

Quality Control Manual
For
Model: M0.5-266B-VMT-000-CEP
S/N: CSN10574
Husky Energy Inc.
Project No: P0095

Crimtech Services Ltd.
#45, 27429 Township Road 374
Red Deer County, Alberta
T4S 2H4

Phone No. (403) 342-7579

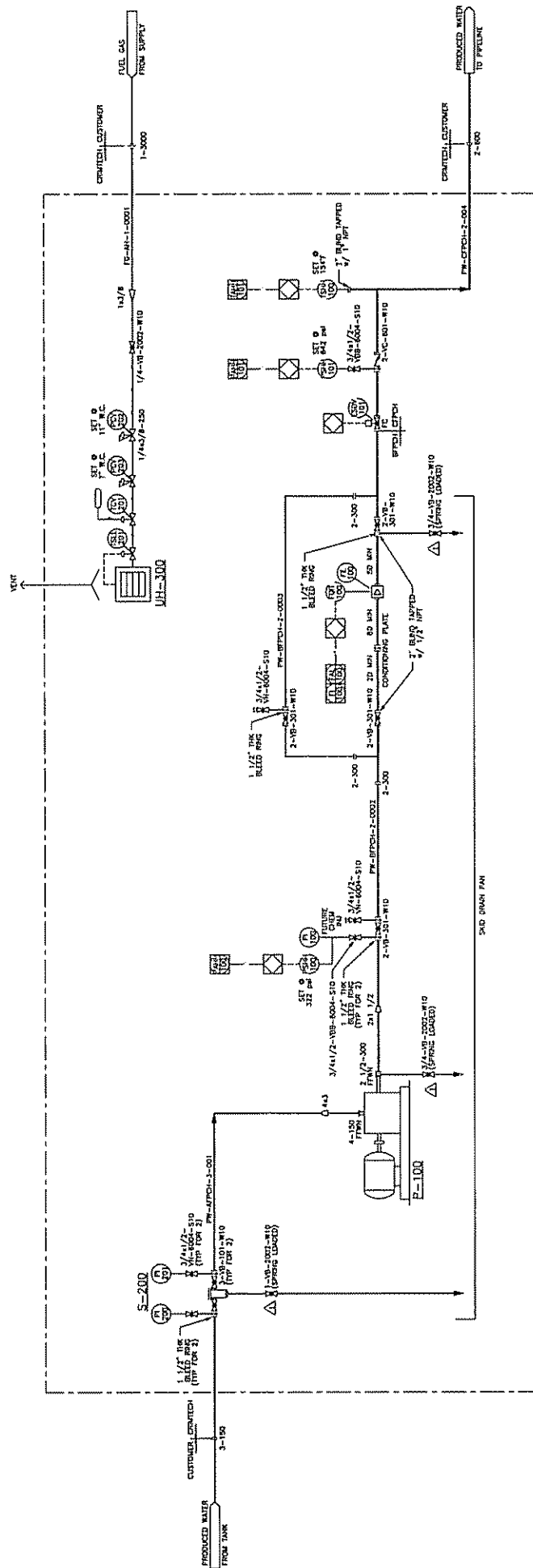
Fax. No. (403) 342-6929

S-200
BASKET STRAINER
1/8" PORTWELD BOGAT
3/4" 1" INP FOR BOGAT

P-100
WATER TRANSFER PUMP
PRESSURE: 150 PSIG
FLOW RATE: 1500-10000 GPM

UH-300
ENCLOSURE HEATER
1500 BU/HR
WATER HEAT EXCHANGER
MODEL NO. HE 18 x 24

06-001-B
WATER TRANSFER SKID
CAPACITY: 2000
WATER HEAT EXCHANGER
PUMP: 2000



CRIMTECH
1-800-551-8158
www.crimtech.com
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NOTES:

1. MAXIMUM INLET PRESSURE 245 PSIG, UNIT DESIGNED TO 1400 PSIG.
2. ALL INSTRUMENTS ARE NOTED OUTSIDE.
3. UNIT DESIGNED TO MEET ROSS PUMP SPECIFICATIONS AS SHOWN. EXCEPTOR: NO LOW FLOW WARNING TO BE USED.
4. SET PRESSURES EXCLUDING PYS TO BE FIELD SET.
5. DRAIN LINES ARE TO BE CAPTED FOR HIGHEST. Δ

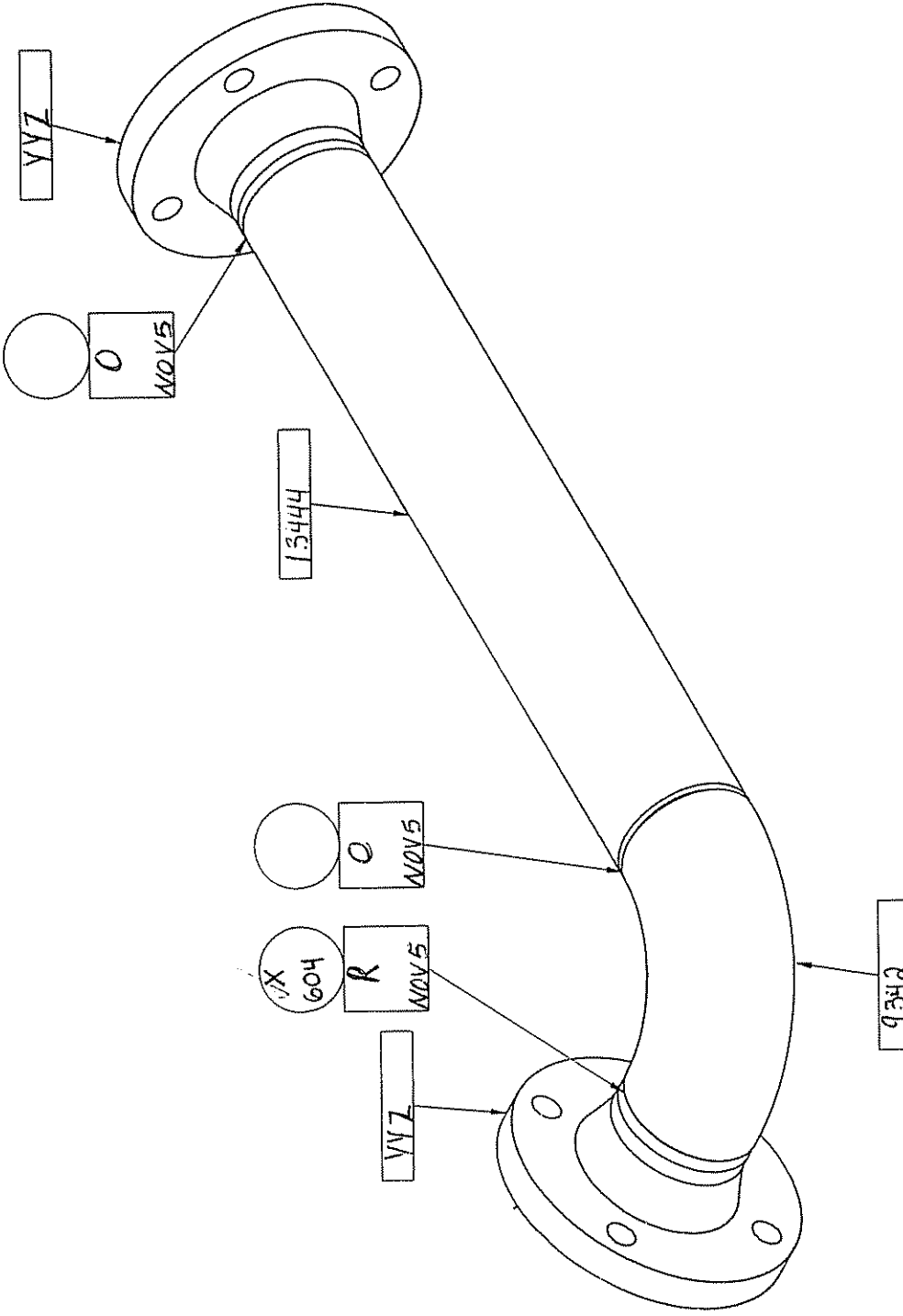
NO.	DATE	REVISION DESCRIPTION	BY	CHECKED	REVIEW	DATE
1	07 04 20	ISSUED FOR CLIENT APPROVAL	JMK		PROCESS	
2	07 05 04	ISSUED FOR CONSTRUCTION	JMK		MECHANICAL	
3	07 05 11	REVISED SPECIFICATION BREAKS	JMK		STRUCTURAL	
4					INSTRUMENT	
5					ELECTRICAL	
6					SHIP	
7					DEC.	
8					ESTIMATOR	

CUSTOM WATER TRANSFER SYSTEM SKID
MODEL NO. MO.S-2668B-VMT-000-CEP
PIPING AND INSTRUMENTATION DIAGRAM

DESIGNED BY: JMK
CHECKED BY: JMK
DATE: 07 05 11

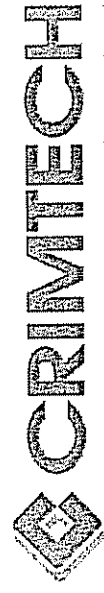
HUSKY ENERGY INC
1014671
BAR ENGINEERING

PROJECT NUMBER: MF-P0085-01



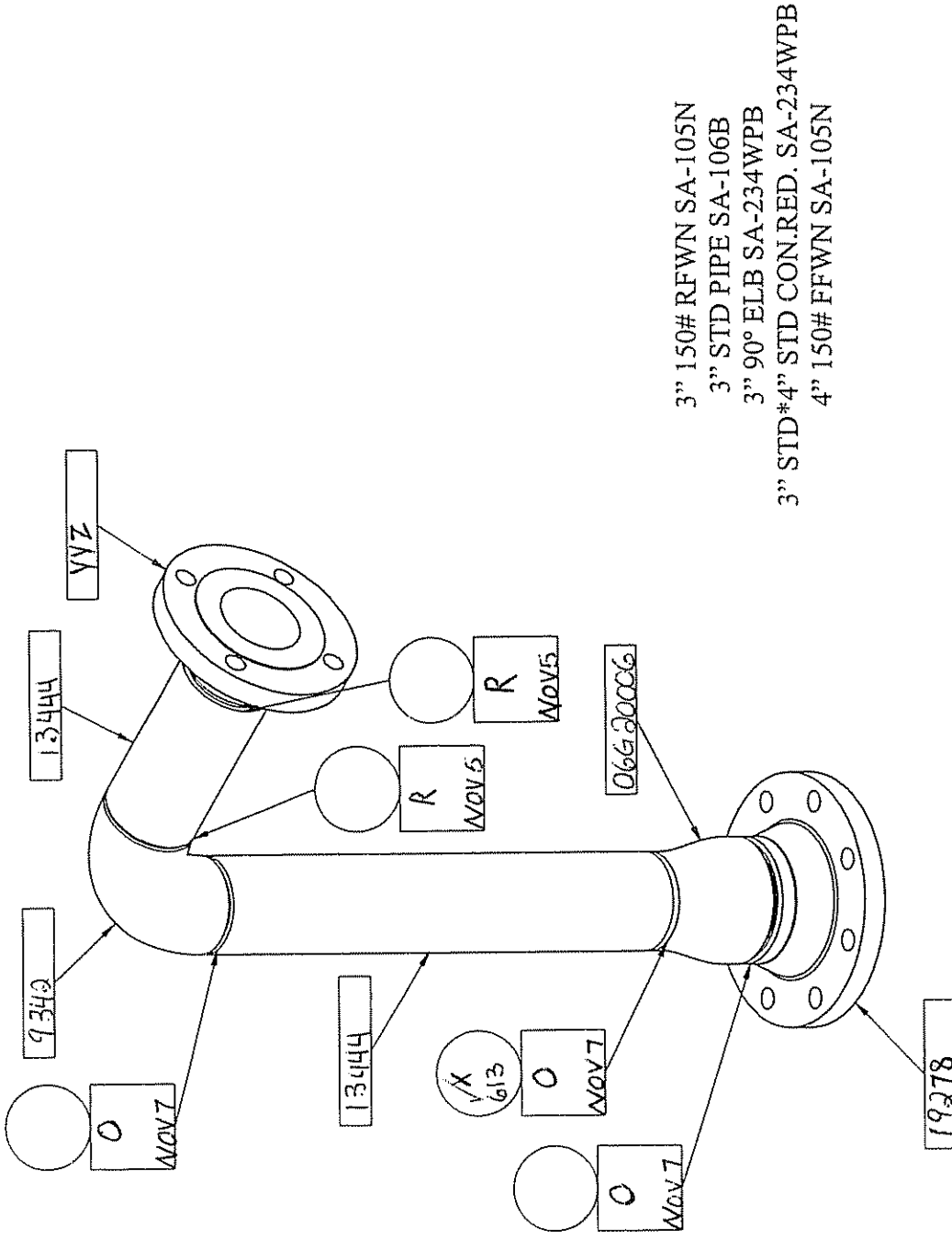
B-95

3" 150# RFWN SA-105N
3" 90 ELB STD SA-234-WPB
3" STD PIPE SA-106B



PH 1-800-993-9958
WWW.CRIMTECH.COM

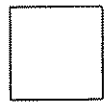
DRAWING NO.: 1014871-WM-01A
SPOOL NO.: 19012



WELD MAP LEGEND



= NDE



= WELDER



= HEAT NUMBER



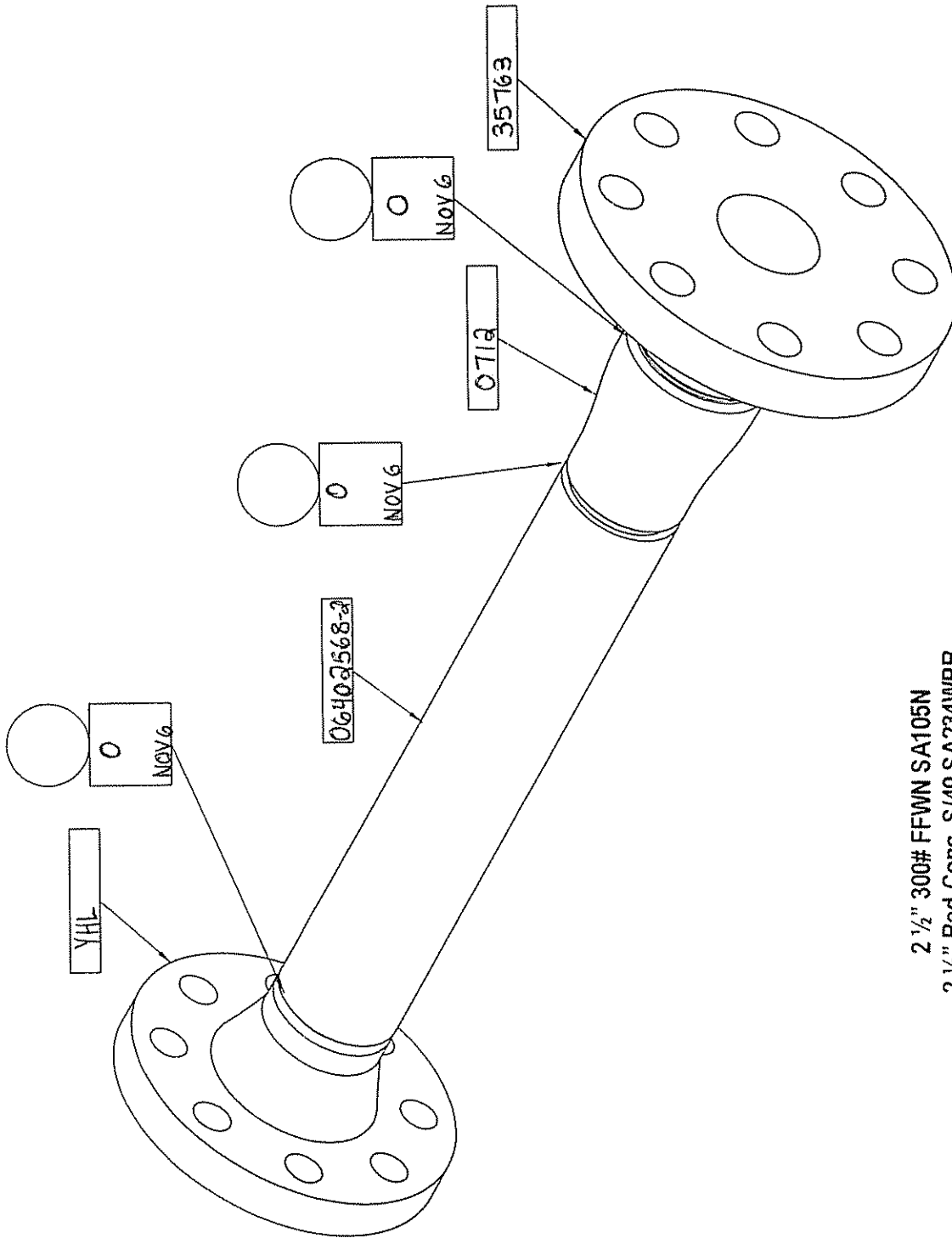
Services Ltd
WWW.CRIMTECH.COM
PH 1-800-953-9958

SPOOL NO.:

19029

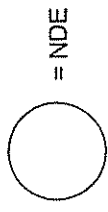
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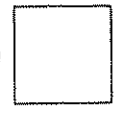


2 1/2" 300# RFWN SA105N
 2 1/2" Red Conc. S/40 SA234WPB
 2" SA106-B PIPE
 2" 300# S/40 RFWN SA105N

WELD MAP LEGEND



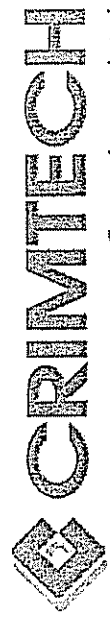
= NDE



= WELDER



= HEAT NUMBER



Services Ltd

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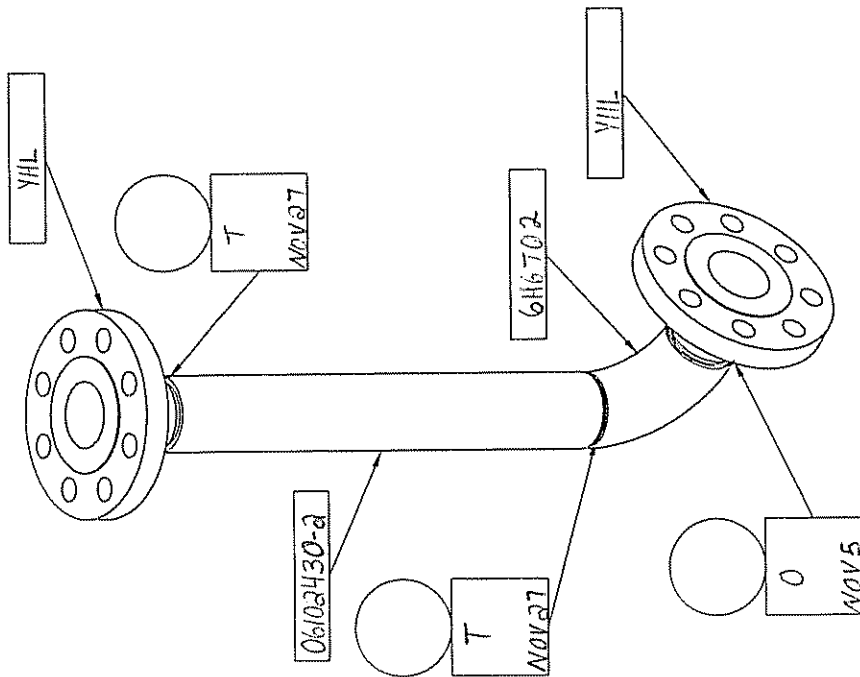
PH 1-800-993-9958

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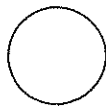
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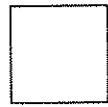
1014871-WM-03A



WELD MAP LEGEND



= NDE



= WELDER



= HEAT NUMBER

2" 300# RFWN SA105N
2" S/40 SA106-B Pipe
2" 90° ELBOW SA234WPB



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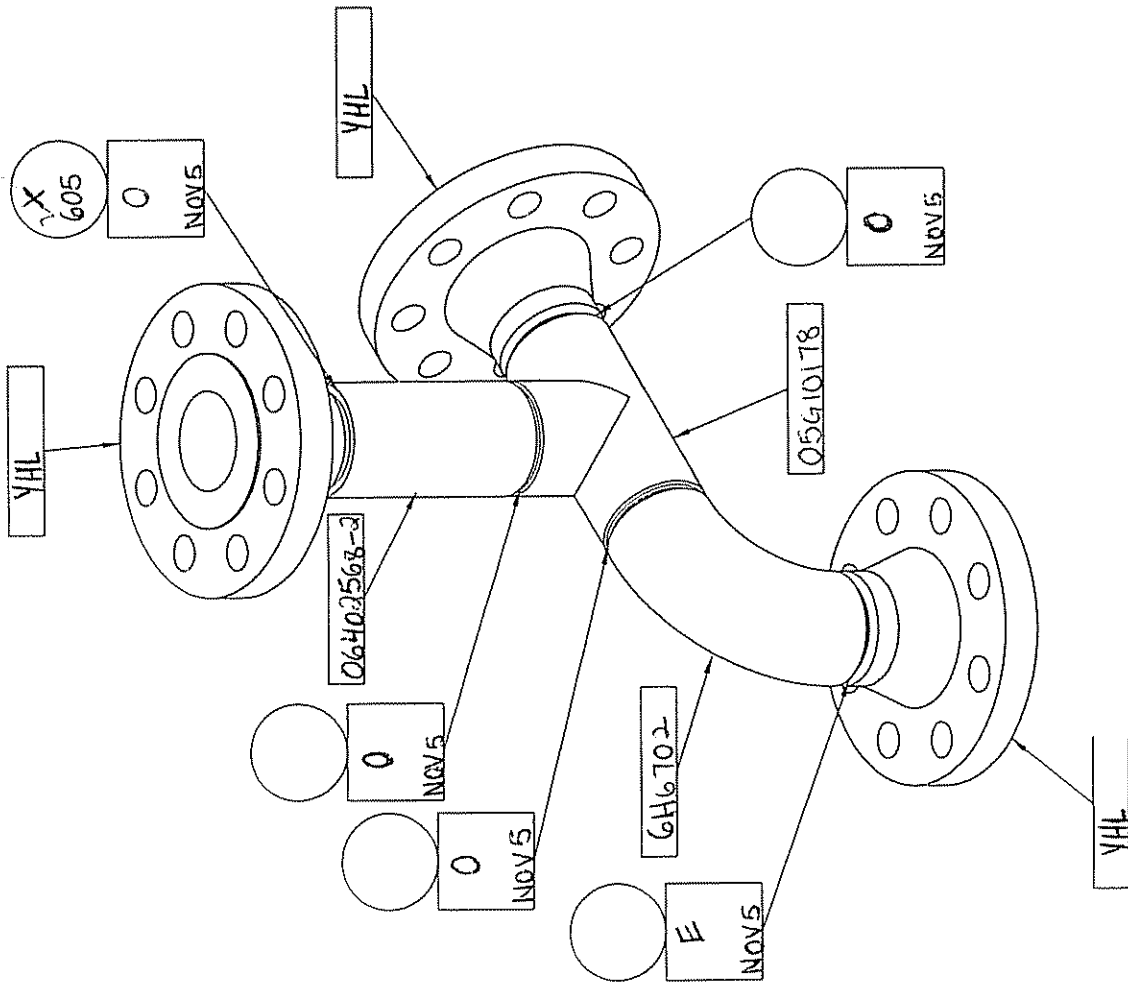
PH 1-800-983-9858

