



HOT OIL COIL - 9308 kPa - 5.5mm

Equip. No. H-101 Prov. Reg. No. 496976 C.R.N. E-9867.213 Serial No. B7080-50 Yr. Inst. \_\_\_\_\_  
 Code/Div. ASME VIII, DIV 1 Size: 80in x 25ft Manufacturer: PRESSON ENERFLEX Yr. Blt. 2004  
 C. Stamp: \_\_\_\_\_ Service: SOUR PWHT: HT Radiography: RT-1 Insulated: 75%

**Design & Materials Data**

HEAD:  
 Mat'l. SA 36 Nom. 6.4mm C.A. \_\_\_\_\_  
 Mat'l. \_\_\_\_\_ Nom. \_\_\_\_\_ C.A. \_\_\_\_\_  
 CHANNEL:  
 Material: \_\_\_\_\_ Nominal: \_\_\_\_\_ C.A. \_\_\_\_\_  
 BOOT  
 Head Mat'l. \_\_\_\_\_ Head Nom. \_\_\_\_\_ Head C.A. \_\_\_\_\_  
 Shell Mat'l. \_\_\_\_\_ Shell Nom. \_\_\_\_\_ Shell C.A. \_\_\_\_\_  
 SHELL  
 Material: SA 36 Nominal: 6.4mm C.A. \_\_\_\_\_  
 MAWP Shell Side: 23271 kPa @ Temp. 93°C  
 MAWP Tube Side: 13962 kPa @ Temp. 93°C

CLIENT	CANADIAN NATURAL RESOURCES	
FACILITY	MURRAY RIVER FIELD LSD b-A77-J/93-I-14	
ITEM	WELLHEAD & LINE HEATER	
BY: CS	DATE: 11/2008	DWG.# 1

# UTS DATA

**CLIENT:** CANADIAN NATURAL RESOURCES LTD  
**EQUIPMENT:** WELLHEAD & LINE HEATER  
**CRN#:** E-9867.213  
**PROV REG:** A 496976  
**TESTED ON STREAM**

**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date
127												
Description:	TOP SHELL											
	2009	4	2010	3								
Min. Thick.	6.9		6.9		6.4		6.4	0	0		L	
Average:	7.1		7.1					0	0		L	
Analysis:												
129												
Description:	LOWER SHELL											
	2009	4	2010	3								
Min. Thick.	6.7		6.7		6.4		6.4	0	0		L	
Average:	6.9		6.9					0	0		L	
Analysis:												

# UTS DATA

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**EQUIPMENT:** WELLHEAD & LINE HEATER PIPING  
**CRN#:**  
**PROV REG:**  
**TESTED ON STREAM**

**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date			
105															
Description: 4" 90° ELBOW															
	2008	11	2009	4	2009	10	2010	3							
Min. Thick.	13.6		13.6		13.6		13.6		11.81		1.7	13.5	0	0	L
Average:	13.8		13.8		13.8		13.8						0	0	L
Analysis:															
106															
Description: 4" 90° ELBOW															
	2009	4	2009	10	2010	3									
Min. Thick.	12.3		12.3		12.3				11.81		1.7	13.5	0	0	L
Average:	12.7		12.7		12.7								0	0	L
Analysis: 2009/10 MIN SCAN @ MID APEX															
107															
Description: 4" TOP BAND															
	2009	4	2009	10	2010	3									
Min. Thick.	13.9		13.9		13.9				11.81		1.7	13.5	0	0	L
Average:	14.1		14.1		14.1								0	0	L
Analysis:															
108															
Description: 4" BOTTOM BAND															
	2009	4	2009	10	2010	3									
Min. Thick.	13.9		13.9		13.9				11.81		1.7	13.5	0	0	L
Average:	14.1		14.1		14.1								0	0	L
Analysis:															
109															
Description: 4" 90° ELBOW															
	2009	4	2010	3											
Min. Thick.	12.5		12.5						11.81		1.7	13.5	0	0	L
Average:	13		13										0	0	L
Analysis: 2009/04 MIN SCAN @ MID ELBOW, MID APEX.															
110															
Description: 2" 90° ELBOW															
	2008	11	2009	4	2009	10	2010	3							
Min. Thick.	8.3		8		8.1		8.1		7.61		1.1	8.7	0	.15	L 2013
Average:	8.6		8.4		8.4		8.4						0	.15	L 2015
Analysis: 2009/04 MIN SCAN AT MID ELBOW, MID APEX.															

