling in water/in still air	
Kennzeichnung [marking]  AUSTRIA / WPL6 / 356637 / 4" / XXS		Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.		Zusatzmarkierung [add. mark.]		Die gelieferten Produkte entsprechen den Anforderungen der Bestellung (einschließlich Herstellung, Probenahme, Testen und Prüfen). [The supplied products comply with the requirements of the order (including manufacturing, sampling, testing and inspections).] Der Werksachverständige [the Works Inspector] 24/07/12 Schelbenstock Daniel ☎ - 323 Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]	
Bemerkungen [remarks] hot formed over mandrel		Zertifiziert nach DGR 9723/EG Anhang I - Absatz 4.3 durch TÜV SÜD Industrie Service, Benannte Stelle 0036.Zertifikat Nr. 129/2002/MUC Notified Body 0036, Certificate No. 129/2002/MUC		Der Werksachverständige [the Works Inspector] 24/07/12 Schelbenstock Daniel ☎ - 323 Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]		Die gelieferten Produkte entsprechen den Anforderungen der Bestellung (einschließlich Herstellung, Probenahme, Testen und Prüfen). [The supplied products comply with the requirements of the order (including manufacturing, sampling, testing and inspections).] Der Werksachverständige [the Works Inspector] 24/07/12 Schelbenstock Daniel ☎ - 323 Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]	

ACCEPTED IN ACCORDANCE
 with ASME Sec II
 2010 Ed. 1 2011 add.
 Date 08/12/2011 Signed 

SSAB

S. Paul, MN 55164-0305

Test Certificate

Form TCI: Revision I: Date 31 Oct 2000

Customer: RYERSON CANADA 161 THE WEST MALL ETOBICOKE ON M9C4Y8		Customer P.O. No.: 718020 & 41-331662		Mill Order No.: 41-331663-08		Shipping Manifest: PR081958										
Product Description: CSA G40.21(2004)4W/300W / ASTM A36(08) A709(01A)36/ASME SA36(01ED)		Ship Date: 16 Jul 12		Cert Date: 16 Jul 12		Cert No: 041143643 (Page 1 of 1)										
Size: 0.500 X 48.00 X 120.0 (IN)																
Tensiles		Charpy Impact Tests														
Heat Id	Piece Id	Tested Thickness	Test Loc	YS (KSI)	UTS (KSI)	%RA 2in	Elong % 2in	Average Hardness	Abs. Energy (FTLB)	% Shear	Tst Temp	Tst Dir	Tst Sz	BDWTT Temp	%Sbr	
558137	1111678780	0.500 (I.L.C)	L	45	68	35	36		1 2 3 Avg	1 2 3 Avg						
			C	47	68	36	36									
Chemical Analysis																
Heat Id	C	Mn	P	S	Si	Tot Al	Ca	Ni	Cr	Mo	Ch	V	Ti	B	N	ORCV
558137	.19	.84	.006	.006	.01	.031	.01	.01	.02	.00	.000	.000	.001	.0000	.0055	USA
MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL PRODUCTS SHIPPED: 1111678780 PCS: 25, WGT: 20420																
ACCEPTED IN ACCORDANCE with ASME Sec II 2010 Ed. 12011 add. Date 07/16/12 Signed <u>LO</u>																
Coil Flanges																
WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION																
Cust Part #: 7838-3526																
Checked by: Chad Falteysck																