SPOOL NO.:

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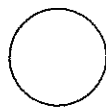
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1014871-WM-03B

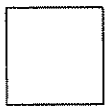


2" 300# RFWN SA105N
 2" STD PIPE SA106-B
 2" STD TEE SA106-B
 2" 90° ELBOW SA234WPB

WELD MAP LEGEND



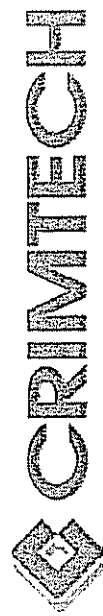
= NDE



= WELDER



= HEAT NUMBER



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SPOOL NO.: 19080

DRAWING NO.: 1014871-WM-03C



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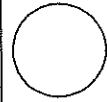
PH 1-800-993-9958

DRAWING NO.:

1014871-WM-05A

2" 300# RFWN SA 105N
2" 90 DEG ELB SA234-WPB SCH 40

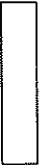
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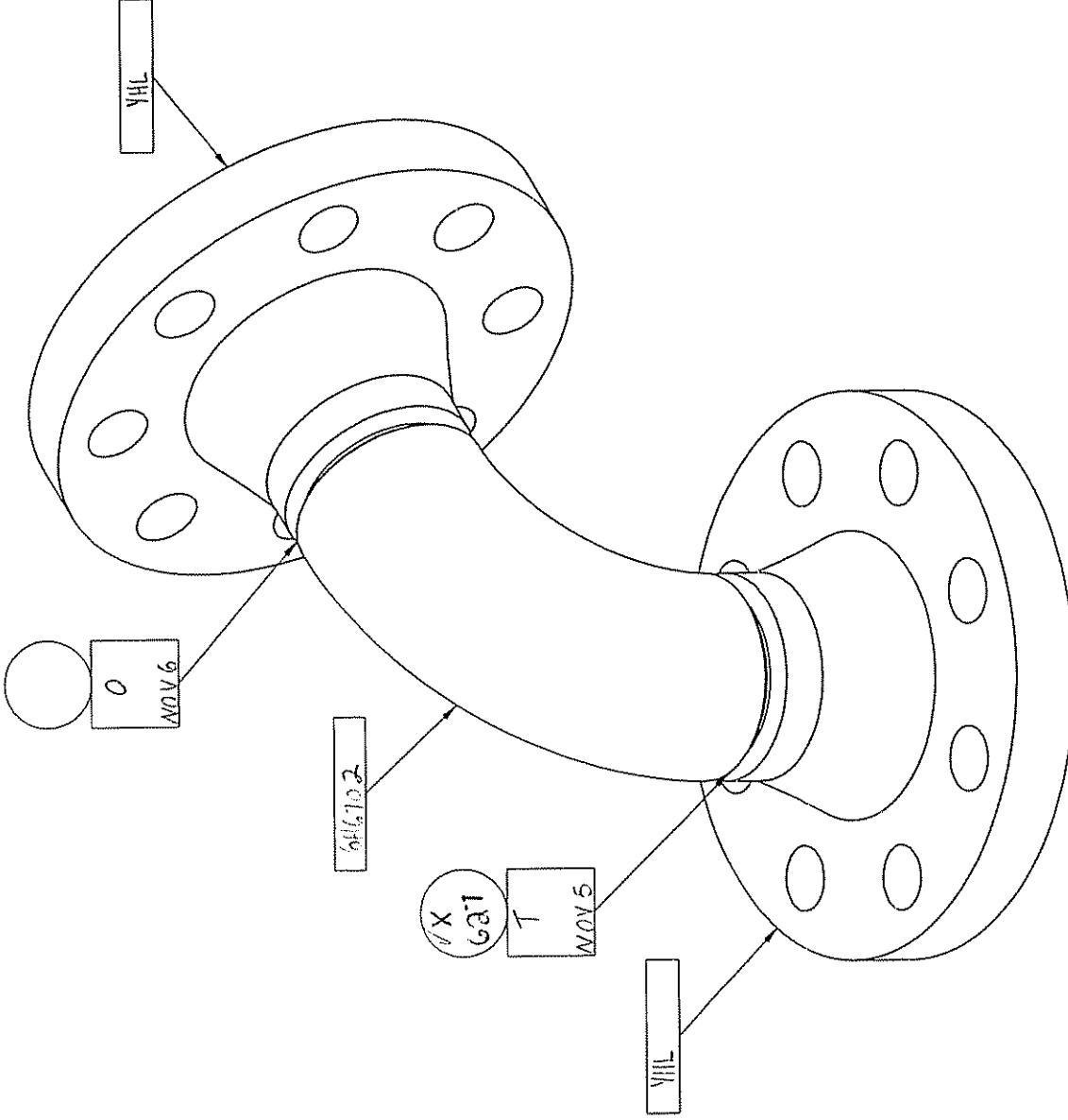
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= HEAT NUMBER



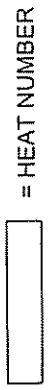
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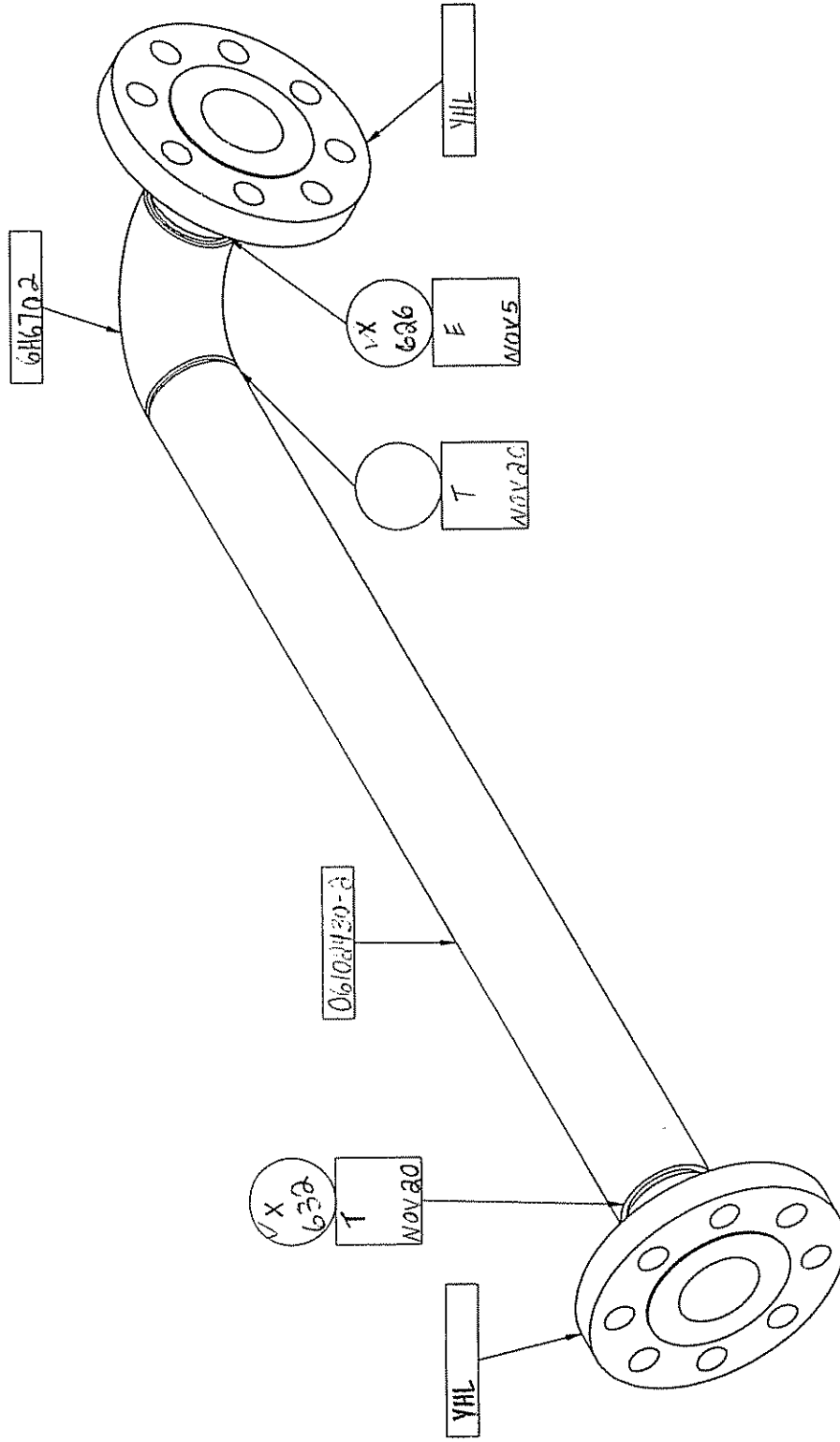


= WELDER



= HEAT NUMBER

2" 300# RFWN STD SA-105N
2" 90 DEG ELB STD SA-234-WPB
2" STD SA-106B



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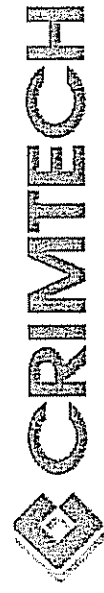
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1014871-WM-05B

SPOOL NO.:

19114

300



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PH 1-800-993-9958

SPOOL NO.:

DRAWING NO.:

1014871-WM-05C

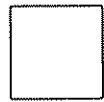
19131

2" 300# RFWN SA-105N
2" STD PIPE SA-106-B
2"STD 90 DEG ELB SA-234WPB

WELD MAP LEGEND



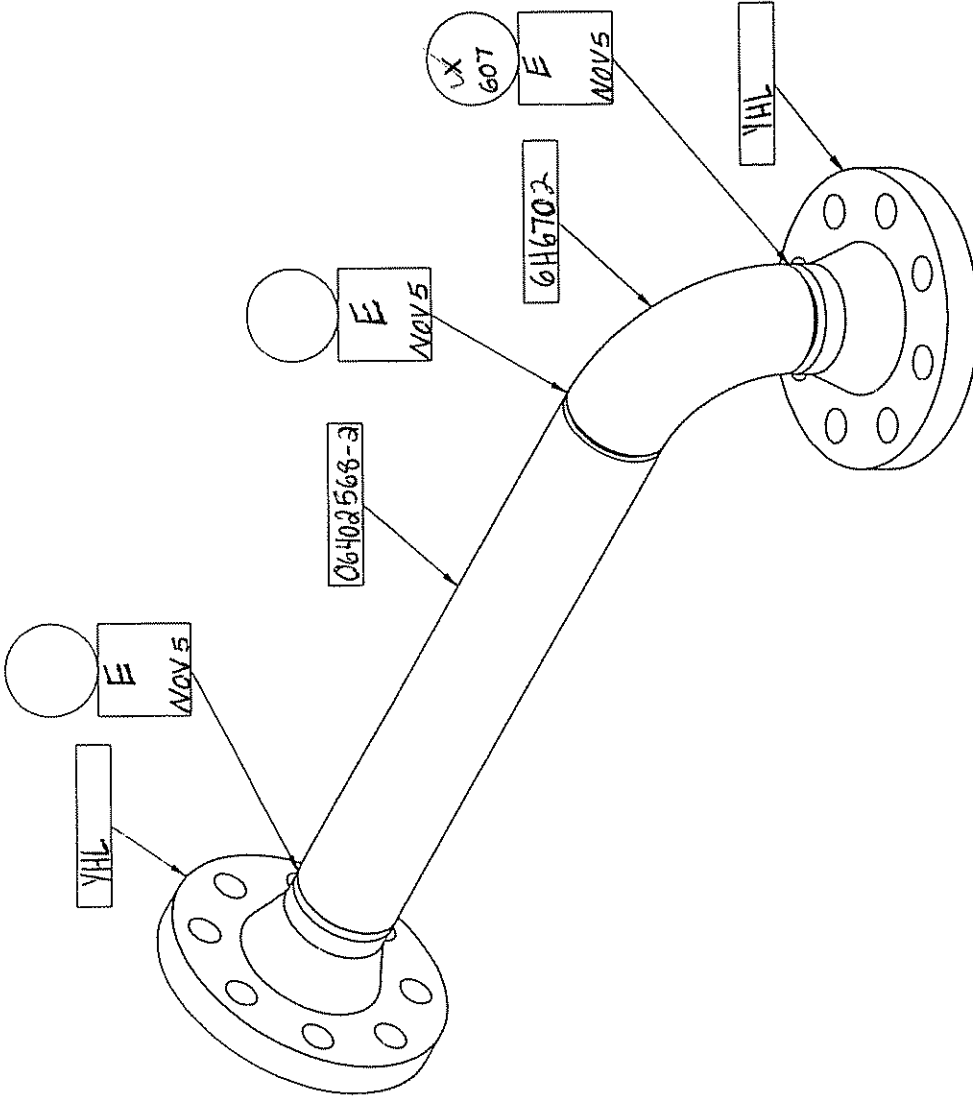
= NDE



= WELDER



= HEAT NUMBER





○



1

TOURNAMENT

1014871-WM-06A

87151



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PH 1-800-993-9959

SPOOL NO.:

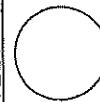
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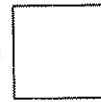
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2"600# RFWN SA-105N
2" STD PIPE SA-106B

WELD MAP LEGEND



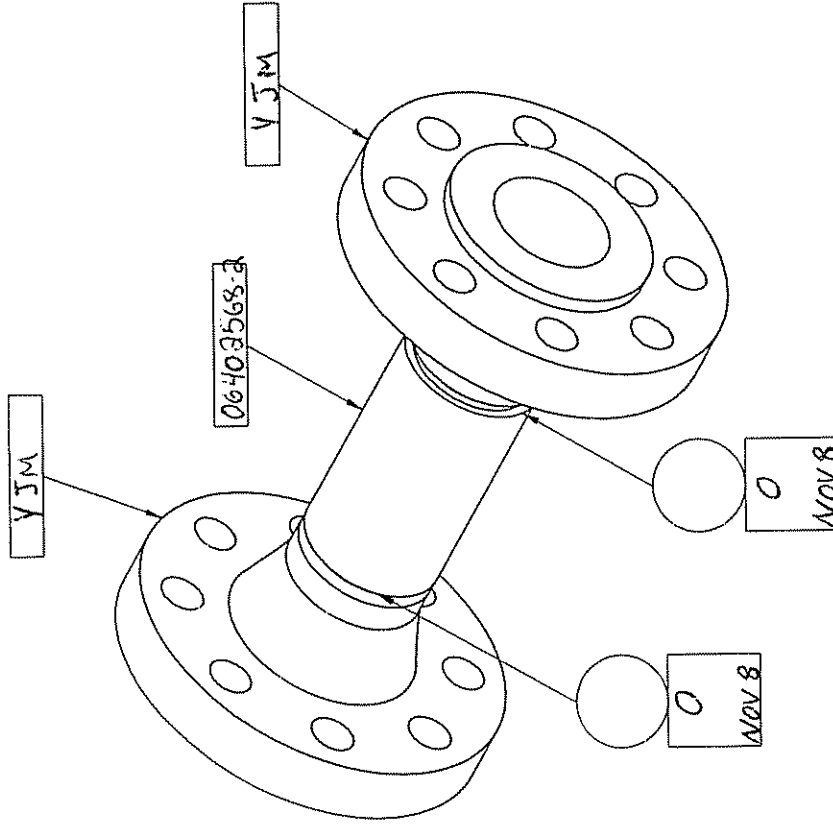
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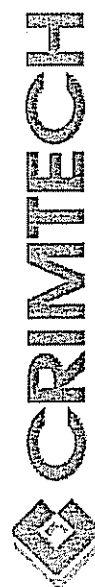


= WELDER



= HEAT NUMBER





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PH 1-800-993-9958

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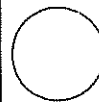
DRAWING NO.:

1014871-WM-06C

19182

2" 600# RFWN SA 105N
2" STD PIPE SA-106B
2" STD 90 DEG ELB SA-234-WPB
2" STD TEE SA-234-WPB

WELD MAP LEGEND



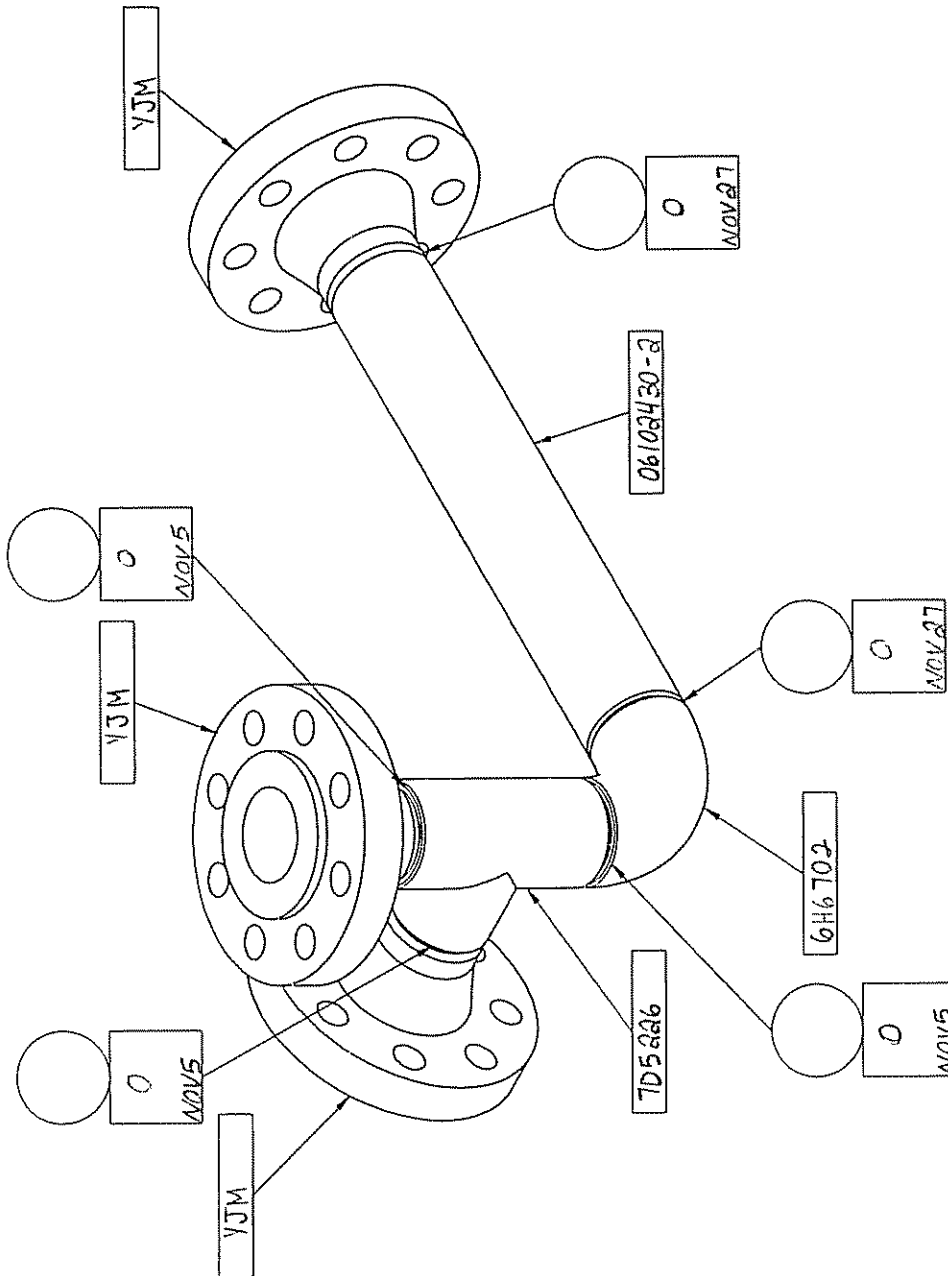
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= WELDER



= HEAT NUMBER



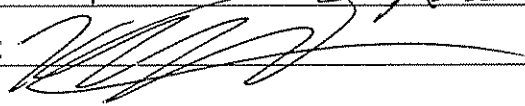
CRIMTECH SERVICES LTD.
PNEUMATIC TEST REPORT



CSN 10574

Client: Husky Energy Inc. Date: February 19th, 2008
Project: P0095
Description of Product: Fuel gas piping as per drawing 1014871-PS-09 Rev.1

Test Medium: Air/ Nitrogen
Test Pressure: 165 psi
Hold Time at Test Pressure: 15 minutes minimum

Crimtech Quality Control Inspector: 
Client Representative: 

Comments: All connections were sprayed with a water/soap solution. There were no visible leaks at time of test.