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**TESTED ON STREAM**

**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date
<b>111</b>												
Description: <b>4" TOP BAND</b>												
	2009	4	2009	10								
Min. Thick.	13.5		13.5		11.81		1.7	13.5	0	0		L
Average:	13.8		13.7						.2	.2		L 2019
Analysis:												
<b>112</b>												
Description: <b>4" BOTTOM BAND</b>												
	2009	4	2009	10								
Min. Thick.	13.9		13.9		11.81		1.7	13.5	0	0		L
Average:	14.2		14.2						0	0		L
Analysis:												
<b>115</b>												
Description: <b>4" CIRC BAND</b>												
	2008	11	2009	4	2009	10						
Min. Thick.	13.7		13.4	13.4	11.81		1.7	13.5	0	.33		L 2014
Average:	14		13.7	13.7					0	.33		L 2015
Analysis:												
<b>116</b>												
Description: <b>4" TOP BAND</b>												
	2009	4	2009	10								
Min. Thick.	13.6		13.4		11.81		1.7	13.5	.4	.4		L 2013
Average:	13.9		13.7						.4	.4		L 2014
Analysis:												
<b>117</b>												
Description: <b>4" BOTTOM BAND</b>												
	2009	4	2009	10								
Min. Thick.	13.9		13.7		11.81		1.7	13.5	.4	.4		L 2014
Average:	14.2		14						.4	.4		L 2015
Analysis:												
<b>118</b>												
Description: <b>4" TOP BAND</b>												
	2009	4	2009	10								
Min. Thick.	13.7		13.7		11.81		1.7	13.5	0	0		L
Average:	14		14						0	0		L
Analysis:												

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**CRN#:**  
**PROV REG:**  
**TESTED ON STREAM**

**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA						Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date
<b>119</b>														
Description:	4" BOTTOM BAND													
	2009	4	2009	10	2010	3								
Min. Thick.	13.9		13.5		13.5		11.81		1.7	13.5	0	.44	L	2014
Average:	14.2		13.8		13.8						0	.44	L	2014
Analysis:														
<b>121</b>														
Description:	4" TOP BAND													
	2009	4	2009	10	2010	3								
Min. Thick.	13.5		13.4		13.4		11.81		1.7	13.5	0	.11	L	2024
Average:	13.8		13.7		13.7						0	.11	L	2027
Analysis:														
<b>122</b>														
Description:	4" BOTTOM BAND													
	2009	4	2009	10	2010	3								
Min. Thick.	13.5		11.8		11.8		11.81	5.6	1.7	13.5	0	1.85	L	2010
Average:	13.8		12.8		12.8						0	1.09	L	2011
Analysis:	2009/10 MIN SCAN @ MID BAND. CORROSION @ MID BAND.													
<b>123</b>														
Description:	4" 90° ELBOW													
	2008	11	2009	4	2009	10	2010	3						
Min. Thick.	13.6		13.3		13.2		13.2		11.81		1.7	13.5	0	.3
Average:	13.7		13.6		13.6		13.6					0	.07	L
Analysis:														
<b>124</b>														
Description:	4" 90° ELBOW													
	2009	4	2010	3										
Min. Thick.	16.9		16.9				11.81		1.7	13.5	0	0		L
Average:	17.2		17.2								0	0		L
Analysis:														
<b>125</b>														
Description:	4" 90° ELBOW													
	2008	11	2009	4	2009	10	2010	3						
Min. Thick.	17.6		17.6		17.3		17.3		14.96		2.1	17.1	0	.23
Average:	18.6		18.6		18		18					0	.45	L
Analysis:	2009/10 MIN SCAN @ MID ELBOW; MID APEX													

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**TESTED ON STREAM**

**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA					Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date			
<b>130</b>																
Description: <b>4" 90° ELBOW</b>																
	2008	11	2009	4	2009	10	2010	3								
Min. Thick.	12.7		12.5		12.3		12.3		11.81		1.7	13.5	0	.3	L	2011
Average:	13		13		12.7		12.7						0	.23	L	2014
Analysis: 2009/10 MIN SCAN @ MID ELBOW; MID APEX																
<b>133</b>																
Description: 4" 90° ELBOW																
	2009	4	2010	3												
Min. Thick.	13		13						11.81		1.7	13.5	0	0	L	
Average:	13.3		13.3										0	0	L	
Analysis:																
<b>135</b>																
Description: <b>4" 90° ELBOW</b>																
	2008	11	2009	4	2009	10	2010	3								
Min. Thick.	12.5		12.5		12.1		12.1		11.81	5.6	1.7	13.5	0	.3	L	2011
Average:	13		13		12.8		12.8						0	.15	L	2016
Analysis: 2008/11 MIN SCAN @ 7cm FROM DOWNSTREAM WELD.																
<b>140</b>																
Description: <b>4" 90° ELBOW</b>																
	2008	11	2009	4	2009	10	2010	3								
Min. Thick.	12.9		12		12		12		11.81	5.6	1.7	13.5	0	.68	L	2010
Average:	13.2		12.7		12.7		12.7						0	.38	L	2012
Analysis: 2009/04 MIN SCAN AT MID ELBOW, BELOW APEX.																
<b>143</b>																
Description: <b>4" 90° ELBOW</b>																
	2009	4	2009	10	2010	3										
Min. Thick.	11.7		11.4		11.4				11.81	5.6	1.7	13.5	0	.33	L	2010
Average:	12.4		11.7		11.7								0	.76	L	2010
Analysis: 2009/04 MIN SCAN AT MID ELBOW, MID APEX.																
<b>145</b>																
Description: 4" 90° ELBOW																
	2008	11	2009	4	2009	10	2010	3								
Min. Thick.	14		14		14		14		11.81		1.7	13.5	0	0	L	
Average:	14.3		14.3		14.3		14.3						0	0	L	
Analysis:																