Leak Test Report

Performed by:	Crimtech Services Ltd.	Date:	Jan 3, 2008
Project Name:	Water Transfer systems	Location of Installation:	Unknown
Design Code :	CSA Z662	Test Pressure :	428 psi
Gauge SN:	CT1001	CT1000	Chart Recorder SN: 202EC 883847
Test Start Time	AM PM	Test finish Time	AM PM

Description of tested items:

Work order Number: 310648

Spool Serial Numbers:

19008
19009
19010
19011
19012

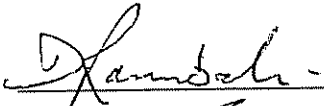
19025
19026
19027
19028
19029

Batch 91-95
CSN #10570 – CSN #10574

Crimtech QC
representative
Client
representative

Dierk Rambali

Signature

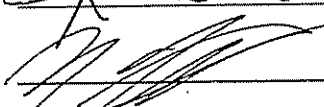


Date

Jan 3, 2008

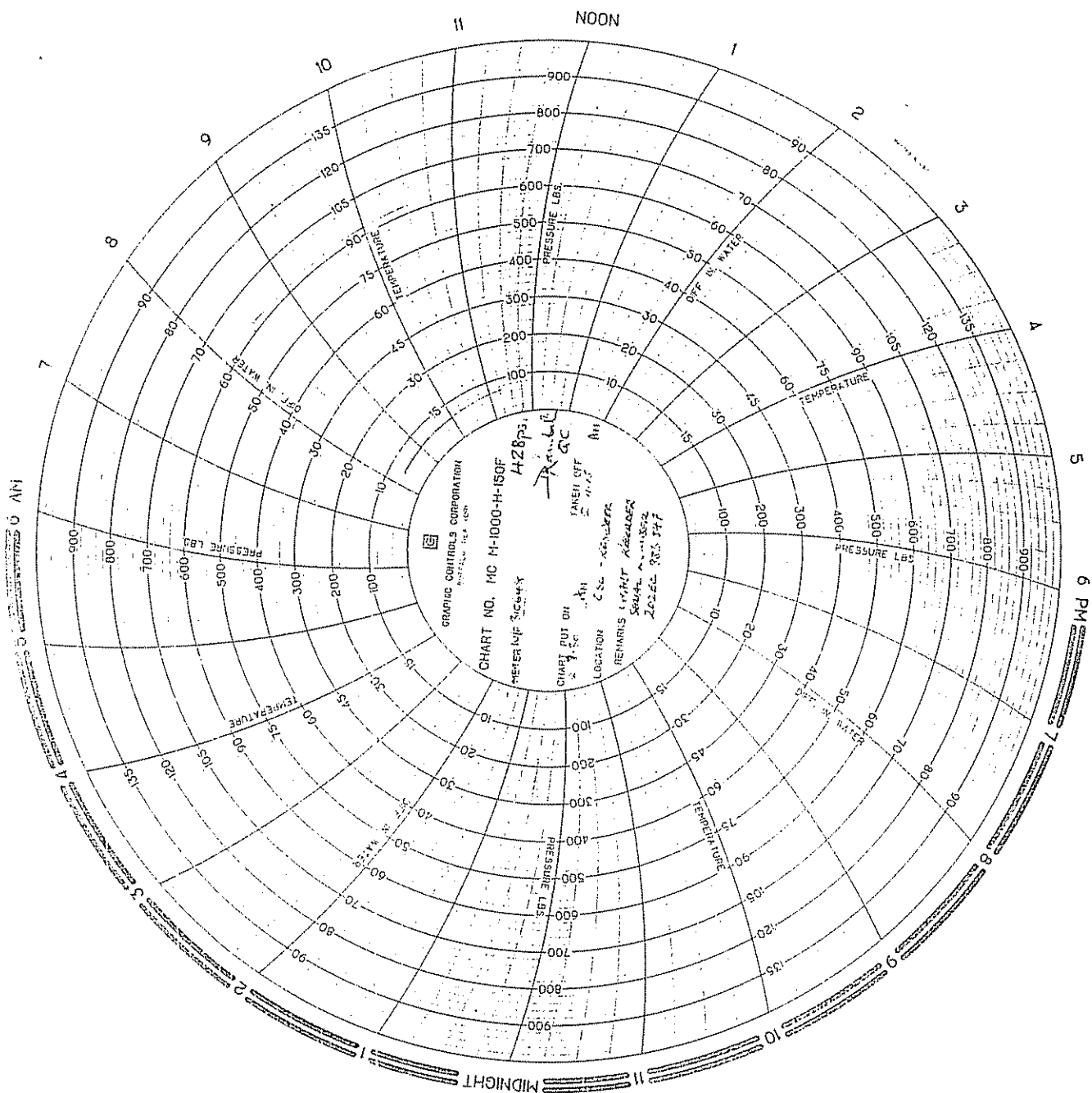
Kevin Fundytus

Signature



Date

Jan 3, 2008



Leak Test Report

Preformed by:	Crimtech Services Ltd.	Date:	Jan 3, 2008
Project Name:	Water Transfer systems	Location of Installation:	Unknown
Design Code :	CSA Z662	Test Pressure :	1079 psi
Gauge SN:	203041-2-2	203041-2-1	Chart Recorder SN: 202E 032838
Test Start Time	AM PM	Test finish Time	AM PM

Description of tested items:

Work order Number: 310648

Spool Serial Numbers:

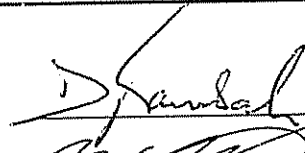
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19046	19114
19059	19127
19060	19128
19061	19129
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19063	19131
19076	19144
19077	19145
19078	19146
19079	19147
19080	19148
19093	
19094	
19095	
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19097	

Batch 91-95
CSN #10570 – CSN #10574

Crimtech QC
representative
Client
representative

Dierk Rambali

Signature



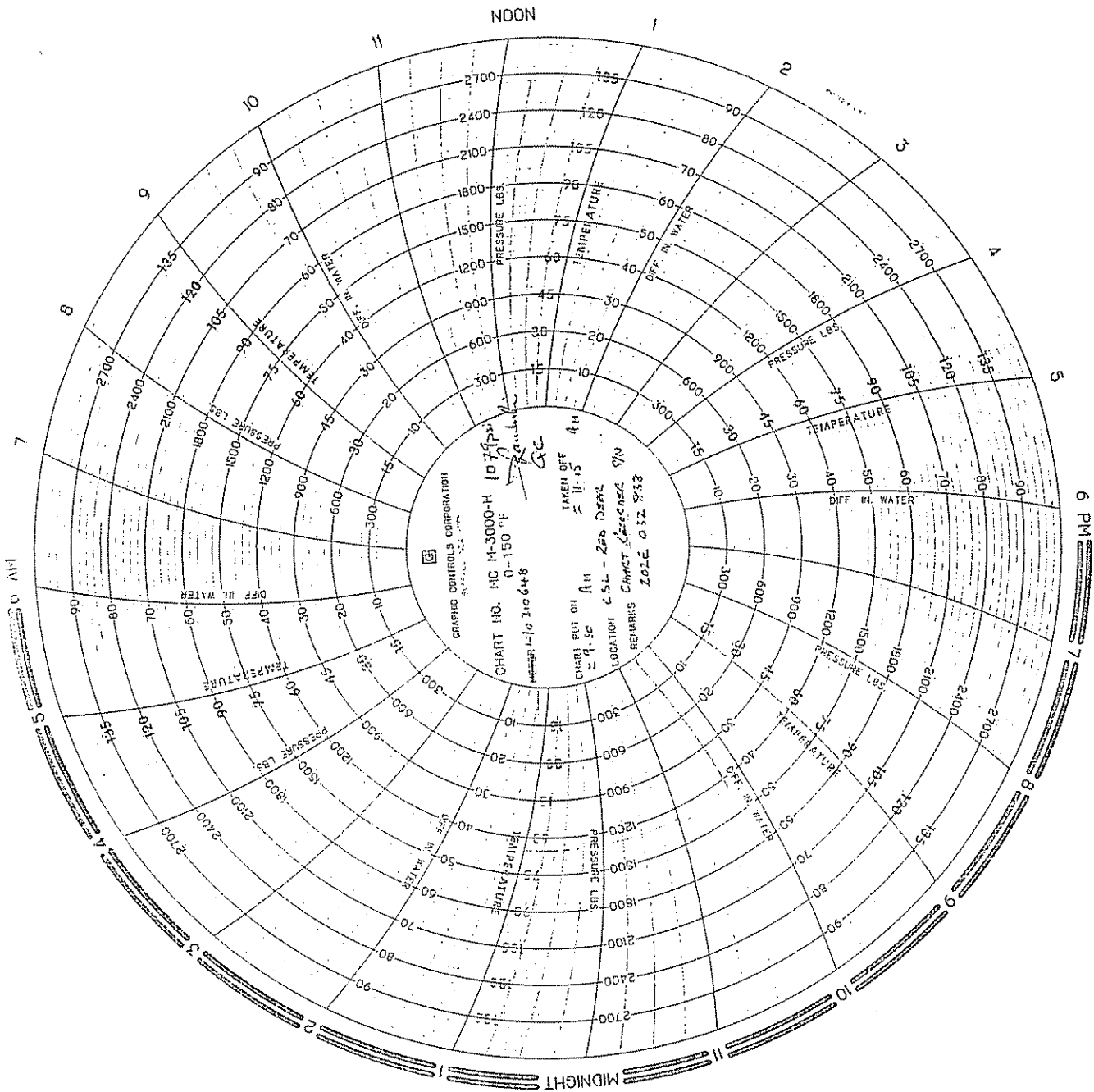
Date Jan 3, 2008

Kevin Fundytus

Signature



Date Jan 3, 2008



Leak Test Report

Performed by:	Crimtech Services Ltd.	Date:	Jan 3, 2008
Project Name:	Water Transfer systems	Location of Installation:	Unknown
Design Code :	CSA Z662	Test Pressure :	2160 psi
Gauge SN:	M6	CT006	Chart Recorder SN: 202EC 160920
Test Start Time	AM PM	Test finish Time	AM PM

Description of tested items:

Work order Number: 310648

Spool Serial Numbers:

19161
19162
19163
19164
19165

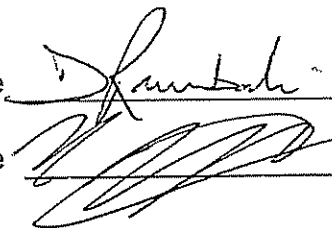
19178
19179
19180
19181
19182

Batch 91-95
CSN #10570 – CSN #10574

Crimtech QC
representative
Client
representative

Dierk Rambali

Signature



Date

Jan 3, 2008

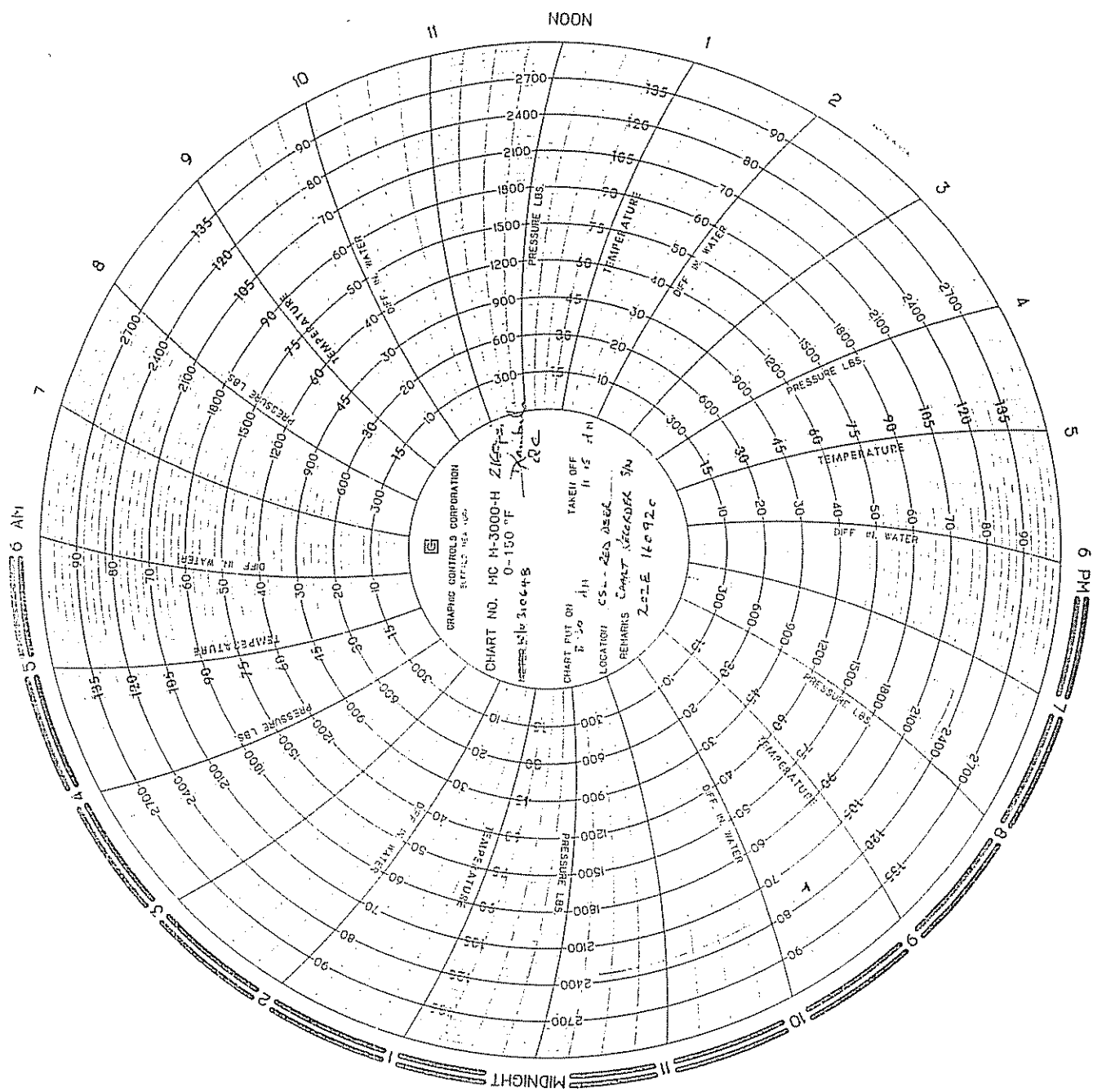
Kevin Fundytus

Signature



Date

Jan 3, 2008



Leak Test Report

Preformed by:	Crimtech Services Ltd.	Date:	Jan 18, 2008
Project Name:	Water Transfer systems	Location of Installation:	Unknown
Design Code :	CSA Z662	Test Pressure :	2160 psi
Gauge SN:	M5A	M6	Chart Recorder SN: 202E 032838
Test Start Time	AM PM	Test finish Time	AM PM

Description of tested items:

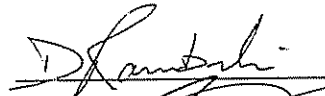
Threaded connections from Work Order Number: 310648

Batches 91 – 95 (CSN10570 - CSN10574)

Crimtech QC
representative
Client
representative

Dierk Rambali

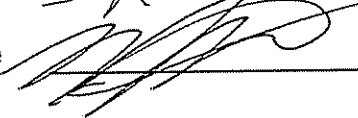
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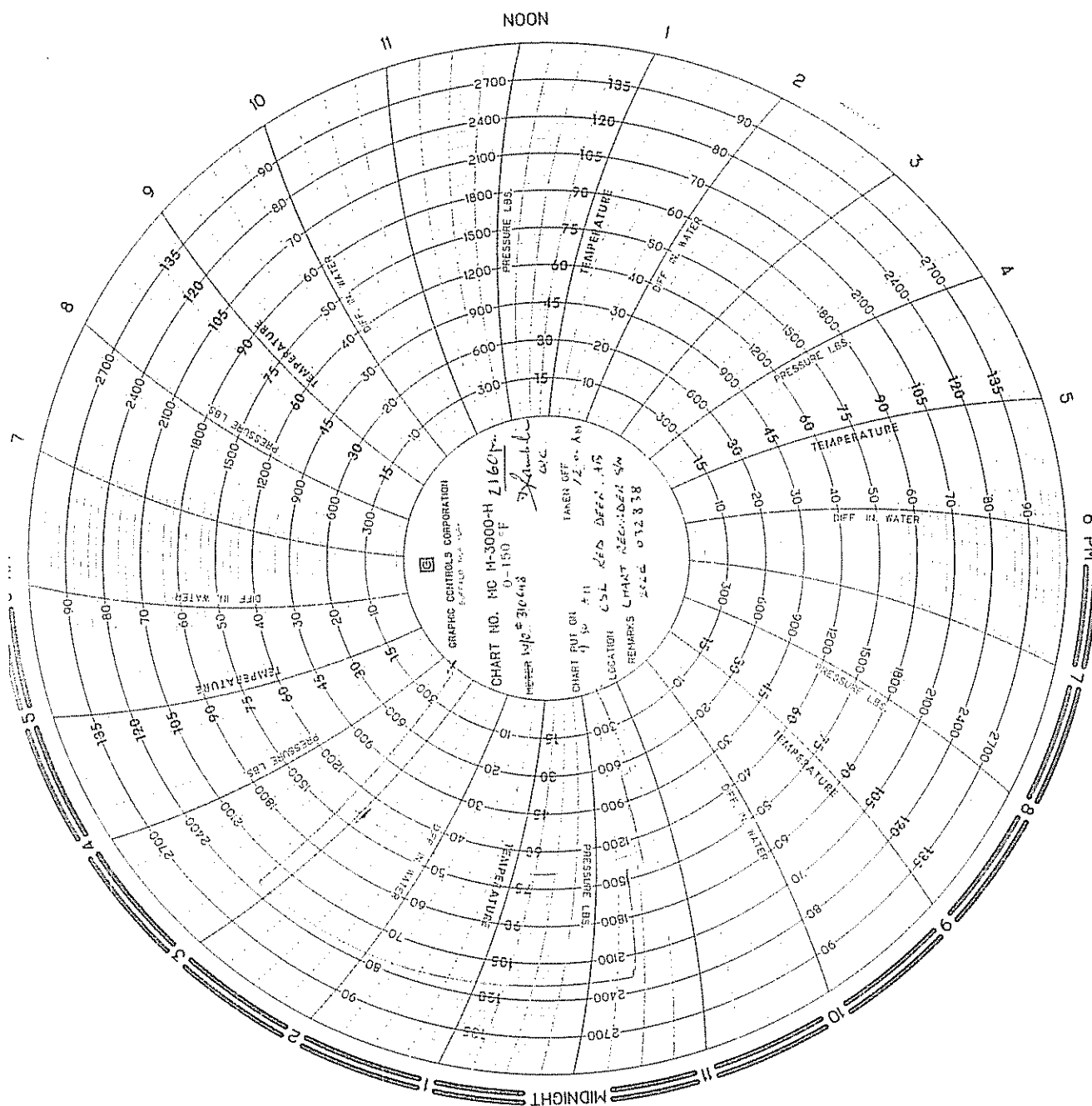
Date Jan 18, 2008

Kevin Fundytus

Signature



Date Jan 18, 2008





R- 14394

RADIOGRAPHY INSPECTION REPORT

Date: <u>Nov-20-2007</u>		Page: <u>2</u> of <u>10</u>																		
CLIENT: <u>CRIMECH SERVICES</u>		ECHO JOB #: <u>0797</u>																		
CONTRACTOR: <u>SAME AS ABOVE</u>																				
LOCATION: <u>RED DEER, AB</u>		PROJECT:																		
CLIENT JOB # (P.O., Job #, AFE, etc.): <u>WO# 310648</u>																				
MATERIAL: <u>P1</u>		CODE(S): <u>CSA Z662-07</u>																		
SOURCE: Ir 192	Size: 3.2 mm	SCREENS: 0.010" Pb F & B	FILM: <u>FLU3 80</u>																	
		SFD: <u>WT 1012</u>	OFD: <u>WT</u>																	
		SOD: <u>CANITEC</u>																		
VERIFIED DENSITOMETER / DENSITY STRIP ACCURACY: ☐		CAL. DATE:																		
ABBREVIATIONS																				
IP - Incomplete Penetration	BT - Burn Through	EP - Excess Penetration	LC - Low Cover																	
LF - Lack of Fusion	S - Slag	IC - Internal Concavity	HL - High / Low																	
CK - Crack	P - Porosity	IUC - Internal Undercut	EUC - External Undercut																	
V - Visual Inspection		T - Technique (See Back)	O - Other																	
1 - Slight	2 - Moderate	3 - Severe	WS - Welder Symbol																	
ACC - Accept	REJ - Reject																			
INTERPRETATIONS																				
FILM #	SIZE	SCH	WS	T	IP	LF	CK	P	S	BT	EP	IC	LC	HL	IUC	EUC	O	COMMENTS	ACC	REJ
1	<u>1004R</u>	<u>3"</u>	<u>STD</u>	<u>R1</u>														<u>SPOOL SERIAL # 19012</u>		
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
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17																				
18																				
19																				
20																				
WELD or FILM QUANTITY		STAMP															Regular Hours		/	
<u>1 x 3"</u>		JULIAN LOMOND # 9584 CGSB RT II / MTII PT II SNT-TC-IARTII / MTII PT II															Overtime Hours		<u>—</u>	
																	Sub / Man Day		<u>—</u>	
																	Kilometers		<u>—</u>	
Client Representative: <u>Lambert</u>		Technician: <u>[Signature]</u>		Assistant: <u>Dan Gray</u>																



R- 14523

RADIOGRAPHY INSPECTION REPORT

Date: Nov 13/07	FABRICATION	Page: 1 of 1
CLIENT: CRIMTECH SERVICES	ECHO JOB #: 0640	
CONTRACTOR: AS ABOVE		
LOCATION: RED DEER SHOP	PROJECT:	
CLIENT JOB # (P.O., Job #, AFE, etc.): W.O# 310648		
MATERIAL: C.S.	CODE(S): CSA 2-662 SWEET	
SOURCE Ir 192	Size 3 2 mm	SCREENS: 0.010" Pb F & B
FILM: FUT 90	SFD: CONTACT	OFD: —
VERIFIED DENSITOMETER / DENSITY STRIP ACCURACY: 12		CAL. DATE:

ABBREVIATIONS

IP - Incomplete Penetration	BT - Burn Through	EP - Excess Penetration	LC - Low Cover	1 - Slight	WS - Welder Symbol
LF - Lack of Fusion	S - Slag	IC - Internal Concavity	HL - High / Low	2 - Moderate	ACC - Accept
CK - Crack	P - Porosity	IUC - Internal Undercut	EUC - External Undercut	3 - Severe	REJ - Reject
V - Visual Inspection		T - Technique (See Back)	O - Other		

INTERPRETATIONS

	FILM #	SIZE	SCH	WS	T	IP	LF	CK	P	S	BT	EP	IC	LC	HL	IUC	EUC	O	COMMENTS	ACC	REJ
1	X-604	3"	STD	R	RT														(3) POROSITY @ 19-20cm	SPOOL S/N 19012	X
2	605	2"		O															(1) 0.14cm	19080	✓
3	606	3"		O																19025	✓
4	607	2"		E																19131	✓
5	608	2"		E																19076	✓
6	609	2"		W															(1) 5cm	19076	✓
7	610	3"		O																19009	✓
8	611	2 1/2"		O																19043	✓
9	612	2"		E															(2) 2.8cm	19127	✓
10	613	3"		O																19029	✓
11	614	2"		O																19161	✓
12	615	2"		O																19163	✓
13	616	3"		R																19008	✓
14	617	3"		O																19025	✓
15	618	2"		E																19077	✓
16	619	2"		W																19077	✓
17	620	2"		O																19162	✓
18	621	3"		O															(1) 8cm	19009	✓
19	622	3"		O																19010	✓
20	623	2"		O																19044	✓

WELD or FILM QUANTITY	STAMP	Regular Hours	3 REG
20 - 2" + 3" WELDS	KYLE BRUNS #10294	Overtime Hours	—
	CGSB RTII / MTII	Sub / Man Day	—
	SNT-TC-1A RTII / MTII	Kilometers	—
Client Representative:	Technician:	Assistant:	RYAN M.



R - 16001

RADIOGRAPHY INSPECTION REPORT

Date: <u>November 30 2007</u>		<u>Fabrication.</u>		Page: <u>1</u> of <u>2</u>	
CLIENT: <u>Crimtech.</u>				ECHO JOB #:	
CONTRACTOR: <u>Crimtech.</u>					
LOCATION: <u>Red Deer shop.</u>			PROJECT: <u>2" STD spooling.</u>		
CLIENT JOB # (PO, Job #, AFE, etc): <u>WO# 310645.</u>					
MATERIAL: <u>C.S.</u>		CODE(S): <u>CSA Z66.2 Sweet.</u>			
SOURCE <u>Ir 192</u>	Size <u>3.2 mm</u>	SCREENS: <u>0.010" Pb F & B</u>	FILM: <u>Fuji 80</u>	SFD: <u>2.4"</u>	OFD: <u>0.279"</u> SOD: <u>2"</u>
VERIFIED DENSITOMETER / DENSITY STRIP ACCURACY: ☒			CAL DATE: <u>November 30 2007.</u>		

ABBREVIATIONS

IP - Incomplete Penetration	BT - Burn Through	EP - Excess Penetration	LC - Low Cover	1 - Slight	WS - Welder Symbol
LF - Lack of Fusion	S - Slag	IC - Internal Concavity	HL - High / Low	2 - Moderate	ACC - Accept
CK - Crack	P - Porosity	IUC - Internal Undercut	EUC - External Undercut	3 - Severe	REJ - Reject
V - Visual Inspection		T - Technique (See Back)	O - Other		

INTERPRETATIONS

	FILM #	SIZE	SCH	WS	RT	IP	LF	CK	P	S	BT	EP	IC	LC	HL	IUC	EUC	O	COMMENTS	ACC	REJ
1		<u>2" STD</u>																	<u>spool serial #</u>		
2																					
3	<u>X624</u>	<u>2"</u>	<u>STD.</u>	<u>0</u>	<u>1</u>														<u>19060</u>	☒	
4	<u>625</u>			<u>0</u>						<u>2017</u>									<u>19111</u>	☒	
5	<u>626</u>			<u>E</u>						<u>2016</u>									<u>19114</u>	☒	
6	<u>627</u>			<u>T</u>						<u>1018</u>									<u>19097</u>	☒	
7	<u>628</u>			<u>0</u>															<u>19095</u>	☒	
8	<u>629</u>																		<u>19129</u>	☒	
9	<u>630</u>			<u>↓</u>															<u>19143</u>	☒	
10	<u>631</u>			<u>0</u>															<u>19096</u>	☒	
11	<u>632</u>			<u>T</u>															<u>19114</u>	☒	
12	<u>633</u>			<u>0</u>															<u>19093</u>	☒	
13	<u>634</u>			<u>T</u>						<u>1018</u>									<u>19110</u>	☒	
14	<u>635</u>			<u>0</u>															<u>19144</u>	☒	
15	<u>636</u>																		<u>19144</u>	☒	
16	<u>637</u>																		<u>19061</u>	☒	
17	<u>638</u>			<u>↓</u>															<u>19112.</u>	☒	
18	<u>X 639</u>	<u>2"</u>	<u>STD.</u>	<u>0</u>	<u>1</u>														<u>19150.</u>	☒	
19																					
20																					

WELD or FILM QUANTITY	STAMP	Regular Hours	<u>5</u>
		Overtime Hours	<u>—</u>
		Sub / Man Day	<u>—</u>
		Kilometers	<u>—</u>
Client Representative: <u>[Signature]</u>	Technician: <u>[Signature]</u>	Assistant: <u>C. Lawrence</u>	<u>est. job cost + GST.</u>



R - 16002

RADIOGRAPHY INSPECTION REPORT

Date: <u>November 30 2007</u>		<u>Fabrication.</u>		Page: <u>2</u> of <u>2</u>	
CLIENT: <u>Crim tech.</u>				ECHO JOB #:	
CONTRACTOR: <u>Crim tech.</u>					
LOCATION: <u>Red Deer shop.</u>			PROJECT: <u>2" STD sparkling.</u>		
CLIENT JOB # (P.O., Job #, AFE, etc.): <u>400 # 310645.</u>					
MATERIAL: <u>C.S.</u>		CODE(S): <u>CSA 266.2 Sweet.</u>			
SOURCE <u>Ir 192</u>	Size <u>3.2 mm</u>	SCREENS: <u>0 010" Pb F & B</u>	FILM: <u>Fuji S0</u>	SFD: <u>2.4"</u>	OFD: <u>0.274"</u>
VERIFIED DENSITOMETER / DENSITY STRIP ACCURACY: ☒			CAL. DATE: <u>November 30 2007.</u>		

ABBREVIATIONS

IP - Incomplete Penetration	BT - Burn Through	EP - Excess Penetration	LC - Low Cover	1 - Slight	WS - Welder Symbol
LF - Lack of Fusion	S - Slag	IC - Internal Concavity	HL - High / Low	2 - Moderate	ACC - Accept
CK - Crack	P - Porosity	IUC - Internal Undercut	EUC - External Undercut	3 - Severe	REJ - Reject
V - Visual Inspection		T - Technique (See Back)	O - Other		

INTERPRETATIONS

	FILM #	SIZE	SCH	WS	T	IP	LF	CK	P	S	BT	EP	IC	LC	HL	IUC	EUC	O	COMMENTS	ACC	REJ
1		<u>2" STD sparkling</u>																			
2																					
3	<u>X640</u>	<u>2"</u>	<u>STD</u>	<u>7</u>	<u>1</u>																✓
4	<u>641</u>			<u>7</u>																	✓
5	<u>642</u>			<u>7</u>																	✓
6	<u>643</u>			<u>7</u>																	✓
7	<u>644</u>			<u>7</u>																	✓
8	<u>645</u>			<u>7</u>																	✓
9	<u>X646</u>	<u>2"</u>	<u>STD</u>	<u>A</u>	<u>1</u>																✓
10																					
11																					
12																					
13																					
14																					
15																					
16																					
17																					
18																					
19																					
20																					

WELD or FILM QUANTITY	STAMP ERIC HEDBERG # 11430 CGSB RT II SNT-TC-1A RTII / MTII	Regular Hours	
		Overtime Hours	
		Sub / Man Day	
		Kilometers	
Client Representative: <u>[Signature]</u>	Technician: <u>[Signature]</u>	Assistant: <u>C. Lawrence.</u>	

92

HT # 13444

Pipe 3in SL 40, SA 106

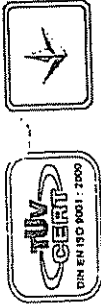
Grade B

Po 126453

HT# 13444

KT

Производитель: Никопольский завод стальных труб "ЮТИСТ" (Украина)
Producer: Nikopol steel pipe plant YUTIST, CJSC (Ukraine)
56, пр. Трубинков
г. Никополь
Днепропетровская обл.
Украина, 53201
tel: +38-05662-25062, -22147
fax: +38-0562-25062
E-MAIL: YUTIST@YUTIST.COM.UA WWW.STEELFROM.COM



СЕРТИФИКАТ ПРИЕМОЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS № 318-A

Дата отгрузки Shipped from plant 25.02.2006	Вид груза, мест Type of cargo place	пакеты packages	Грузополучатель Consignee	EMSCO "Corporation"	Контракт № Contract № 202
Вагон Wagon № 66565300	Кол-во груза мест Q-ty of cargo place	6	Страна назначения Destination country	Канада Canada	Дата Date 12.10.2005

Наименование продукции Description of goods	Стандарт Standard	неразрушающие испытания пройденны	Марка стали Steel grade	термообработка / heat treatment с прокатного нагрева after rolling heating			
трубы стальные бесшовные seamless steel pipes	ASTM A 106/ASME SA 106, ASTM A 53; ASME A 53; NACE MR 0175	NDE	Gr. B				

Дополнительные требования: согласно контракта № 202 от 12.10.2005
Additional remarks: according to Contract № 202 from 12.10.2005

№ заводской партии	№ плавки	Размеры, мм Sizes, mm	Номинальный размер x толщина стенки (дюйм) x длина (фут)	Класс веса Weight Class	Способ изготовления Method of manufacture	Кол-во брутто, тн Quantity G.W., M.Tons	Кол-во нетто, тн Quantity N.W., M.Tons	Кол-во футов Q-ty of feet	Кол-во, метров Quantity, meters	Кол-во, шт. труб PCS of pipes	Лот Lot	№ места. Bndl #
1	314	88.9x5.49x5486-6706	3 1/2" x 0.216" x 18'-22"	40	гор. деф./hot fin. Итого/Total(1)	2,260	2,250	672,500	205	30	7	1
2	316	88.9x7.62x5486-6706	3 1/2" x 0.300" x 18'-22"	80	гор. деф./hot fin.	2,260	2,250	672,500	205	30	1	2
3	316	88.9x7.62x5486-6706	3 1/2" x 0.300" x 18'-22"	80	Итого/Total(2-3)	1,940	1,940	416,670	127	19	2	3
4	40991	168.3x10.97x5486-6706	6" x 0.432" x 18'-22"	80	гор. деф./hot fin.	1,940	1,930	586,470	67	10	4	4
5	40991	168.3x10.97x5486-6706	6" x 0.432" x 18'-22"	80	гор. деф./hot fin.	1,690	1,680	150,900	46	7	5	5
6	40991	168.3x10.97x5486-6706	6" x 0.432" x 18'-22"	80	Итого/Total(4-6)	1,950	1,940	433,000	132	20	3	3
						5,580	5,550	1741,970	531	79		

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2002 EDITION, 2002 ADDENDA
JUN 15 2006

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2002 EDITION, 2002 ADDENDA
FEB 21 2008

By:

P.O. No.

Nikopol steel pipe plant YUTIST, CJSC

P.O. No.

Лист
Sheet 1

Листов
Sheets 3



СЕРТИФИКАТ ПРИМЕЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS №
в соответствии с / in. acc with EN10204/3.1B

31.11.11

РЕЗУЛЬТАТЫ ИСПЫТАНИЙ / TEST RESULTS

Химический состав стали / Steel chemical composition												
Массовая доля элементов, % / Element fraction of total mass, %												
№ плавки Heat №	C	Si	Mn	S	P	Cr	Ni	Cu	Mo	V		
13444	0,20	0,23	0,51	0,005	0,007	0,04	0,04	0,07	0,01	<0,01		
40991	0,20	0,24	0,46	0,006	0,005	0,06	0,04	0,06	0,01	<0,01		

CE = 0,44 ✓

№ п/п Item	Номер заводской партии. Set for testing	№ плавки Heat №	Механические свойства / Mechanical properties			
			Предел прочности. Tensile strenght, Rm.		Предел текучести Yield strenght, Rp	
			MPa	PSI	MPa	PSI
1	314	13444	524	76000	359	52000
2	316	13444	519	75500	376	54500
3	316	13444	519	75500	376	54500
4	45	40991	486	70500	310	45000
5	45	40991	486	70500	310	45000
6	45	40991	486	70500	310	45000



СЕРТИФИКАТ ПРИЕМОЧНЫХ ИСПЫТАНИЙ / CERTIFICATE OF CHECK TESTS №
в соответствии с / in. acc with EN10204/3.1B

Примечание:
Note:

Order: P.O. # 1192157

Герметичность: Гидростатические испытания не проводились. Взамен гидрокиспытаний проведен

неразрушающий ультразвуковой контроль и вихревой контроль по методике E 213.E309.

Leak-proofness: Hydrostatic test are not carried out. Instead of hydrostatic are carried out nondestructive ultrasonic

tests and carried out nondestructive test - on a technique E 213.E 309.

Трубы испытаны на сплющивание- удовлетворительно Pipes are tested by flating test - satisfactory.

Номинальный размер продольного полосового образца для испытания на растяжение:

Ширина, мм: 19 ± 0,78

Расчетная длина, мм - 50

Nominal size of longitudinal strip sample for stretching test:

Width, mm: 19± 0,78

Calculated length, mm - 50

Концы труб защищены полиэтиленовыми пробками.

The ends of pipes are protected by polyethylene caps.

Наружная поверхность труб покрыта грунт-эмалью "АКРОКОР" в два слоя.

The outside surface of pipes is covered with ground - enamel "AKROKOR" in two layers

Трубы изготовлены с фаской.

Pipes are made with bevel.

Старший контрольный мастер
Senior control foreman

Сертификатор
Prepared by

Освидетельствовано экспертом
Witnessed by expert

Лист
Sheet

3

Листов
Sheets

3

Nikopol steel pipe plant YUTIST, CJSC tel./fax: +38-05662-25062; 22147; +38-0566-687000 e-mail: utist@utist.com.ua

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 2007 ADDENDA
MAR 10 2008
By: QA
江阴市无缝钢管总厂
JIANGYIN SEAMLESS STEEL PIPE FACTORY (GST)

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 2007 ADDENDA
JUN 08 2007
By: QA
产品 质量证明书 [EN 10204.3.1]
MILL TEST CERTIFICATE

江苏省江阴市夏港镇澄澄路375号
No.375,Zhencheng Rd.Xiagang Town Jiangyin City
Jiangsu Province, China (214442) http://www.cjgg.cn
Tel:86-510-6160703 Fax:86-510-6167989

总件数 Total Bundles	20	总支数 Total Pieces	686	总重量 (t) Total Weight	23.880	日期 Date: 2006年07月26日	№: 00020502-2
收货单位 PURCHASER	合同编号 Contract No. R-0506-A						
产品名称 Product	CARBON STEEL SEAMLESS PIPE		技术标准 Spec.	ASTM A106/ASME SA106/API 5L NACE MR-0175/94	许可证号 License No.	0503	
规格 Size O.D×W.T×L (mm)	219×SCH40×6400		钢级 Grade	B	交货状态 Delivery Status	COLD-DRAWING (ANNEAL)	
序号 NO.	炉号 Heat No	批号 Batch No	件数 PCS	支数 BDL	重量 (t) WT	拉伸试验 Tensile Test	
1	06402568	06070143	7	259	9.016	尺寸 Dimension	抗拉强度 T.S Mpa
2	06402568	06070144	7	259	9.016	屈服强度 Y.S Mpa	伸长率 E.L (%)
3	06400944	06070146	6	200	6.962	尺寸 Dimension	抗拉强度 T.S Mpa
4						屈服强度 Y.S Mpa	伸长率 E.L (%)
化学成分 (%) Chemical Composition							
类别 Type	C	Si	Mn	P	S	Cr	Ni
1 R	.210	.280	.510	.012	.011	.013	.012
2 R	.210	.280	.510	.012	.011	.013	.012
3 R	.200	.240	.570	.010	.014	.016	.015
4 R							
压扁 Flattening	冷弯 Cold Bending	扩口 Flaring	超声检验 U.T	涡流检验 E.T	磁粉检验 M.P.I	漏磁检验 L.M.T	通径 N.D
OK							
注释 Notes	*1:纵向条状 Longitudinal Strip: A1-12.7mm, A2-19.05mm A3-25.4mm A4-38.1mm, F-全截面 Full-section *2:棒状 Clubbed: B1=12.7mm, B2=8.9mm, B3=8mm, B4=10mm *3:横向条状 Transverse Strip: C1-12.7mm, C2-19.05mm C3-25.4mm C4-38.1mm, *4: D1=10×10×55mm D2=10×7.5×55mm D3=10×5×55mm *5: C-成品成分 Product composition R-熔炼成分 Melting composition *6: F-铁素体 Ferrite B-贝氏体 Bainite P-珠光体 Pearlite S-回火索氏体 Tempered Sorbite M-马氏体 Martensite						
备注 Remark	1. API 5L Gr.B -43rd Edition. 2. ON THEORETICAL WEIGHT BASIS. 3. CE=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15						

4" 150# STD FFWN SA105N
HT# 19278

三英鋼鐵股份有限公司
SAN ENG STEEL FORGING CO., LTD.
NO. 22 LANE 50, WAN SING STREET
SAN MIN DISTRICT, KAOHSIUNG,
TAIWAN, R. O. C.
Tel: 07-372 4249 07-371 2934
Fax: 07-371 2923 07-371 2846
URL: http://www.saneng.com.tw
e-mail: saneng@ksts.seed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.1.B(DIN50049/3.1.1.B)
CUSTOMER: W.F.F. FITTINGS & FLANGES
(CANADA) LTD.
7004K-5TH STREET S.E. CHARTER
ALBERTA, CANADA T2H 2G3
TEL: 4032559527 FAX: 4032524711

ORDER NO.: E04324DD

L/C NO.:

MAR 10 2008

10H

CERT NO.: SH060374N
DATE: 03/20/2006

PAGE: 1 OF 1

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20 ADDENDUM 8

P R O D U C T			SPECIFICATION FOR MATERIAL			SPECIFICATION FOR FITTINGS										
FORGED CARBON STEEL FLANGES			ASTM A-105-03/ASME SA-105			ASME B16.5-98a										
ITEM NO.	D E S C R I P T I O N	QUANTITY	C H E M I C A L C O M P O S I T I O N (%)													
			C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N	C.E.	
1.	900 WHRTJ STD	3" A105H	5 PCE	0.210	0.170	1.160	0.017	0.011	0.050	0.060	0.030	0.005	0.003	0.005	0.009	0.423
2.	600 WHRTJ XS	3" A105H	10 PCE	0.220	0.200	1.110	0.014	0.013	0.110	0.070	0.060	0.005	0.003	0.005	0.010	0.432
3.	600 WHRTJ XS	4" A105H	5 PCE	0.210	0.160	1.110	0.014	0.015	0.100	0.050	0.070	0.005	0.003	0.005	0.011	0.418
4.	300 WHFF STD	3" A105H	5 PCE	0.220	0.230	1.080	0.013	0.011	0.060	0.040	0.030	0.010	0.003	0.005	0.009	0.417
5.	150 WHFF STD	4" A105H	100 PCE	0.200	0.240	1.090	0.015	0.015	0.120	0.070	0.060	0.005	0.003	0.005	0.008	0.410
6.	150 WHFF XS	8" A105H	5 PCE	0.200	0.240	0.960	0.020	0.012	0.160	0.210	0.130	0.030	0.000	0.003	0.009	0.428
ITEM	HEAT	TENSILE STRENGTH (MPa)	YIELD STRENGTH (MPa)	ELONGATION (%)	HARDNESS (HB)	REDUCTION OF AREA (%)	HEAT TREATMENT		MATERIAL SUPPLIER	R E M A R K S						
										NORMALIZATION: 880°C X3HRS						
1.	17832	511.90	323.60	33.8	157	65.9	NORMALIZED		OEKK	CRIMTECH SERVICES LTD.						
2.	44041	515.50	301.90	34.8	162	68.6	NORMALIZED		OEKK	MATERIAL CONFORMS TO: ASME						
3.	48946	521.70	313.80	34.4	157	64.9	NORMALIZED		OEKK	SEC. II, 2007 EDITION, 2006 ADDENDUM 8						
4.	28008	515.80	323.60	40.0	157	61.1	NORMALIZED		OEKK	OCT 29 2007						
5.	09278	508.00	311.90	33.6	153	66.8	NORMALIZED		OEKK	By: 10H						
6.	63427	498.90	303.80	38.0	148	63.0	NORMALIZED		RED OCTOBER							

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR BY THE ABOVE ORDER AND IS THAT WHICH HAS BEEN TESTED TO THE SATISFACTION OF THE CERTIFICATE.

P.O. No.