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**FACILITY:** MURRAY RIVER FIELD  
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**RTD JOB #:** 05.003683  
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Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date
<b>150</b>												
Description: 4" BOTTOM BAND												
	2008 11	2009 4	2009 10									
Min. Thick.	13.8	13.8	13.8	11.81		1.7	13.5	0	0		L	
Average:	14	14	14					0	0		L	
Analysis:												
<b>155</b>												
Description: 4" 90° ELBOW												
	2008 11	2009 4	2009 10									
Min. Thick.	13.4	13.4	13.4	11.81		1.7	13.5	0	0		L	
Average:	13.7	13.7	13.7					0	0		L	
Analysis:												
<b>156</b>												
Description: 6" 90° ELBOW												
	2009 4	2009 10										
Min. Thick.	11.4	11.3		9.63		1.4	11	.2	.2		L	2018
Average:	11.7	11.6						.2	.2		L	2019
Analysis:												
<b>157</b>												
Description: 6" TOP BAND												
	2009 4	2009 10										
Min. Thick.	10.8	10.7		9.63		1.4	11	.2	.2		L	2015
Average:	11	11						0	0		L	
Analysis:												
<b>158</b>												
Description: 6" BOTTOM BAND												
	2009 4	2009 10										
Min. Thick.	10.9	10.7		9.63		1.4	11	.4	.4		L	2012
Average:	11.1	11						.2	.2		L	2016
Analysis:												
<b>159</b>												
Description: 6" TOP BAND												
	2009 4	2009 10										
Min. Thick.	11.3	11.2		9.63		1.4	11	.2	.2		L	2017
Average:	11.5	11.5						0	0		L	
Analysis:												

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**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
**RTD JOB #:** 05.003683  
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Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date	
<b>160</b>													
Description: <b>6" BOTTOM BAND</b>													
	2008	11	2009	4	2009	10							
Min. Thick.	12.6		11		11		9.63		1.4	11	0	1.75	L 2010
Average:	13.6		11.3		11.3						0	2.51	L 2010
Analysis: 2008/11 MIN SCAN @ WELDS.													
<b>161</b>													
Description: 6" 90° ELBOW													
	2009	4	2009	10	2010	3							
Min. Thick.	12.5		12.4		12.4		9.63		1.4	11	0	.11	L 2035
Average:	13		13		13						0	0	L
Analysis: 2009/10 MIN SCAN @ LEFT OF APEX													
<b>163</b>													
Description: 6" TEE													
	2008	6	2009	4	2009	10							
Min. Thick.	12.6		12.6		12.6		11.81		1.7	13.5	0	0	L
Average:	13.6		13.6		13.6						0	0	L
Analysis: 2009/10 MIN SCAN @ D.S.W.													
<b>164</b>													
Description: 6" 90° ELBOW													
	2009	4	2009	10	2010	3							
Min. Thick.	11.3		11.3		11.3		9.63		1.4	11	0	0	L
Average:	11.7		11.7		11.7						0	0	L
Analysis: 2009/10 MIN SCAN @ MID ELBOW; MID APEX													
<b>165</b>													
Description: <b>4" PIG TRAP</b>													
	2008	11	2009	4	2009	10							
Min. Thick.	13		13		13		11.81		1.7	13.5	0	0	L
Average:	13.3		13.3		13.2						.2	.11	S 2016
Analysis:													
<b>170</b>													
Description: 3" 45° ELBOW													
	2008	11	2009	4	2009	10							
Min. Thick.	7.5		7.5		7.5		6.65		1	7.6	0	0	L
Average:	7.6		7.6		7.6						0	0	L
Analysis:													



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**FACILITY:** MURRAY RIVER FIELD  
**SERVICE:** SOUR  
**LOCATION:** b-A77-J/93-I-14  
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**REFER TO DRAWING:** 1

Test Point	THICKNESS DATA				Flag	Crit	C.A.	Nom.	Short Term	Long Term	Ave. mm/py	Flag Date
<b>175</b>												
Description: <b>2" 90° ELBOW</b>												
	2008 11	2009 4	2009 10									
Min. Thick.	7.9	7.7	7.7		7.61	1.1	8.7	0	.22		L	2010
Average:	8.2	8	8					0	.22		L	2011
Analysis:												