19278



Material Test Report

Heat Code: **XYZ**

An Ameri-Forge Group Company

13770 Industrial Rd , Houston, TX 77015

Sales: (713) 868-4421 Fax: (713) 455-8366

ISO 9001:2000 Certified

CCIF-EDMONTON	PO: PO#4023270	Sales Order: 61313	Line: 1
5407 53RD AVENUE	Item Code: 0151300101-0021f		Qty Shipped: 140
T6B3G2 EDMONTON ALB	Item Desc: FLG 03.00 0150 WN RF STD A105		NRM COFFR
CA	Supplier: CMC		Supplier Heat: 257489

Spec: ASTM A 105/A 105M-03/ASME SA 105/SA 105M-04 Normalized

Element	(%wt)	Ladle	Product	EPCRA	CAS#	Element	(%wt)	Ladle	Product	EPCRA	CAS#
C Carbon	0.20	✓				Ni Nickel	0.08	✓		✓	7440-02-0
Mn Manganese	0.88	✓		✓	7439-96-5	Cr Chromium	0.19	✓		✓	7440-47-3
P Phosphorous	0.014	✓				Mo Molybdenum	0.020	✓			
S Sulphur	0.009	✓				V Vanadium	0.002	✓			
Si Silicon	0.20	✓				Cb Columbium	0.002	✓			
Cu Copper	0.32	✓		✓	7440-50-8	C.E.	0.41				

Mechanical		Heat Treat	
Test Lab	AFG	Norm. Temp (F)	1675
Test Bar Size	SACRIFICIAL PIECE	Norm. (Hrs)	4.0
HBW	156-156	Norm Cooling Type	AIR
Elg (%)	33.0	Norm Location	AFG
RA (%)	62.0		
Tensile Specimen Size (in)	0.501	Other	
Tensile (ksi)	77.0	Country of Origin	USA (US)
Yield (ksi)	45.0	EF	Y
Gauge Length	2.00		

CRIMTECH SERVICES LTD.

MATERIAL CONFORMS TO: ASME

2004 EDITION 2006 ADDENDA

NOV 16 2007

PO No

7533493

CRIMTECH SERVICES LTD.

MATERIAL CONFORMS TO: ASME

2004 EDITION 2006 ADDENDA

MAR 10 2008

By: *AKH*

P.O. No

No Weld repair performed Chemical Analysis results shown are actual. Forgings are capable of passing hydrostatic test compatible with the appropriate rating Elongation taken from a round specimen. All material supplied under this order is certified to be free of mercury contamination and no mercury bearing equipment was used in manufacturing, fabrication or testing Yield strength was determined using the 0.2% offset method

EPCRA Supplier Notification: This product may contain one or more toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986) and 40 C.F.R. Part 372. Potentially reportable chemicals are indicated with a checkmark in the "EPCRA" column and a Chemical Abstract Services (CAS) registry number is provided for each such chemical in addition to the percent by weight of the chemical present in this product. It is your responsibility alone to determine whether your facility is required to submit a Toxic Release Inventory Report under EPCRA Section 313

Certification No.: 127022
Certification Date: 10/4/2007

Kevin Papich

Kevin Papich - Tech. Svcs. Manager

10130244

2 1/2" 150# STD RFWN SA105N
HT# 45339

12K7U7095607
12K7U7031747
12K7U1932650
12K7U110027

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20 ADDENDA
MAR 10 2008
SAN ENG STEEL FORGING CO., LTD.
BY: SING STREET
SAN NIN DISTRICT, KAOHSIUNG,
TAIWAN, R. O. C.

二英鋼股份有限公司
SAN ENG STEEL FORGING CO., LTD.
NO. 22 LANE 50, MAN
SAN NIN DISTRICT,
TAIWAN, R. O. C.

CERT NO.: SE-3025AN
DATE: 11/13/2000

ORDER NO.: 3025(1)-CCTF

TEL: 07-372 4249 07-371 2934
FAX: 07-371 2923
FAX: 07-371 2846

PAGE: 1

P R O D U C T		S P E C I F I C A T I O N F O R M A T E R I A L				S P E C I F I C A T I O N F O R F I T T I N G S								
FORGED CARBON STEEL FLANGES		ASTM A-105-98/ASME SA-105				ANSI B16.5-98a								
ITEM NO.	D E S C R I P T I O N	Q U A N T I T Y	C H E M I C A L C O M P O S I T I O N (%)											
			C	SI	MN	P	S	CU	CR	NI	MO	V	Nb	N
1.	7533967 150# WRF STD	980 PCE	0.210	0.210	0.860	0.014	0.012	0.030	0.080	0.050	0.008	0.001	0.005	0.007
2.	7533983 150# WRF STD	800 PCE	0.210	0.200	0.850	0.015	0.008	0.070	0.070	0.040	0.005	0.002	0.005	0.008
3.	7534027 150# WRF STD	600 PCE	0.220	0.180	1.000	0.013	0.009	0.050	0.070	0.030	0.008	0.002	0.005	0.007
4.	7534086 150# WRF STD	60 PCE	0.220	0.240	0.950	0.017	0.011	0.010	0.030	0.040	0.001	0.009	0.002	0.000
5.	7530111 150# WRF XS	10 PCE	0.210	0.250	0.690	0.011	0.006	0.059	0.065	0.043	0.009	0.006	0.002	0.000
6.	7534337 150# WRF XS	1,470 PCE	0.210	0.210	0.960	0.014	0.012	0.080	0.080	0.050	0.008	0.001	0.005	0.007
7.	7535190 150# WRF S80	10 PCE	0.250	0.220	0.880	0.017	0.016	0.010	0.030	0.010	0.000	0.001	0.003	0.006
8.	7534027 150# WRF STD	10 PCE	0.210	0.180	0.910	0.013	0.011	0.070	0.050	0.040	0.010	0.000	0.005	0.006
9.	7534205 150# WRF STD	175 PCE	0.220	0.200	0.940	0.012	0.008	0.100	0.080	0.070	0.006	0.002	0.005	0.008
10.	7535210 150# S80	1,500 PCE	0.230	0.220	0.900	0.010	0.009	0.050	0.060	0.050	0.005	0.002	0.005	0.009
ITEM	H E A T	T E N S I L E S T R E N G T H (M P a)	Y I E L D S T R E N G T H (M P a)		E L O N G A T I O N (%)	H A R D N E S S (H B)	R E D U C T I O N O F A R E A (%)	H E A T T R E A T M E N T	M A T E R I A L S U P P L I E R	R E M A R K S				
		485 MIN	250 MIN	22.0 MIN						NORMALIZATION: 880°C X2HRS				
1.	47318	519.80	296.20	34.6	152	62.0	NORMALIZED	OEK	CRIMTECH SERVICES LTD. MATERIAL CONFORMS TO: ASME SEC. II, 2007 EDITION, 2007 ADDENDUM JUN 08 2007 By: AGH P.O. No.					
2.	45875	495.20	307.90	37.2	162	64.0	NORMALIZED	OEK						
3.	10630	501.10	306.00	26.4	157	59.0	NORMALIZED	OEK						
4.	40034	485.40	335.40	36.6	145	66.8	NORMALIZED	HIZHNY TAGIL						
5.	40034	485.40	335.40	36.6	145	66.8	NORMALIZED	FEHG HSIN						
6.	47818	519.80	327.50	34.6	152	58.0	NORMALIZED	OEK						
7.	07389	495.20	296.20	35.6	147	66.8	NORMALIZED	ISCOR						
8.	45875	511.90	315.80	36.8	157	66.8	NORMALIZED	OEK						
9.	45876	511.90	315.80	36.8	171	63.0	NORMALIZED	OEK						
10.	36852	489.40	311.90	38.0	162	60.1	NORMALIZED	OEK						

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND ALSO WITH THE REQUIREMENTS CALLED FOR BY THE ABOVE ORDER AND IS THAT WHICH HAS BEEN TESTED TO THE SATISFACTION OF THE INSPECTOR

Joe Lee MANAGER
C.H. Kao TEST CHIEF

35763 : 2-1/2" 300# W/N FLANGE RF STD
 35763 : 2-1/2" 300# BORE A105N
 nt/Seq #: 5 - 1477



METALFAR

PRODOTTI INDUSTRIALI S.p.A.
 23061 CESANA BRIANZA (LC)
 Tel. 031.855441 - Fax 031.855148

1021

PRIME-AL PIPING PRODUCTS LTD
 7075 14TH STREET SE YIC148
 CALGARY, ALBERTA
 CANADA T2C 1A8

JUL 23 2007

MATERIAL CONFORMS TO: ASME
 SEC. II, 2007 EDITION, 2007 ADDENDA

INSPECTION CERTIFICATE EN 10504/3.1

CERTIFICATO DI COLLAUDO
 N. 3777/
 INVOICE / FATURA
 S. 47438
 DEL NOTE / BOLLE
 4472/

MATERIAL TEST DEPARTMENT
 SALA PROVE ED ANALISI MATERIALI

HEAT CODE COD. COLATA	ITEM POS.	YOUR I.D. VS. ORIGIN	COUR REFERENCE PIS. DISTRIB.	QUANTITY QUANTITA'	DESCRIPTION DESCRIZIONE	DATA IN ACCORDO A	VERIFICATION PUNTO													
35779	0036	C105-155	05000379 0013	1	W/N 400 RJ 3" STD A105	ASME/ANSI B16.5	SATISFACTORY													
35779	0062	C105-282	05000345 0059		W/N 400 RJ 3" STD A105	ASME/ANSI B16.5	SATISFACTORY													
35763	0077	C105-282	05000345 0031		W/N 306 RJ 2.1/2" STD A105	ASME/ANSI B16.5	SATISFACTORY													
35779	0062	C105-282	05000345 0059		W/N 400 RJ 3" STD A105	ASME/ANSI B16.5	SATISFACTORY													
35763	0076	C105-344	05000345 0033		W/N 306 RJ 2.1/2" STD A105	ASME/ANSI B16.5	SATISFACTORY													
35763	0014	C105-432	05000304 0072		W/N 306 RJ 2.1/2" STD A105	ASME/ANSI B16.5	SATISFACTORY													
HEAT CODE COD. COLATA	ITEM POS.	MATERIAL LATERALE	TEST SPECIFICATION REQUISITI SPECIFICAZIONE	YIELD POINT Tensione (N/mm²)	TENSILE STRENGTH Tensione (N/mm²)	ELONGATION Allungamento (%)	REDUCED SECTION Riduzione Sezione (%)	IMPACT TEST Tensione (N/mm²)	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato
35779	0036	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35779	0062	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0077	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35779	0062	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0076	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0014	ASTM A 105	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
HEAT CODE COD. COLATA	ITEM POS.	MATERIAL LATERALE	TEST SPECIFICATION REQUISITI SPECIFICAZIONE	YIELD POINT Tensione (N/mm²)	TENSILE STRENGTH Tensione (N/mm²)	ELONGATION Allungamento (%)	REDUCED SECTION Riduzione Sezione (%)	IMPACT TEST Tensione (N/mm²)	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato	IMPACT TEST Temperatura (°C)	IMPACT TEST Risultato
35779	0036	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35779	0062	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0077	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35779	0062	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0076	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
35763	0014	ASTM/ASME A 105/SA 105 M - 02	126.40	58.8	524	28.0	57.0	0.09	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	

CRIMTECH SERVICES LTD.
 MATERIAL CONFORMS TO: ASME
 SEC. II, 2007 EDITION, 2007 ADDENDA
 MAR 10 2008

HEAT TREATMENT
 NORMALIZED AT 920 C - COOLED IN STILL AIR
 NORMALIZED AT 920 C - COOLED IN STILL AIR
 NORMALIZED AT 920 C - COOLED IN STILL AIR
 NORMALIZED AT 920 C - COOLED IN STILL AIR
 NORMALIZED AT 920 C - COOLED IN STILL AIR
 NORMALIZED AT 920 C - COOLED IN STILL AIR

QUALITY CONTROL DEPARTMENT
 OFFICE QUALITY CONTROL
 BRACCHI / LAVIO
 P.O. No.

NOTE

MATERIAL IN ACCORDANCE WITH NACE MR-0175/2007

MANUFACTURER'S SYMBOL
 ASSOCIATED QUALITY

(MFC)



Material Test Report

Heat Code: YHL

An Ameri-Forge Group Company
13770 Industrial Rd., Houston, TX 77015

Sales: (713) 868-4421 Fax: (713) 455-8366

ISO 9001:2000 Certified

CCTF-EDMONTON 5407 53RD AVENUE T6B3G2 EDMONTON ALB CA	PO: 4880716	Sales Order: 60168	Line: 7
	Item Code: 0301200101-0021F		Qty Shipped: 5
	Item Desc: FLG 02 00 0300 WN RE STD A105		NRM COFFR
	Supplier: CMC		Supplier Heat: 256874

Spec: ASTM A 105/A 105M-03/ASME SA-105/SA 105M-04 Normalized

7534608

Element	(%wt)	Ladle	Product	EPCRA	CAS#	Element	(%wt)	Ladle	Product	EPCRA	CAS#
C	Carbon	0.19	✓			Ni	Nickel	0.07	✓		7440-02-0
Mn	Manganese	0.91	✓	✓	7439-96-5	Cr	Chromium	0.08	✓		7440-47-3
P	Phosphorous	0.012	✓			Mo	Molybdenum	0.012	✓		
S	Sulphur	0.025	✓			V	Vanadium	0.002	✓		
Si	Silicon	0.17	✓			Cb	Columbium	0.002	✓		
Cu	Copper	0.27	✓			C.E		0.38			

Mechanical		Heat Treat	
Test Lab	AFG	Norm. Temp. (F)	1675
Test Bar Size	SACRIFICIAL PIECE	Norm. (Hrs)	4.0
HBW	146-149 ✓	Norm. Cooling Type	AIR
Elg (%)	31.0 ✓	Norm. Location	AFG
RA (%)	48.0		
Tensile Specimen Size (in)	0.248	Other	
Tensile (ksi)	76.0 ✓	Country of Origin	USA (US)
Yield (ksi)	46.6 ✓	EF	Y
Rough Length	1.00		
CRIMTECH SERVICES LTD. MATERIAL CONFORMS TO: ASME SEC II, 2007 EDITION, 20__ ADDENDA MAR 10 2008 By: <u>DAH</u> PO No. _____		CRIMTECH SERVICES LTD. MATERIAL CONFORMS TO: ASME SEC II, 2004 EDITION, 2006 ADDENDA OCT 29 2007 By: <u>DAH</u> PO No. _____	

No Weld repair performed. Chemical Analysis results shown are actual. Forgings are capable of passing hydrostatic test compatible with the appropriate rating. Elongation taken from a round specimen. All material supplied under this order is certified to be free of mercury contamination and no mercury bearing equipment was used in manufacturing, fabrication or testing. Yield strength was determined using the 0.21 offset method.

EPCRA Supplier Notification: This product may contain one or more toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III) of the Superfund Amendments and Reauthorization Act of 1986 and 40 C.F.R. Part 372. Potentially reportable chemicals are indicated with a checkmark in the "EPCRA" column and a Chemical Abstract Services (CAS) registry number is provided for each such chemical in addition to the percent by weight of the chemical present in this product. It is your responsibility alone to determine whether your facility is required to submit a Toxic Release Inventory Report under EPCRA Section 313.

Certification No.: 125274
Certification Date: 9/11/2007

This report is issued in compliance with the requirements of EN10204 3.1 / ISO 10474 3.1 b

Kevin Papich - Tech Svcs Manager

2" 300# STD RFWN SA105N
HT# YHL



Material Test Report

Heat Code: YJM

An Ameri-Forge Group Company

13770 Industrial Rd. Houston, TX 77015

ISO 9001:2000 Certified

Sales: (713) 868-4421 Fax: (713) 455-8366

CCTF-EDMONTON 5407 53RD AVENUE T6B3G2 EDMONTON ALB CA	PO: 4880716	Sales Order: 60168	Line: 8
	Item Code: 0601200101-0021F		Qty Shipped: 320
	Item Desc: FLG-02-00-0600 WN RF STD-A105 NRM COFFR		
	Supplier: CMC		Supplier Heat: 257036
Spec: ASTM A 105/A 105M-03/ASME SA 105/SA 105M-04 Normalized 7530064			

Element	(%wt)	Ladle	Product	EPCRA	CAS#	Element	(%wt)	Ladle	Product	EPCRA	CAS#
C Carbon	0.19	✓				Ni Nickel	0.08	✓		✓	7440-02-0
Mn Manganese	0.87	✓		✓	7439-96-5	Cr Chromium	0.14	✓		✓	7440-47-3
P Phosphorous	0.018	✓				Mo Molybdenum	0.015	✓			
S Sulphur	0.028	✓				V Vanadium	0.002	✓			
Si Silicon	0.18	✓				Cb Columbium	0.002	✓			
Cu Copper	0.35	✓		✓	7440-50-8	C E	0.39				

Mechanical	Heat Treat
Test Lab AFG	Norm. Temp. (F) 1675
Test Bar Size SACRIFICIAL PIECE	Norm. (Hrs) 4.0
HBW 163-163 ✓	Norm. Cooling Type AIR
Elg (%) 36.0 ✓	Norm. Location AFG
RA (%) 62.0	
Tensile Specimen Size (in) 0.502	Other
Tensile (ksi) 76.6 ✓	Country of Origin USA (US)
Yield (ksi) 46.0 ✓	
Gauge Length 2.00	

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20__ ADDENDA
MAR 10 2008
By: KOH
P.O. No. _____

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2004 EDITION, 2006 ADDENDA
OCT 29 2007
By: KOH
P.O. No. _____

No Weld repair performed. Chemical Analysis results shown are actual. Forgings are capable of passing hydrostatic test compatible with the appropriate rating. Elongation taken from a round specimen. All material supplied under this order is certified to be free of mercury contamination and no mercury bearing equipment was used in manufacturing, fabrication or testing. Yield strength was determined using the 0.2% offset method.

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Certification No.: 122806

Certification Date: 8/4/2007

This report is issued in compliance with the requirements of EN10204 3.1 / ISO 10474 3.1 b

Kevin Papich - Tech. Svcs. Manager

2" 600# STD RFWN SA105N
HT YJM



INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL: (07) 831-9157-9
FAX: (07) 831-2942, 821-7500

Customer: TRANS AM PIPING PRODUCTS LTD.
Product : SEAMLESS STEEL PIPE FITTING
Spec : ASME/SA/ASTM A234-WPB-05a
(DIN 50493, EN 10204, 1.1B/NACE MR 0175-03)

Certificate No: 09500077-1001
Order No : CL-06-478
Date : 2007/5/18

HEAT NUMBER : 9342

TRANS AM PIPING PRODUCTS - REV'D BY: 5
Shipment/Seg #: 5 7 - 1106

Specification for Raw Material		Specification for Inspection		Visual Examination		Dimensional Inspection	
ASTM A106 GR.B		ASME B16.9-2001		GOOD		GOOD	
Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.	
6	90 E L/R STD	6	9342	J6K9342	SUMITOMO	BYYL4522	
9	90 E L/R STD	8	6871	J6K6871	SUMITOMO	BYYL4521	
10	90 E L/R STD	10	7194	J6K7194	SUMITOMO	BYYL4507	
11	90 E L/R STD	16	1855	J6K1855	SUMITOMO	WYYK0468	
14	90 E L/R STD	4	2779	J6K2779	SUMITOMO	WYYK4619	
66	90 E S/R STD	6	3638	J6K3638	SUMITOMO	BYYL4201	
145	45 E L/R XS	3	6166	J6K6166	SUMITOMO	BYYL4502	
177	180 E S/R XS	12	051A	J5K6051	SUMITOMO	BYYL3084	
222	90 E L/R S40		7306	J6K7306	SUMITOMO	WYYK4615	

Specification	Chemical Composition %												Tension Test			Heat Treatment	Magnetic Particle Exam.	Remark
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	Y.S	T.S	E			
	×100	×100	×100	×1000	×1000	×100	×100	×100	×100	×1000	×1000	×100						
	10	29	106	50	38	40	40	40	15	80	20	50						
MIN	30															197		
MAX	20	23	51	12	9	5	2	4	2	0	0	30	43900	66900	40	139		
6	14	16	79	7	2	8	3	3	1	0	0	29	42500	63400	41	135		
9	13	18	77	7	4	6	3	2	1	0	0	27	39200	62100	44	135		
10	15	27	69	12	8	10	2	4	1	0	0	28	45700	70400	41	135		
11	15	21	66	11	9	9	4	3	2	0	0	28	50700	71900	41	134		
14	15	26	69	8	5	6	4	3	1	0	0	28	46400	71100	40	135		
66	12	16	75	6	1	6	3	3	1	0	0	26	37000	62800	44	135		
145	18	28	55	18	9	3	2	2	1	0	0	28	50900	70100	39	137		
177	18	22	50	15	8	6	2	2	2	0	0	28	49300	74700	41	137		
222																		

C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

We hereby certify that the product described herein has manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 2007 ADDENDA
OCT 29 2007
By: [Signature]
P.O. No.

Chief of Quality Assurance Section

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 2007 ADDENDA
MAR 10 2008
By: [Signature]
P.O. No.

L.S. Tsai

1001345
LINE 1

CRIMTECH SERVICES LTD. 20244
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20__ ADDENDA

MAR 10 2008

INSPECTION CERTIFICATE

(MILL TEST)

P.O. No.

CHUP HSIN ENTERPRISE CO., LTD.
17, TUNG LI ROAD HSIAO KANG
KAOHSIUNG, TAIWAN R.O.C.
TEL: (07) 831-9157-9
FAX: (07) 831-2942, 821-7500

Certificate No: 09500065-0201
Order No: 4020990
Date: 2005/12/5

Customer: CCTFA DIVISION OF EMCO LTD.)
Product : SEAMLESS STEEL PIPE FITTING
Spec : ASTM A234 WPB-05a
IDN 500493, FINANCE MR 0175-95

Specification for Raw Material		Specification for Inspection		Visual Examination		Dimensional Inspection	
ASTM A106 GR.B		ASME B16.9-2001		GOOD		GOOD	
Item	Description	Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.	
5	90 E LR STD 7510346	2	A257	J6K1257	SUMITOMO	BYYL4501	
10	90 E LR STD 7510346	25	8181	J6K8181	SUMITOMO	WYTK4153	
11	90 E LR STD 7511396	50	B450	J6K9450	SUMITOMO	BYYL4033	
13	90 E SR STD 7510454	10	5296	J6K5296	SUMITOMO	BYYL4352	
15	90 E SR STD 7511140	2	1271	J6K1271	SUMITOMO	WYTK0442	
15	90 E SR STD 7510008	3	5244	J5L5244	SUMITOMO	WYTK2664	
21	90 E SR STD 7511396	50	5881	J6K5881	SUMITOMO	BYYL4353	
23	45 E LR STD 7510853	40	5237	J6K5237	SUMITOMO	WYTK4322	
28	180 E LR STD 7512305	10	0544	J5K0544	SUMITOMO	BYYL2717	

Chemical Composition %

Specification	Chemical Composition %											Tension Test	Heat Treatment	Magnetic Particle Exam.	Remark	
	C ×100	Si ×100	Mn ×100	P ×1000	S ×1000	Cu ×100	Ni ×100	Cr ×100	Mo ×100	V ×1000	Nb ×1000					C.E. ×100
MIN	10	10	29	50	58	40	40	40	15	30	20	50	35000	95000	40	138
MAX	30	106	56	12	10	7	1	2	1	0	0	29	43500	68200	41	141
5	19.7	20.7	56	17	7	2	2	7	2	0	0	35	40628	69213	41	139
10	22	19	62	17	7	2	2	7	2	0	0	30	44000	66500	41	138
11	20	25	56	8	4	3	2	3	1	0	0	29	44500	68100	40	135
13	19	24	55	7	3	6	3	2	1	0	0	29	47200	70100	39	139
15	15	28	69	12	5	11	5	4	2	0	0	30	46100	66100	41	135
15	19	19	54	14	6	1	2	7	1	0	0	28	41500	62700	40	139
21	13	14	80	10	3	5	2	3	1	0	0	31	45700	71800	41	133
23	20	28	58	13	5	4	2	1	2	0	0	27	42100	65700	41	
28	13	18	75	8	2	7	3	3	1	0	0					

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2004 EDITION, 2004 ADDENDA

MAY 29 2007

By: 

P.O. No. 

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20__ ADDENDA

MAY 29 2007

By: [Signature]

P.O. No. [Signature]

L.S. Lai

Chief of Quality Assurance Sec.

C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
We hereby certify that the product described herein has manufactured in accordance with the requirements and also with the purchaser's requirements and that the

130244

LINE 2

1003884

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2004 EDITION, 2000 ADDENDA

OCT 29 2007

INSPECTION CERTIFICATE



PURCHASER: SEYBOLD

ASTM A234 WPB-07
ASME SA234 WPB-04

DATE

2007 - 08 - 28

ORDER NO.

86594022719

By: *OH*

RIGID INDUSTRIES CO., LTD.

9, MEI-CHUNG RD, NIAO-SUNG

KAOHSIUNG HSIEN, 83301 TAIWAN

TEL: 886-77310527-8

FAX: 886-77315887

P. I. NO: 7E05-1

MATERIALS: ASTM A106 Gr.B (SEAMLESS PIPE)
INSP. SPEC. ASME B16.9 - 03

CERTIFI. NO: 472

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
4	ELL 45 LR 5"	50	6D4895	GOOD	137 - 137	A	CRIMTECH SERVICES LTD.	
5	ELL 90 LR 1.1/4"	2000	6B4254 (6B)	GOOD	137 - 138	A	MATERIAL CONFORMS TO: ASME	
6	ELL 90 LR 2"	300	6H5702	GOOD	135 - 136	A	SEC. II, 2004 EDITION, 2000 ADDENDA	
7	ELL 90 LR 4"	125	7F5592	GOOD	129 - 144	A		
8	CON-RED 1.1/2X1.1/2"	5	6H5702 (6H)	GOOD	118 - 119	N		
9	CON-RED 2X1.1/2"	35	7E2412	GOOD	109 - 120	N		
10	CON-RED 2.1/2X1.1/2"	35	5G1755	GOOD	123 - 149	N		
11	CON-RED 2.1/2X2"	60	5H4855	GOOD	120 - 133	N		
12	CON-RED 5X4"	30	6B5625	GOOD	141 - 155	N		
13	CON-RED 6X2"	4	5H5981	GOOD	86 - 89	N		

By: *OH*

P.O. No.

CHEMICAL COMPOSITION %

PHYSICAL TEST

ITEM NO.	MATERIAL CHARGE NO.	CHEMICAL COMPOSITION %										PHYSICAL TEST		
		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Y S KSI	T S KSI	E %
4	312795	19	24	55	7	3	7	3	2	1	<1	50.1	68.1	41.0
5	304154	13	17	60	9	2	11	4	5	2	<1	48.6	70.4	33.0
6	0623002	14	30	73	13	9	12	4	2	3	<1	43.5	57.5	34.0
7	Y0702492	19	20	52	7	7	10	4	5	1	<1	46.4	57.5	35.0
8	0623002	14	30	73	13	9	12	4	2	3	<1	44.3	68.2	33.5
9	317512	18	24	56	5	1	7	3	2	1	<1	43.8	71.4	32.0
10	J5L1555	11	25	125	10	3	3	2	6	1	<1	49.2	70.9	62.0
11	J5L1555	11	25	125	10	3	3	2	5	1	<1	49.2	70.9	62.0
12	J4LC225	11	24	129	11	4	1	2	10	1	<1	50.6	71.2	42.1
13	J5L4981	11	25	129	13	3	2	2	10	<1	<1	45.7	71.2	43.7

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C-980°C AIR COOLING.

N: NORMALIZING AT TEMPERATURE 980°C X 0.5 HR AIR COOLING.

NACE MR-01-75 & NACE MR 0103 : SATISFACTORY

WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATIONS CONCERNED AND ALSO WITH THE PURCHASER'S REQUIREMENTS AND THAT THE TEST RESULTS SHOWN HEREIN ARE CORRECT.

O. E. Lan

MANAGER OF Q.A. DEPT.

2" STD. Tee SA234 WPB-04
HT#7D5226



INSPECTION CERTIFICATE

PURCHASER: SEYBOLD
ASTM A234 WPB-04
STANDARD: ASME SA234 WPB-04

DATE: 2007-08-07
ORDER NO: 6431/4879805
P.I. NO: 7C05-1
CERTIF. NO: 428

8, MEI-CHUNG RD, NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527-8
FAX: 886-77315887

MATERIALS: ASTM A106 Gr.B (SEAMLESS PIPE)
INSP. SPEC.: ASME B16.9-03

ACCORDING TO EN10204/DIN5049/3.1

ITEM NO.	PRODUCT & SIZE	QUANTITY PCS	MFG NO.	VISUAL & DIMENSIONAL INSPECTION	HARDNESS MAX 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
2	ELL 180 LR 4"	50	6H4809	GOOD	137 - 138	A		7512341
3	CON-RED 18X8"	2	6B4314	GOOD	112 - 115	N		7513909
4	ECC-RED 6X3"	30	6K0546	GOOD	141 - 148	N		7515120
5	ECC-RED 6X3"	5	7A2478	GOOD	135 - 141	N		7511434
6	ECC-RED 6X4"	50	6K2946	GOOD	133 - 137	N		7515081
7	ECC-RED 8X4"	25	6B659	GOOD	138 - 152	N		7515235
8	ECC-RED 10X6"	15	6E2307	GOOD	130 - 140	N	GOOD	7515294
9	TEE 2" STD	500	7D5226	GOOD	140 - 144	N	GOOD	7511736
10	TEE 2" XH	500	7C3755	GOOD	160 - 169	N	GOOD	7512040
11	TEE 4"	200	7D0546	GOOD	160 - 174	N	GOOD	7511817

ITEM NO.	MATERIAL CHARGE NO.	C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Y S	T S	E	C.E.
		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x1000	KSI	KSI	%	X100
	MIN.															
	MAX.															
2	308409	12	17	79	9	3	7	3	3	1	<1	1	40.2	62.4	40.0	50
3	J51K014	11	23	125	11	4	1	2	11	<1	<1	<1	47.7	65.8	47.4	26
4	0632546	16	20	66	15	6	10	4	6	<1	<1	<1	47.2	71.1	39.5	34
5	J61A935	11	26	133	11	4	3	3	11	<1	<1	1	44.1	67.3	46.9	29
6	0632546	16	20	66	15	6	10	4	6	<1	<1	<1	47.2	71.1	39.5	35
7	0632159	14	26	62	15	5	10	5	3	2	<1	<1	48.6	74.7	36.0	28
8	J61K007	12	25	129	10	4	3	2	11	<1	<1	<1	47.7	69.0	46.9	26
9	J7L2426	11	30	126	11	4	2	2	12	<1	<1	<1	54.7	74.1	57.0	36
10	J61K5355	11	29	130	11	3	2	2	11	1	<1	<1	49.9	70.9	60.0	34
11	J61K8146	11	31	133	7	5	2	2	11	<1	<1	<1	51.9	69.9	41.2	35

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620°C-880°C, AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880°C X 0.5HR, AIR COOLING.

NACE MR-01-75 & NACE MR 0103 - SATISFACTORY
WE HEREBY CERTIFY THAT THE PRODUCT DESCRIBED HEREIN HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE SPECIFICATIONS CONCERNED AND IT IS THE POLICY OF CRIMTECH SERVICES LTD. THAT THE MATERIAL CONFORMS TO ASME TEST RESULTS SHOWN HEREIN ARE CORRECT.

CRIMTECH SERVICES LTD.
2007 EDITION, 2007 ADDENDUM
SEC. II, 2007 EDITION, 2007 ADDENDUM OF Q.A. DEPT.

SEC. II, 2007 EDITION, 2007 ADDENDUM

OCT 02 2007

MAR 10 2008

By: JCH

P.O. No.

By: JCH

P.O. No.

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME
SEC. II, 2007 EDITION, 20__ ADDENDA

4" x 3" S40 RC SA234 WPB
HT#06G20006

LINE S
1004506

MAR 10 2008

Purchaser: CRIMTECH CORPORATION
By: [Signature]

INSPECTION CERTIFICATE



Thai Benkan Co., Ltd.
58 Soi Waiwanat, Bangsru, Prapacheng,
Samutprakan, 10130 Thailand.

TO EN10204 3.1

Order No. 4877324
Job No.

D M Y Certificate No.
30/08/2006 T-2006200825

No.	MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe		Specification for Inspection		Visual Examination	Dimensional Inspection
		ASTM A234-05a/ASME SA234 WPB CSA Z245.11 GR241 CAT I NACE MR0175-2003	Product & Size (1/2")	Quantity	Heat Treatment (Note 1)		
1	06G00013	90 ES WPB 10 S40		24	A	Good Symbol No. 7511140	Good
2	06F00024	45 EL WPB 4 S40		500/580	A	7511256	
3	06G00061	45 EL WPB 8 S40		80	A	7511326	
4	06G20006	RC WPB 4 X 3 S40		678/800	N	7513330	
5	06F20103	RC WPB 6 X 3 S40		149/340	N	7513585	

Specification	Chemical Composition %												Tension Test #2		HARDNESS MAX
	C	Si	Mn	P	S	Cu	Ni	Cr	Mn	V	Nb	C.E.	YS	TS	E
Min.	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 100			%
Max.		10	29										240	415	30
Material Heat No.	23		106	50	58	40	40	40	15	80	20			655	
1 J8K3003	11	28	129	9	3	4	2	13	0	0	0	36	332	480	47
2 88MD38	16	23	69	9	2	11	8	6	1	25	2	35	335	505	36
3 J5KB110	19	23	69	22	7	2	2	7	1	0	1	32	292	472	40
4 60M1351	16	30	74	6	4	9	7	3	1	25	1	35	303	463	38
5 69M1560	17	29	74	12	5	13	11	8	4	26	2	35	333	494	38

(Note 1) A: Hot formed with final temperature between 620°C/969°F. Air Cooling N: Normalizing 910°C/1670°F. Air Cooling *N: Normalizing 910°C/1670°F. Air Cooling (Specification for material made from plate) S: Stress relieving 675°C/1245°F. Air Cooling

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO: ASME SECTION II, 2007 EDITION, 20__ ADDENDA
OCT 29 2007
Quality Assurance Manager
Thai Benkan Co., Ltd.

C.E. = C+Mn/6+(Cr+Mn)/5+(Ni+Cu)/15
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

JUN 15 2007



INSPECTION CERTIFICATE

(MILL TEST)

CHUP HSIN ENTERPRISE CO., LTD.

17, TUNG LI ROAD HSIAO KANG

KAHSIUNG, TAIWAN R.O.C.

TEL: (07) 831-8157-9

FAX: (07) 831-2942, 821-7500

Customer: CCTF CORPORATION

Product: SEAMLESS STEEL PIPE FITTING

Spec: ASME SA-312-24 WPB-05a

(DIN 50497, BIEN 10204 3.1B NACE MK 0175-03)

Certificate No: 09600041-0103

Order No: 4021681

Date: 2007/5/31

Specification for Raw Material			Specification for Inspection			Visual Examination		Dimensional Inspection								
ASTM A106 GR.B			ASME B16.9-2001			GOOD		GOOD								
Item	Description		Quantity	Heat ID.	Heat No.	Raw Material Mfg	Raw Certificate NO.									
38	RED TEE STD	7510047	8 X 6	B316	J6K1316	SUMITOMO	WYK4235									
40	CON RED STD	7510054	1 1/4 X 3/4	4816	J6K4816	SUMITOMO	BYYL4098									
41	CON RED STD	7510055	1 1/4 X 1/2	3101	J1K3101	SUMITOMO	WYTL8451									
42	CON RED STD	7510152	2 X 1 1/2	0710	J6K0710	SUMITOMO	BYYL4402									
43	CON RED STD	7510179	2 X 1 1/4	0710	J6K0710	SUMITOMO	BYYL4402									
44	CON RED STD	7510195	2 X 1	0710	J6K0710	SUMITOMO	BYYL4402									
45	CON RED STD	7510217	2 X 3/4	0710	J6K0710	SUMITOMO	BYYL4402									
47	CON RED STD	7510269	2 1/2 X 2	0712	J6K0712	SUMITOMO	BYYL4404									
48	CON RED STD	7513084	2 1/2 X 1 1/2	0885	J6K0885	SUMITOMO	BYYL4015									
50	CON RED STD	7514427	2 1/2 X 1	0885	J6K0885	SUMITOMO	BYYL4015									
Specification	Chemical Composition %										Heat Treatment	Magnetic Particle Exam.	Remark			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V				Nb	C.E.	Y.S
MIN	10	29	106	50	58	40	40	40	15	80	20	50	35000	60000	30	197
MAX	30	31	106	15	9	8	4	2	2	0	0	33	39200	68000	44	139
38	20	31	66	15	9	8	4	2	2	0	0	33	39200	68000	44	139
40	20	22	36	23	9	6	1	3	3	0	0	28	47800	71800	41	139
41	19	27	62	15	8	4	3	7	1	0	0	31	48200	72300	42	136
42	21	28	55	13	10	3	1	2	1	0	0	31	45600	72100	40	141
43	21	28	55	13	10	3	1	2	1	0	0	31	45600	72100	40	141
44	21	28	55	13	10	3	1	2	1	0	0	31	45600	72100	40	141
45	21	28	55	13	10	3	1	2	1	0	0	31	45600	72100	40	141
47	20	28	57	10	8	4	2	2	2	0	0	31	48000	72500	40	139
48	18	24	43	16	10	5	5	2	1	0	0	26	43500	66700	41	135
50	18	24	43	16	10	5	5	2	1	0	0	26	43500	66700	41	135

GRIMTECH SERVICES LTD.

MATERIAL CONFORMS TO ASME

SEC. II, 2007 EDITION, 20__ ADDENDA

MAR 10 2008

By:

CRIMTECH SERVICES LTD.
MATERIAL CONFORMS TO ASME
SEC. II, 2002 EDITION, 2006 ADDENDA

MAR 10 2008

By: *[Signature]*

P.O. No. *[Signature]*

Chief of Quality Assurance Section

C.E.=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
We hereby certify that the product described herein has manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

TRANS AM PIPING PRODUCTS - REV'D BY: S 6 - 1482 30
 21/2X2 STD BW CONC REDUCER
 A234-WPB



Thai Benkan Co., Ltd.
 58 Soi Waduanai, Bangkru, Prapadaeng,
 Samutprakan, 10130 Thailand.

D M Y Certificate No.

09/08/2006 T-2006180205

INSPECTION CERTIFICATE

TO EN10204 3.1

(MILL TEST REPORT)

Purchaser: TRANS-AM PIPING PRODUCTS LTD.

E-No. MA-571 Purchase Order No. CI-08-284 Job No.

No.	MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe ASTM A234-05a/ASME SA234 WPB NACE MR0175-2003	Product & Size (T:*)	Quantity	Heat Treatment (Note 1)	Specification for Inspection ASME B16.9-2003	Visual Examination	Dimensional Inspection
1	06D000009	90 EL WPB 1 S80			A		Good	Good
2	06F000043	90 EL WPB 4 S80			A			
3	06F000074	90 EL WPB 8 S80			A			
4	06C200001	RC WPB 1 X 3/4 S40			N			
5	06A200004	RC WPB 2 1/2 X 2 S40			N			

(Note 1) A: Hot formed with final temperature between 620 C-980 C, Air Cooling N: Normalizing 910 Cx0.5 HR, Air Cooling *N: Normalizing 910 Cx0.5 HR, Air Cooling

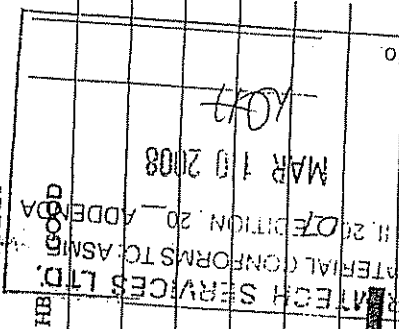
C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/5
 We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1: "T" symbolized wall thickness in mm. * 2: YS Yield strength TS = Tensile strength E = Elongation
 Form TZ-6A/2

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY:
 Form TZ-6A/2

GRIMTECH SERVICES LTD.
 MATERIAL CONFORMS TO: ASME
 SEC. II, 2004 EDITION, 2006 ADDENDA

Quality Assurance Manager
 Thai Benkan Co., Ltd.
 JUN 15 2007
 BY: [Signature]
 P.O. No.



Abnahmeprüfzeugnis nach EN 10204 - 3.1

Inspection certificate acc. to EN 10204 - 3.1

Zeugnis-Nr./Certificate No. US - 405941

Seite/Page 1 von/of 1

Es wird bescheinigt, dass die gelieferten Erzeugnisse den Vereinbarungen bei der Bestellung entsprechen. Darüber hinaus wird bescheinigt, dass bei der Herstellung der nachstehend aufgeführten Erzeugnisse die vorgeschriebenen Prüfungen und/oder die zusätzlich aufgeführten Prüfungen nach den bestehenden Prüfvorgaben durchgeführt und die erforderlichen Freigaben erteilt wurden. Die unten aufgeführten Prüfungen wurden unter Aufsicht einer dazu autorisierten, unabhängigen Stelle durchgeführt.

It is certified that the products supplied are in compliance with the requirements of the order. Furthermore, it is confirmed that during the manufacturing of the subsequently listed products the specified inspections and/or the additionally ordered tests have been performed according to the valid procedures and the necessary releases have been given. The subsequently listed inspections have been performed by especially authorized personal.

Kunde/Customer : ENDRESS+HAUSER FLOWTEC AG
US - 46143 - GREENWOOD
Kunden Bestell-Nr./Customer Order No. : -
E+H-Auftrags-Nr./E+H Order No. : 46551459

Pos./Item	Menge/Qty.	Produktbezeichnung/Description
130	1	72F15-SM0AA4PAB4AA PROWIRL 72 F 1/2" S/N.: 9504FE02000 Tag-Nr.: FQIT-100

Abnahmeprüfzeugnisse nach EN 10204 - 3.1/Inspection Certificates acc. to EN 10204 - 3.1:

Grundkörper/Meter body: C964, Uni Deritend
Prozessanschluss/Process connection: 192106, Neumayer
Schraube/Screw: DA (M5X12), Bossard AG
Elektroden/Electrodes: 417527, 242343, Kurt Schneider AG

Datum/Date 07.06.2007

Endress+Hauser Flowtec AG
CH-4153 Reinach

R. Karrer

Abnahmebeauftragter
Inspector

Dieses Dokument wurde elektronisch nach EN 10204 erstellt und ist ohne Unterschrift gültig
This document was generated electronically acc. to EN 10204 and is valid without signature.

9504FE02000

(SVTI-Zulassung-Nr. 400113)

Confirmation of Heat No. Transfer of Material with Inspection Certificate acc. to EN 10204-3.1

(SVTI Permission No. 400113)



Endress+Hauser

People for Process Automation

Kunde/Besteller:

Client/Purchaser: Endress+Hauser Flowtec AG

E+H-Ident.-Nr./Teil:

E+H Ident. No./ Teil.	
E+H Ident No./Part:	Prozessanschluss/Process connection

Unsere Beleg-Nr.:

Our Reference No.: 10024932

Auftr./Bestell-Nr.:

Com./Order No.:

[illegible]

Anlagen:	Zeugnis(se)
Enclosures:	Certificate(s)

Ort: _____
 Platz: _____

Reinach

Datum:
Date:

22.03.2007

Unterschrift:
Signature:

Firma:
Company:

Endress+Hauser Flowtec AG
CH-4153 Reinach

Wir bestätigen, dass die Umstempelung gemäss obiger Liste im Unternehmen mit dem "SV" durch einen unserer Sachverständigen erfolgte. We confirm that the heat no. transfer for the above mentioned material has been performed by our specialists, in conformance with "SV".

(EN10204/3.1B)

Inspection Certificate (DIN 50049-3.1B)

Customer : ENDRESS + HAUSER FLOWTEC (I) PVT LTD
AURANGABAD

Inspection No. : 38202/19.6.05

Part :

Page : 1 of 2

Manufacturer : Uni Deritend Limited



S.V.Road, Manpada, Thane 400 607, India.

Phone : 2 589 0112, 2 589 0114, 2 589 0115, 2589 0088, 2589 0685

Fax : (91-22) 2589 1089

E-Mail : udl@bom3.vsnl.net.in

Article : Investment Castings

Order No. : AO1/20063014,20078907

Date : 28.12.04,12.5.05

INV.NO. & Dt. 118,119/05-06DT.19.6.05

Technical Specifications / Requirements : ASTM

Material : Cast Stainless Steel According to : A 351 Gr CF3M Edition : 2000

Delivery Condition : UnMachined

Melting Process : Induction Melting

Marking : Heat No., Brand of the manufacturer, Material

Brand of the Manufacturer : U

Inspector's stamp : -

Extent of Delivery:

Item No.	No. of Pieces	Article	Heat No.	Test No.
Works Code: 26-E-16	30+70	METER BODY PW F 15 W/O FL 330500-0000 INDEX-C (30104934)	C964	

Chemical Analysis :

Heat No.	C	Si	Mn	P	S	Cr	Ni	Mo	V	Nb	
Specified :											
Min:	--	--	--	--	--	17.0	9.0	2.0	--	--	--
Max:	0.03	1.5	1.5	0.040	0.040	20.0	13.0	3.0	--	--	--
C964	0.027	0.71	0.97	0.015	0.011	17.96	9.90	2.13	-	-	-

The requirements are fulfilled as per Annex :

Place : Thane

Date : 19.6.05

Annexes :

The Inspector



TEST RESULTS

EN 10204/3.1B

Uni Deritend Limited

S.V.Road, Manpada, Thane 400 607, India.

Phone : 2 589 0112, 2 589 0114, 2 589 0115, 2589 0088, 2589 0685

Fax : (91-22) 2589 1089

E-Mail : udl@born5.vsnl.net.in

Works Code : 26E16

Article : METER BODY PW F 15 W/O FL 330500-0000 INDEX-C (50104934)

Inspection No. : 38202/19.6.05

Annex :

Part :

Page : 2 of 2

Mechanical Tests :

Test No./ Heat No	Dim of Specimen		Specimen			Test Temperature °C	Yield Point Proof Stress Mpa	Tensile Strength Rm Mpa	Elongation A %	Reduction of Area Z %	1 = (J) Energy of Impact 2 = (J/cm²) Impact Strength 3 = (%) Cryst. Proportion 4 = (mm 10²) } Expansion 5 = (%) 6 = Hardness				
	Thick- ness Dia	Width	Location	Direction	Position						Values				
	mm	mm									1	2	3	Σ/n	
C964	6.27	-	Integral			Ambi- ent Temp.	297.8	524.4	42.80	-	At room temp 122,132,128	Avg. 127.33			

Heat treatment : Solution annealing

Radiography : Satisfactory - within acceptance level

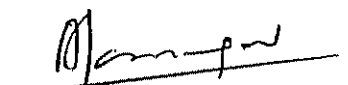
Liquid penetrant test : Satisfactory

Severity level S2/V3 according to DIN 1690 part 2 - confirmed

Castings are in pickled condition

Place : Thane

Date : 19.6.05


The Inspector





Firma
Dynaflux
Kägenstrasse 14

CH 4153 Reinach BL1

ABNAHMEPRÜFZEUGNIS DIN 50049 / EN 10204 3.1

Inspektioncertifikat / Certificat de réception
Herstellerzulassung TÜV nach AD 2000 und
PED-97/23/EG Anhang 1, Absatz 3 liegt vor.

Stempel des Herstellers
Mark of factory
Poinçon d'usine



Stempel der Werkprüfstelle
Mark of factory's inspection
Poinçon de réception d'usine



Pos.: 1 von 1

Besteller / manager / le commandant Dynaflux		Ihre Bestellung / Your order / Votre commande 0671365 v. 10.10.06		Tag / Date / Date 09.11.2006		Komm.-Nr. / works-No / Notre réf. 5034234/10	
Gegenstand / Article / Désignation du produit WN Rohl. 600lb 1/2" RTJ alls. ohne M'loch			Menge/Stück Quantity Quantité 100		Anforderungen / Requirements / Valeurs demandés AD2000-W2/W9/W10; ASTM A182; NACE MR 0175		
Erzeugnisform / Product / Produit Gesensschmiedestück		Werkstoff (Norm) / Material correspondent / Matériel correspondant 1.4404/ F316L/ F316			Erschmelzungsart Kind of melting Mode de fusion E		Teile-Nr. / Article No R04 00 22106
Prüfergebnisse					Maße und Lage der Probe Dimensions and Position of test piece Dimensions et Position de l'éprouvette rd. 8 mm q/t		
Probe Specimen Echantillon Nr./No	Härte Hardness Dureté HB 10/3000	Streckgrenze Yield point Limite d'élasticité Rp = 0,2%	N/mm² Rp = 1,0 %	Zugfestigkeit Tensile strength Résistance à la traction N/mm² Rm	Dehnung Elongation Allongement (Lo-6 d) AS %	Einschnürung Reduction of area Striction Z %	Kerbschlagarbeit nach EN 10045 Imp. Strength Résistance KV J/ RT q/t
Gefüllwert nominal nominal	235	190	225	490 690	35		60
261918	163 164	251	293	548	52	69	265 / 278 / 241

Bemerkungen / Remarks / Remarques

Wärmebehandlung: lösungsgeglüht: 1050°C, Wasser, Heat treatment: 1050°C
quenching in water, 100% Werkstoffverwechslungsprüfung spectralanalytisch
durchgeführt: o B., 100% control of material identity produced by spectro-
scopic method: a r. Prüfung auf Beständigkeit gegen Interkristalline Korro-
sion n EN ISO 3651-2 durchgeführt: Material ist IK-beständig, intercrystalline
corrosion has been carried out acc. EN ISO 3651-2: no cracks

Schmelze Heat Charge Nr./No	C Ti %	Si Nb %	Mn V %	P N %	S Cu %	Cr B %	Mo % Ca	Ni %	Al %
192106		0,013	0,620	1,320	0,024	0,012	16,910	2,030	11,290
		0,008			0,039	0,200	0,002		

Werkstoff und Ausführung der Produkte stimmen mit den vertraglich vereinbarten Angaben überein. Die Analysewerte stimmen mit
dem Ursprungszeugnis überein. Beschädigung und Maßprüfung ohne Beanstandung.
Material and products are corresponding to the indications in our contract. The values of the analysis corresponds to the origine certificate of our material.
Le matériel et l'exécution des produits correspondent à les indications dans notre contrat les indications de l'analyse correspondent au certificat d'origine de
la matière de base

RICHARD NEUMAYER
Abnahmebeauftragter

Grenzer Leiter QM

Endress & Hauser Flowtec AG
Kägenstrasse 7
Postfach
4153 Reinach BL

3. April 2007

Abnahmeprüfzeugnis 3.1

Bestell-Nr.:	R03/2046002242	Lieferschein-Nr.:	-
Bestelldatum:	27.09.2007	Lieferscheindatum:	-
Auftrags-Nr.:	7822419	Positions-Nr.:	-
KD-Art-Nr.:	50103215	Kontrakt-Menge:	58.550

Beiliegendes Abnahmeprüfzeugnis

Die beiliegende Kopie wurde aus dem Vorgabe – Dokument erstellt und enthält alle Angaben für deren Zuordnung zu den geprüften Produkten.

BOSSARD

Bossard AG
Engineering
Postfach 1257
CH-6901 Zug

3.1 002 316 107

INSPECTION CERTIFICATE

PURCHASER: BOSSARD AG

CERT NO: Q06120672

PO# NO.: 6067374

DATE: 2006/12/28

ITEM: DIN912 HEX CAP SOCKET SCREW 316 (A4)
M5X12

QUANTITY: 60

MPCS

SAMPLE SIZE: 10

PCS

PROD NO.: 95B598-001

UNIT: MM

CHARACTERISTICS	SPECIFICATION	ACTUAL RESULT	RESULT
Head Diameter	8.28 ~ 8.50	8.40 ~ 8.44	OK
Head Height	4.82 ~ 5.00	4.97 ~ 5.00	OK
Major Diameter	4.83 ~ 4.97	4.85 ~ 4.88	OK
Tolerance On Length	11.65 ~ 12.35	11.79 ~ 11.95	OK
Ring Gauge			OK
Head Mark DA & A4-70			OK
Key Engagement Min	2.50 ~	2.68	OK
Tensile Strength	700.00 ~	716.00 N/mm ²	OK

CHEMICAL COMPOSITION (wt%)

HEAT NUMBER	Cr x100	Cu x100	Mn x100	Mo x100	Ni x100	P x1000	S x1000	Si x100	C x100	
2P031	1661.00	314.00	168.00	203.00	1057.00	29.00	1.00	30.00	1.80	

REMARK:

Q.M. DIRECTOR: WANG

INSPECTED BY: TERRY

Kurt Schneider AG
Tempelstrasse 1
3608 Thun / Allmendingen



SVTI - Zulassung : KIS.PQ.400101

Umstempelungsbescheinigung

Besteller: Endress + Hauser Flowtec AG
CH - 4153 Reinach

von Werkstoffen mit Gütenachweis

Nr: 06103101

Gegenstand		* P = Bleche T = Rohre		F = Schmiedestücke		Zeugnis		Neue Stempelung auf Lieferung			
Benennung	Liefer - Abmessungen	Hersteller	Nr.	Typ	Werkstoffe	Schmelze - Nr.	Probe - Nr.	Kontroll - stempel			
PW 7772	Elektrode	Acciaierie Valbruna	MEST 339118/ 2006	3.1B	1.4301	417527	528600480				
PW 77	Membrane eingeschr. in Elektrode	Acciaierie Valbruna	MEST 385396/ 2006	3.1B	1.4435	242343	607402840				

KURT SCHNEIDER AG

Anlagen : 2 Zeugnis (se) Ort : Thun / Allmendingen Datum : 30. Oktober 2006 Firmenstempel / Unterschrift :

Feinmechanik

Tempelstrasse 1

3608 THUN / ALLMENDINGEN
Tel. 033 334 70 20 Fax 033 334 70 30

Wir bescheinigen, dass die Umstempelung gemäss obiger Liste durch unseren Sachverständigen erfolgte.

Acciaierie Valbruna S.p.A.



36100 VICENZA (Italia) - Viale della scienza, 25 z.l.

Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4

Cliente / Baseline/Purchase Order

VALBRUNA AG

NEUBURGSTRASSE 54 POSTFACH 212

03282-BARGEN BEI AARBERG-CH

Produttore: ACCIAIERIE VALBRUNA S.P.A.

Hersteller/Werk/Usine producteur

Avviso di Spedizione: D-VI06009217
Lieferanweisung/Packing Instruction

Ordine nr: 60305003894
Bestell/Your order/Commande

Tipo di Elaborazione: E+AOD
Erzeugnisart/Manufacturing process/Mode d'elaboration

CERTIFICATO DI COLLAUDO ABNAHMEPRUEFZEUGNIS INSPECTION CERTIFICATE CERTIFICAT DE RECEPTION EN 10204, 3.1

Certificato nr: MEST339118/2006/
Prüfung/Test/Essai

Conferma ordine nr: EI06003162
Werk/Our Order/Ref. n.

Marchio di Fabbrica:
Zeichen des Lieferanten
Trade mark
Sigle de l'usine producteur



Punzone del Collaudatore:
Stempel des Werkstattsachverständigen
Inspector's stamp/Plombon de l'essayeur

Oggetto Prove: - Abgeschreckt Geschaeft
Prüfgegenstand/Item inspected/Échantillon

Specifiche:

Anforderungen / Requirements / Exigences

VAL AD-W2 2005 1.4301/1.4307 A

AD 2000-M. W 2 2003. 1.4307 A (1)

ASME SA479 2004 S30400 A (2)

ASTM A276 2005A S30403 A

DIN 17440 96 1.4301

EN 10272 2000 1.4301

NACE MR0175* 2003 S30403 A (5)

(0) ACCORDING TO DIN 17440,96 - EN 10272.2000

(2) SEC.II PT.A 2004 EDITION ADD.2005

(4) * ISO 15156-3

AD 2000-M. W 10 2003.

AISI 304

ASME SA479 2004 S30403 A (3)

ASTM A479 2005A S30400 A

EN 10088-3 2005 1.4301 A

EN 10272 2000 1.4307

AD 2000-M. W 2 2003. 1.4301 A (0)

AISI 304L

ASTM A276 2005A S30400 A

ASTM A479 2005A S30403 A

EN 10088-3 2005 1.4307 A

NACE MR0175* 2003 S30400 A (4)

(1) ACCORDING TO EN 10272.2000
(3) SEC.II PT.A 2004 EDITION ADD.2005
(5) * ISO 15156-3

Qualità: 1.4301/1.4307

Werkstoff/Grade/Qualité

Marca: MVAISL MAXIVAL

Markenbezeichnung/Brand/Qualité

Punzonatura: 1.4301/1.4307

Kennzeichnung/Marking/Marquage

Pos. nr. Pos. nr. Item N. Nr. de poste	Oggetto Gegenstand Product description Descript. du produit	Dimensioni - mm Abmessungen Dimension Dimension	Tolleranza Toleranz Allowance Tolerance	Lunghezza - mm Länge Length Longueur	Colata Schmelze Heat Coulée	Pezzi Stücke Pieces Pièces	Peso - KG Gewicht Weight Poids	Lotto nr. Losz Lot N. Lot n.
0010	Rund	45,000	K12-MIN	5400 / 5450	417527		5161,0	528600480

Sono state soddisfatte tutte le condizioni richieste
Die gestellten Anforderungen sind i. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le matériel a été livré conforme aux exigences

Controllo antimescolanza: OK
Verunreinigungsprüfung: spektralanalytisch durchgeführt
Antidoping testing performed: OK
Contrôle antimeslange: satisfaisant

Controllo visivo e dimensionale: soddisfatta le esigenze:
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional check/satisfactory
Contrôle visuel et dimensionnel: satisfaisant

TEST	Provetta/ Bastone/ Long. diam. Item Long. diam. Item Long. diam. Item mm	°C	Posit. Baggio Liquore Liquore	Snervamento Stressgrenze Yield Stress Unité élastique Rp 0,2% N/mm2	Snervamento Stressgrenze Yield Stress Unité élastique Rp 1% N/mm2	Resistenza Zugfestigkeit Tensile strength Résistance à traction Rm N/mm2	Alungamento Bruchdehnung Elongation Allongement A5 % E 4d %	Strizione Bruchdehnung Reduction of area Striction Z RA %	Resilienza Kerbschlagenergie Impact Value Resilience KV J	Durezza Härte Hardness Dureté HB
Valori richiesti 1 Anforderungen/Required values Valeurs demandées	min max			205	230	515 680	45 40	- 50	100	- 215
A	10	20	L	334	372	639	55 57	67 67	219 223	182 182
B	10	20	L	332	370	635	54 56	66 66	218 220	180 180
C	10	20	L	339	377	643	55 57	67 67	216 215	183 183
D	10	20	L	337	375	640	54 56	66 66	215 222	182 182

1) L=Longitudinale/Längs, Q=Transversale/quers, T=Tangenziale/tangentiel

Korngröße nach ASTM E112 : 6 - TEST D

Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

Colata Steel Schmelze/Coulée	min - max 0,030	1,00	2,00	18,00 18,50	8,00 10,00	0,045	0,030	0,100	-	-	-	-	-	-	-
	C %	SI %	Mn %	Cr %	Ni %	P %	S %	N %							
417527	0,017	0,53	1,72	18,55	8,24	0,028	0,023	0,100							

Im Einvernehmen mit TUV BAYERN (Juli 1972).

Gegenzeichnungsverzicht durch TUV BAYERN (21.05.1979).

Melted and manufactured in Italy No welding or weld repair Material free from Mercury or radio-activity contamination
The Quality Management System is Certified acc. Pressure Equipment Directive [97/23/EC] Annex 1, 4.3 by TUEV and LLOYD'S

Vicenza, 05/04/06 Mod. VCC006	Il collaudatore di stabilimento / der Werkstattsachverständige / Works inspector / L'agent d'usine M. Rizzotto	Pagina - 1 di 1
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Acciaierie Valbruna s.p.A.



CERTIFICATO DI COLLAUDO
ABNAHMEPRUEFZEUGNIS
INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION
EN 10204, 3.1

36100 VICENZA (Italia) - Via della scienza, 25 z.l.

Stab.: 36100 BOLZANO (Italia) - Via A. Volta, 4

Cliente / Bestell-/Purchase/Client

VALBRUNA AG

NEUBURGSTRASSE 54 POSTFACH 212

03282-BARGEN BEI AARBERG-CH

Produttore: **ACCIAIERIE VALBRUNA S.P.A.**

Hersteller/Hersteller/producer

Avviso di Spedizione: D-VI06020336

Lieferungs-/Packing Nr./N.L.

Ordine nr: 803003872

Bestell-/Your order/Commande

Certificato nr: MEST385396/2006/

Prüfung/Test/Exam

Conferma ordine nr: EI06002719

Werk-/Our Order/Nr.

Marchio di Fabbrica:

Zeichen des Werks/Marken

Trade mark

Signe de l'usine/producer



Oggetto Prova: - Abgeschreckt Geschacht
Prüfgegenstand/Item inspected/Finissage

Tipo di Elaborazione: E+AOD

Endbearbeitung/Finishing process/Mode d'elaboration

Punzione del Collaudatore:

Stempel des Werksachverständigen

Inspector's stamp/Pointeur de l'essayeur

Specifiche:

Anforderungen / Requirements / Exigences

VAL AD-W2 2006 1.4435 A

AD 2000-M. W 2 2003. 1.4435 A (1)

EN 10088-3 2005 1.4435 A

FERRITE <0,5 2003

(1) ACCORDING TO DIN 17440,96 - EN 10272,2000

(2) *ISO 15158-3

BN 2 97 1.4435 A

ASME SA479 2004 S31600/03 A (1)

EN 10272 2000 1.4435

AD 2000-M. W 10 2003

DIN 17440 96 1.4435

NACE MR0175* 2003 S31600/03 (2)

(1) SEC II PT A 2004 EDITION ADD.2005

Qualità: 1.4435

Werkstoff/Grade/Qualité

Marca: MVAPMLD2 MAXIVAL

Markenbezeichnung/Brand/Numéro

Punzonatura: 1.4435

Kennzeichnung/Marking/Marquage

Pos. nr. Pos. nr. Item nr. Nr. de poste	Oggetto Gegenstand Product description Descript. du produit	Dimensioni - mm Abmessungen Dimension Dimension	Tolleranza Toleranz Allowance Tolerance	Lunghezza - mm Länge Length Longueur	Colata Schmelze Heat Coulée	Pezzi Stückzahl Pieces Pièces	Peso - KG Gewicht Weight Poids	Lotto nr. Losr. Lot nr. Lot N°
0010	Rund	28,000	H12-MIN	5410 / 5410	242343		1428,0	607402840

Sono state soddisfatte tutte le condizioni richieste
Die gegebenen Anforderungen sind i. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le matériel a été livré conforme aux exigences

Controllo antimescolanza: OK
Vermischungsprüfung: spezialisiert/nach durchgeführt
Antimixing testing performed: OK
Contrôle antimeslange test: F.A.

Controllo visivo e dimensionale: soddisfa le esigenze:
Besichtigung und Abmessung: ohne Beanstandung
Visual inspection and dimensional check/satisfactory
Contrôle visuel et dimensionnel: satisfaisant

TEST	Prove/Prüfung/ Essai/Exam/ Longitud. Exam. Stütz. Exam. Details Werk. Exam. Details Long. Exam. Details	°C	Post. Stag. Fenster/ Fenster	Sneramento Sneramento Viel Stress Liait. serrage Rp 0,2% N/mm2	Sneramento Sneramento Viel Stress Liait. serrage Rp 1% N/mm2	Resistenza Zugfestigkeit Tensile strength Résistance à traction Rm N/mm2	Allungamento Zugdehnung Elongation Allongement A5 % E 4d %	Strizione Zugdehnung Reduction of area Striction Z % RA %	Resilienza Kerbschlagenergie Impact Value Resilience KV J	Durezza Härte Hardness Dureté HB
Valori richiesti 1 Anforderungen/required values Valeurs requises	min	max		205	235	515 690	40 30	- 40	100	- 215
A	10	20	L	253	288	578	63 65	75 75	240 243	240 182
B	10	20	L	250	284	576	63 65	75 75	247 242	240 0
C	10	20	L	250	283	575	62 64	74 74	246 244	241 0

Korngröße nach ASTM E112 : 5 - TEST C
DELTA FERRIT : 0,2 - TEST C

1) L=Longitudinale/Long., Q=transversale/Quer., T=Tangentiale/Tangentiale

Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

Colata Heat Schmelze/Heat	min - max 0,030	1,00	2,00	17,00 16,00	2,50 3,00	12,50 14,00	0,050	0,045	0,030	0,100	-	-	-	-	-
	C %	Si %	Mn %	Cr %	Mo %	Ni %	Ti %	P %	S %	N %					
242343	0,018	0,37	1,24	17,57	2,66	12,67	0,045	0,031	0,022	0,082					

I. Korrosion nach EN ISO 3651-2A Sensibilisierung : T1 : OK

Corrosion test per EN ISO 3651-2A sensitized T1 : OK

Abgeschreckt 1070°C/H2O.

Im Einvernehmen mit TUV BAYERN (Juli 1972).

Gegenzeichnungsverzicht durch TUV BAYERN (21.05.1979).

Melted and manufactured in Italy No welding or weld repair Material free from Mercury or radio-activity contamination

The Quality Management System is Certified acc. Pressure Equipment Directive (97/23/EC) Annex 1, 4.3 by TÜV and LLOYD'S

Vicenza, 27/07/06 Mod. VCO012	Il collaudatore di stabilimento / der Werksachverständige / Works Inspector / L'agent d'usine M. Rizzotto	Pagina - 1 di 1
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Abnahmeprüfzeugnis nach EN 10204 - 3.1 Inspection certificate acc. to EN 10204 - 3.1

Zeugnis-Nr./Certificate No. US - 405941

Seite/Page 1 von/of 1

Es wird bescheinigt, dass die gelieferten Erzeugnisse den Vereinbarungen bei der Bestellung entsprechen. Darüber hinaus wird bescheinigt, dass bei der Herstellung der nachstehend aufgeführten Erzeugnisse die vorgeschriebenen Prüfungen und/oder die zusätzlich aufgeführten Prüfungen nach den bestehenden Prüfvorgaben durchgeführt und die erforderlichen Freigaben erteilt wurden. Die unten aufgeführten Prüfungen wurden unter Aufsicht einer dazu autorisierten, unabhängigen Stelle durchgeführt.

It is certified that the products supplied are in compliance with the requirements of the order. Furthermore, it is confirmed that during the manufacturing of the subsequently listed products the specified inspections and/or the additionally ordered tests have been performed according to the valid procedures and the necessary releases have been given. The subsequently listed inspections have been performed by especially authorized personal.

Kunde/Customer : ENDRESS+HAUSER FLOWTEC AG
US - 46143 - GREENWOOD
Kunden Bestell-Nr./Customer Order No. : -
E+H-Auftrags-Nr./E+H Order No. : 46551459

Pos./Item	Menge/Qty.	Produktbezeichnung/Description
130	1	72F15-SM0AA4PAB4AA PROWIRL 72 F 1/2" S/N.: 9504FE02000 Tag-Nr.: FCIT-100

Drucktest Messsystem/Pressure Test Measuring System:

Druck/Pressure: 100 bar, Dauer/Duration: 3' 00", Medium/Fluid: Wasser/Water.

Alle Tests wurden mit Erfolg bestanden./All tests were passed successfully.

Datum/Date 07.06.2007

Endress+Hauser Flowtec AG
CH-4153 Reinach

R. Karrer

Abnahmebeauftragter
Inspector

Dieses Dokument wurde elektronisch nach EN 10204 erstellt und ist ohne Unterschrift gültig.
This document was generated electronically acc. to EN 10204 and is valid without signature.

9504FE02000

Parameter Setting Réglage des paramètres

1709593

46551459

Purchase order number · Référence de commande

US-405941-130 / Endress+Hauser Flowtec AG

Order N°/Manufacturer · N° d'ordre/Fabricant

72F15-SM0AA4PAB4AA

Order code · N° commande

9504FE02000

Serial N° · N° de série

PROWIRL 72 F

Transmitter/Sensor · Transmetteur/Capteur

1/2"

Nominal diameter · Diamètre nominal

FQIT-100

Tag N° · N° de Tag

Device Software · Logiciel embarqué

Device Revision · Pilote de communication

Application · Application

Meas Unit Type · Type unité de mes.

Operation Density · Densité de service

Reference Density · Densité de référence

Meter Body MB · Code Diam.Corps MB

V1.03.00

4

liquid

VolumeFlow

62.5 lb/ft³

62.5 lb/ft³

312

Current Output 1 · Sortie Courant 1

Assign Current · Affect.Sor.Cour.

Value for 20mA · Valeur 20mA

Current Span · Gamme Courant

VolFlow

23.5 us.gal/min

4-20 mA HART US

Impulse Output 1 · Sortie Impulsion 1

Assign Pulse · Affect.Impuls.

Pulse Value · Valeur d'Impulsion

Output Signal · Signal de Sortie

VolFlow

0.02 us.gal

Passive/Positive

The above parameters are set according to your order.

Please refer to the Operating Manual for any parameters not mentioned

L'appareil a été configuré conformément à votre commande

Vous trouverez dans le manuel de mise en service les valeurs des paramètres qui n'ont pas été spécifiés sur le document

07.06.2007

Date · Date

Endress+Hauser Flowtec AG

Kägenstrasse 7 / Rue de l'Europe 35

CH-4153 Reinach / F-68700 Cernay

Flow Calibration with Adjustment Etalonnage du débit avec ajustement

10299369-1709593

46551459

Purchase order number Référence de commande

US-405941-130 / Endress+Hauser Flowtec AG

Order N°/Manufacturer N° d'ordre/Fabricant

72F15-SM0AA4PAB4AA

Order code N° commande

PROWIRL 72 F 1/2"

Transmitter/Sensor Transmetteur/Capteur

9504FE02000

Serial N° N° de série

FQIT-100

Tag N° N° de Tag

Flow Débit [%]	Flow Débit [dm³/s]	Duration Durée [sec]	V target V doit [dm³]	V meas V mesure [dm³]	Δ o r * Δ d m * [%]	Outp ** Sortie** [mA]
30.7	0.419	50.2	21.016	21.134	0.56	8.94
45.6	0.623	35.2	21.901	21.910	0.04	11.30
74.9	1.02	30.2	30.856	30.671	-0.60	15.91
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o r d m : of rate de la mesure

**Calculated value Valeur calculée (4 - 20 mA)

For detailed data concerning output specifications of the unit under test, see technical informations (TI), chapter Performance characteristics

Pour les données détaillées sur les spécifications des sorties signal de l'appareil à étalonner, se reporter aux informations techniques (TI), chap Précision de mesure

Traceability to the national standard for all test instruments used for the calibration is guaranteed

Nous garantissons que les instruments de mesure utilisés sur nos bancs d'étalonnage sont raccordés aux étalons nationaux

FCP-6.3

Calibration rig Banc d'étalonnage

1.3657 dm³/s (± 100%)

Calibrated full scale Valeur finale d'étalonnage

Calibration Interface

Calibrated output Signal de sortie étalonné

401.20 Imp./dm³

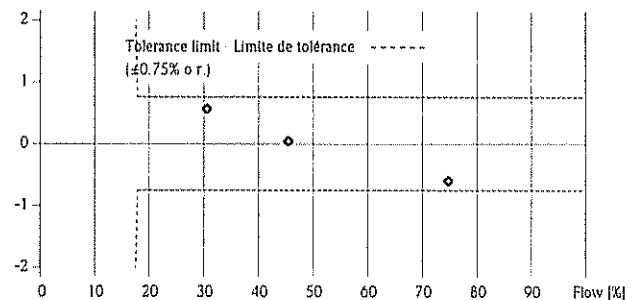
Calibration factor Facteur d'étalonnage

75.5 °F

Water temperature Temperature de l'eau

Measured error % o r

Déviat ion de mesure % d m



07.06.2007

Date of calibration Date d'étalonnage

Endress+Hauser Flowtec AG
Kägenstrasse 7 / Rue de l'Europe 35
CH-4153 Reinach / F-68700 Cernay



E. Dreyer

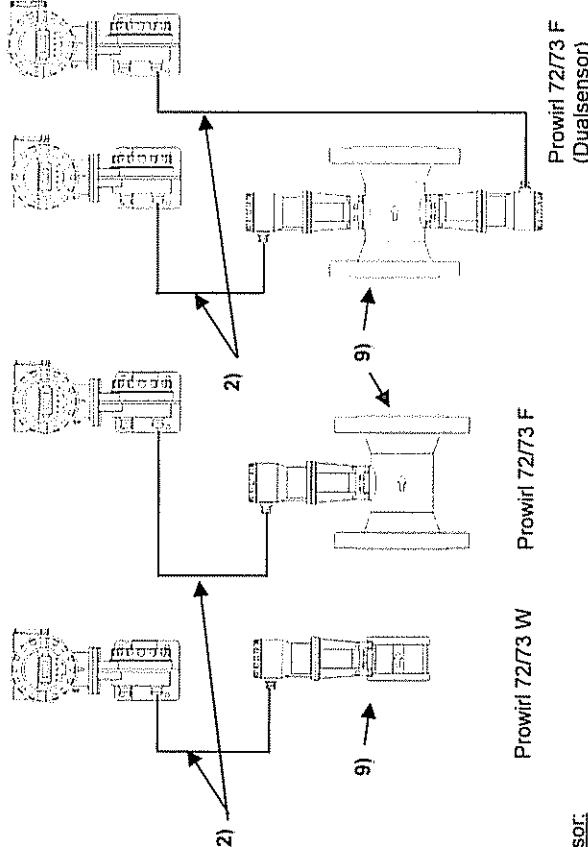
Operator Opérateur

Certified acc to Certifié selon
ISO 9001

Hazardous Locations

Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
Class II Division 1 Groups EFG
Class III

Remote version



Sensor:

PROWIRL 7***1***N***, PROWIRL 7***2***N***, PROWIRL 7***3***N***
PROWIRL 7***4***N***, PROWIRL 7***6***N***, PROWIRL 7***7***N***
PROWIRL 7***C***N***, PROWIRL 7***F***N***, PROWIRL 7***H***N***

Max. medium temperature						
T6 2)	T5 2)	T4	T3	T2	T1	
Ta = 104°F	176°F	203°F	266°F	374°F	554°F	824°F
Ta = 140°F	—	203°F	266°F	374°F	554°F	824°F
Ta = 185°F	—	—	266°F	374°F	554°F	824°F

PROWIRL 7***0***p***, PROWIRL 7***5***p***
PROWIRL 7***B***p***, PROWIRL 7***G***p***

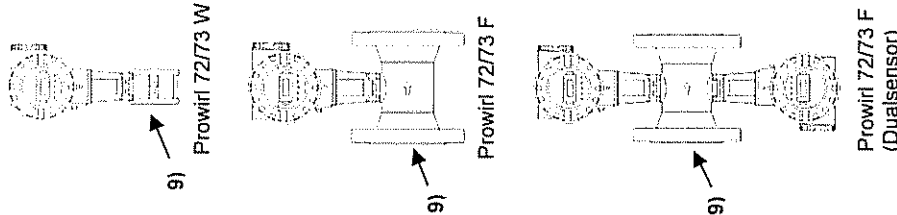
Max. medium temperature						
T6 2)	T5 2)	T4	T3	T2	T1	
Ta = 104°F	176°F	203°F	266°F	374°F	536°F	536°F
Ta = 140°F	—	203°F	266°F	374°F	536°F	536°F
Ta = 185°F	—	—	266°F	374°F	536°F	536°F

Transmitter:

PROWIRL 7***1***p***

T6 2)	T5 2)	T4 - T1
104°F	140°F	140°F

Compact version



PROWIRL 7***1***N***, PROWIRL 7***2***N***, PROWIRL 7***3***N***
PROWIRL 7***4***N***, PROWIRL 7***6***N***, PROWIRL 7***7***N***
PROWIRL 7***C***N***, PROWIRL 7***F***N***, PROWIRL 7***H***N***

Max. medium temperature						
T6 2)	T5 2)	T4	T3	T2	T1	
Ta = 104°F	176°F	203°F	266°F	374°F	554°F	824°F
Ta = 140°F	—	203°F	266°F	374°F	554°F	824°F

PROWIRL 7***0***p***, PROWIRL 7***5***p***, PROWIRL 7***B***p***
PROWIRL 7***G***p***

Max. medium temperature						
T6 2)	T5 2)	T4	T3	T2	T1	
Ta = 104°F	176°F	203°F	266°F	374°F	536°F	536°F
Ta = 140°F	—	203°F	266°F	374°F	536°F	536°F

Notes:

1) Assignment of Control Drawings:

Drawing-No.	Model Codes:
FES0077 A	Prowirl 7***p***
FES0077-0001 A	Prowirl 7***p***A, Prowirl 7***p***W, Prowirl 7***p***H, Prowirl 7***p***K

- Max. cable length for intrinsically safe installation 100m for using cable parameters
 $L_{\text{cable}} = 1\text{mH/km} / 0.34\text{H/ft}$ and $C_{\text{cable}} = 14\text{F/km} / 300\text{F/ft}$
Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation
(not for PROWIRL 7***p***H and PROWIRL 7***p***K)
- Caution: Use supply wires suitable for 50°F above maximum ambient temperature
- Caution: Surface temperature of transmitter enclosure can exceed 158°F depending on ambient temperature or medium temperature
Dust tight seals must be used at conduit entries for Class II and III installation within 18 inches (450mm) of the enclosure.
- The Prowirl 72/73 is Factory Sealed. This means that a conduit seal is not required
- The Prowirl 72/73 is a Dual Seal Device in accordance to ANSI/ISA-12.27.01-2003
- Prowirl 72 and Prowirl 73 transmitter is intended for installation to Service Interface FXA 193 when using the PROLINE EX-ZWEIFLEITER-KABEL (blue cable)
- Sensor of remote version and interior of measuring tube of remote and compact versions are permissible for use in Zone 0

Änderungen:

A	10.12.03 / Bn	F
B	G	
C	H	
D	J	
E	K	

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Ersteller: FES/BN
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FM CONTROL DRAWING

PROWIRL 72, PROWIRL 73 (XP-version)

Compact Version, Remote version

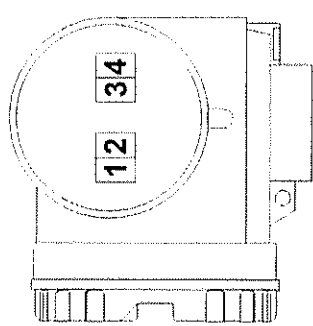
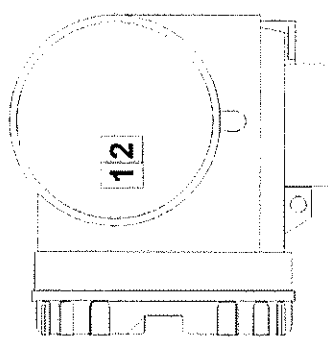


Flowtec AG, Keegenstrasse 7, CH-4153 Remach BL1, Postfach

FES0077 A

Hazardous Locations

- Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
- Class II Division 1 Groups EFG
- Class III



Prowirl 7* **_***p****A**

Division 1 and Division 2 installation

- 1) Terminal 1 and 2
Supply voltage: $U \leq 36 \text{ Vdc}$
 $U_{\text{max}} = 250 \text{ Vdc}$
Signal current: $4 \dots 20 \text{ mA}$ (max. 25 mA)

Prowirl 7* **_***p****H and Prowirl 7* **_*****p****K**

Division 1 and Division 2 installation

- 2) Terminal 1 and 2
Supply voltage: $U \leq 36 \text{ Vdc}$
 $U_{\text{max}} = 250 \text{ Vdc}$

Prowirl 7* **_***p****W**

Division 1 and Division 2 installation

- 3) Terminal 1 and 2
Supply voltage: $U \leq 36 \text{ Vdc}$
 $U_{\text{max}} = 250 \text{ Vdc}$
Signal current: $4 \dots 20 \text{ mA}$ (max. 25 mA)
- 4) Terminal 3 and 4
Pulse Output: $U \leq 30 \text{ V}$
 $U_{\text{max}} = 250 \text{ Vdc}$
Signal current: $\leq 30 \text{ mA}$

Class II, III installation

- 5) Transmitter circuit wiring in conduit in accordance with the NEC ANSI/NFPA 70

Note:

- 6) Installation of transmitter circuit wiring according to National Electrical Code using threaded conduit.
- 7) **WARNING** Terminal compartment:
KEEP COVER TIGHT WHEN CIRCUITS ARE ALIVE
OR THE AREA IS KNOWN TO BE HAZARDOUS
- 8) Control room equipment may not use or generate over 250Vrms.
- 9) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

Aenderungen:	A	10.12.03 / Bn	F	G	H	J	K	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersetzt durch:	
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	D								File: MZEICHNG1..1031210c.doc	ID 1112
	E								Gezeichnet	08.09.03 Bn
FM CONTROL DRAWING PROWIRL 72, PROWIRL 73 (XP-version)									Gepüft	
									Ex-geprüft	10.12.03 Bn
									Gesehen	
									FES0077-0001 A	



Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
Class II Division 1 Groups EFG
Class III

```

PROWL 7**_*1*N***** PROWL 7**_*2*N***** PROWL 7**_*3*N*****
PROWL 7**_*4*N***** PROWL 7**_*6*N***** PROWL 7**_*7*N*****
PROWL 7**_*C*N***** PROWL 7**_*E*N***** PROWL 7**_*H*N*****

```

	Max. medium temperature					
	T6 2)	T5 2)	T4	T3	T2	T1
Ta = 40°C	80°C	95°C	130°C	190°C	290°C	440°C
Ta = 60°C	—	95°C	130°C	190°C	290°C	440°C

PROWLRL 7***-0***N****, PROWLRL 7** *-5 N****, PROWLRL 7***-B***N****,
PROWLRL 7***-C***N****.

	Max. medium temperature				
	T6 2)	T5 2)	T4	T3	T2 - T1
Ta = 40°C	80°C	95°C	130°C	190°C	280°C
Ta = 60°C	---	95°C	130°C	190°C	280°C

1) Applicable Control Drawings

Drawing-No.	Model Codes:
FES0076 A	Prowir 7** ** *****p*****
FES0076-0001 A	Prowir 7** ** *****p*****A, Prowir 7** ** *****p*****W, Prowir 7** ** *****p*****H, Prowir 7** ** *****p*****K

- 2) Max. cable length for intrinsically safe installation of remote sensor is 100m for using cable parameters $L_{\text{cable}} = 1\text{mH/km}$ and $C_{\text{cable}} = 1\mu\text{F/km}$
- 3) Temperature class T6 and T5 is not allowed for versions of Profibus PA and Fieldbus Foundation
(not for PROWIRL 7*** **..*****P****H and PROWIRL 7*** **..*****P****K)
- 4) Caution: Use supply wires suitable for 10°C above maximum ambient temperature
- 5) Caution: Surface temperature of transmitter enclosure can exceed 70°C depending on ambient temperature or medium temperature
- 6) Dust tight seals must be used at conduit entries for Class II and III installation
- 7) The Prowirl 72/73 is Factory Sealed. This means that a conduit seal is not required within 18 inches (450mm) of the enclosure.
- 8) Prowirl 72 and Prowirl 73 transmitter is intended for installation to Service Interface FXA 193 when using the PROLINE EX-ZWEILEITER-KABEL (blue cable)
- 9) Sensor of remote version and interior of measuring tube of remote and compact version are permissible for use in Zone 0

	Max. intermediate temperature						
	T6.2)	T5.2)	T4	T3	T2	T1	
Ta = 40°C	80°C	95°C	130°C	190°C	290°C	440°C	
Ta = 60°C	---	95°C	130°C	190°C	290°C	440°C	
Ta = 85°C	---	---	130°C	190°C	290°C	440°C	

PROWIRL 7** **0***N****, PROWIRL 7** *-5***N****;
PROWIRI 7** **BB***N***** PROWIRI 7** **CC***N*****.

	Max. medium temperature				
	T6.2)	T5.2)	T4	T3	T2 - T1
Ta = 40°C	80°C	95°C	130°C	190°C	280°C
Ta = 60°C	—	95°C	130°C	190°C	280°C
Ta = 85°C	—	—	130°C	190°C	280°C

Transmitter:

BROWNE & CAMERON

Ta =	T6 2)	T5 2)	T4 - T1
	40°C	60°C	60°C

PROWIRL 72, PROWIRL 73 (XP-version)

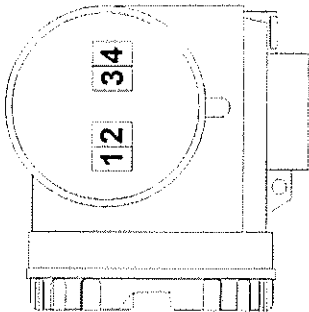
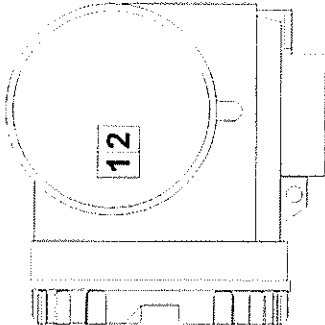
Compact Version, Remote version

Anderungen:		A	10.12.03 / Bn	F	Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersetzt durch: Ersatz für: Ersteller: FES/Bn File: M:\ZEICHNUNG\031210c.doc ID 1113
		B		G		
		C		H		
		D		I		
		E		K		
CSA CONTROL DRAWING PROWIRL 72, PROWIRL 73 (XP-version) Compact Version, Remote version					Maßstab	Gezeichnet 18.6.03 Bn Geprüft Ex-geprüft/ 10.12.03 Bn Gesehen

FES0076 A

Hazardous Locations

- Class I Division 1 Groups ABCD or Class I Zone 1 Group IIC
- Class II Division 1 Groups EFG
- Class III



Prowirl 7* **_***P****A**

Division 1 and Division 2 installation

- 1) Terminal 1 and 2

Supply voltage: $U \leq 36 \text{ Vdc}$

$U_{\text{max}} = 250 \text{ Vdc}$

Signal current: $4 \dots 20 \text{ mA (max. 25 mA)}$

Prowirl 7* **_***P****H and Prowirl 7* **_*****P****K**

Division 1 and Division 2 installation

- 2) Terminal 1 and 2

Supply voltage: $U \leq 36 \text{ Vdc}$

$U_{\text{max}} = 250 \text{ Vdc}$

Prowirl 7* **_***P****W**

Division 1 and Division 2 installation

- 3) Terminal 1 and 2

Supply voltage: $U \leq 36 \text{ Vdc}$

$U_{\text{max}} = 250 \text{ Vdc}$

Signal current: $4 \dots 20 \text{ mA (max. 25 mA)}$

- 4) Terminal 3 and 4

Pulse Output: $U \leq 30 \text{ V}$

$U_{\text{max}} = 250 \text{ Vdc}$

Signal current: $\leq 30 \text{ mA}$

Class II, III installation

- 5) Transmitter circuit wiring in conduit in accordance with the Canadian Electrical Code.

Notes:

- 6) Installation of transmitter circuit wiring according to Canadian Electrical Code using threaded conduit.
- 7) **WARNING** Terminal compartment:
KEEP COVER TIGHT WHEN CIRCUITS ARE ALIVE
OR THE AREA IS KNOWN TO BE HAZARDOUS
- 8) Control room equipment may not use or generate over 250V/rms.
- 9) **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

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CSA CONTROL DRAWING									Ersatz für:		
PROWIRL 72, PROWIRL 73 (XP-version)									Erseller: FES/Bn		
									File: MZEICHNG\...1031210c.doc ID 1113		
									Gezeichnet	18.6.03	Bn
									Geprüft		
									Ex-geprüft	10.12.03	Bn
									Gesehen		



FES0076-0001 A