


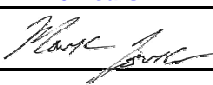
Enerplus Resources Visual External Inspection Report – Pressure Vessels

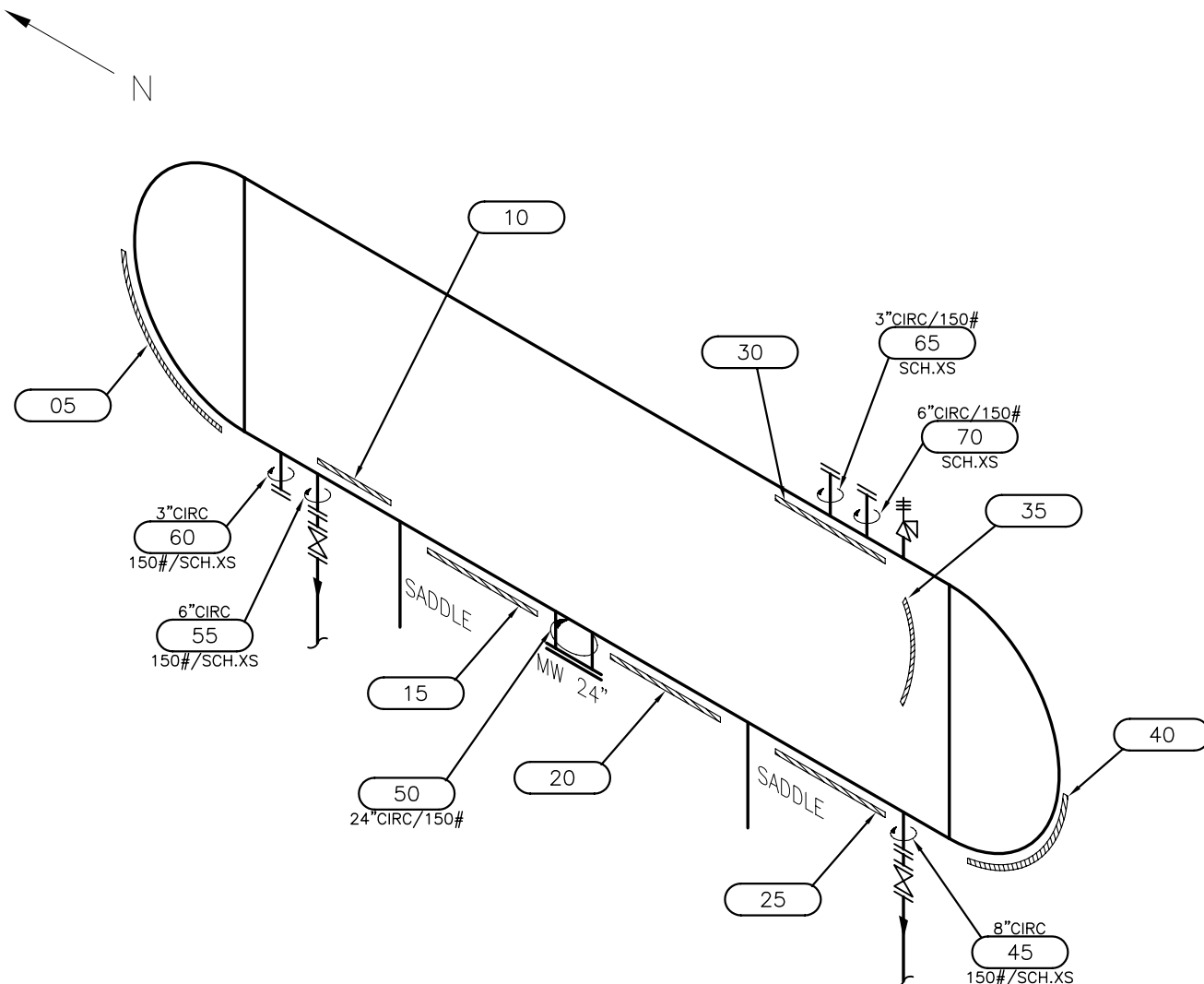
<input type="checkbox"/> Installation		<input checked="" type="checkbox"/> External		AI FR 023									
Date:		August 15, 2012		Description:		<input checked="" type="checkbox"/> Vessel		<input type="checkbox"/> Exchanger		<input type="checkbox"/> Boiler		E# 23052	
Inspector:		Mark Tomko		Equipment Name:		LPG Bullet		CRN#		F398.2			
Agent Co:		Integrity Testing Services		Jurisdiction #		A0138997		Serial#		28319A			
Owner:		Enerplus Resources		Manufacturer:		Western Rock Bit Co. Ltd.		Year Built:		1987			
District:		North Central Plains:Joar		Field:		Joarcam Unit 2		LSD:		11-03-049-21W4M			
Service:		<input checked="" type="checkbox"/> Sweet		<input type="checkbox"/> Sour						MDMT		N/S	
Zones	MAWP	MAWT	PSV Set P	PSV Tag E#	PSV Manufacturer	PSV S/N#	PSV Inlet size	PSV Outlet size	PSV Serv. Co	PSV Serv. Date	PSV CSO? Y/N	PSV Capacity	
Shell Side	250 PSI	115°F	N/S	N/S	N/S	N/S	3" 600	4x2"	Powell	1-May-07	N/A	N/S	
Tube Side	-	-											
Other	-	-											
		Shell		Head		Channel		Tube		Comment			
Material		SA-516-70		SA-516-70									
Nominal T		0.8415"		0.836"									
CA		0.0625"		0.0625"									
Orientation		<input checked="" type="checkbox"/> Hor <input type="checkbox"/> Ver		Foundation:		<input checked="" type="checkbox"/> Concrete <input type="checkbox"/> Gravel <input type="checkbox"/> Timbers <input type="checkbox"/> Steel		Condition		Good			
Support		<input checked="" type="checkbox"/> Saddle <input type="checkbox"/> Seal Welded <input type="checkbox"/> Free to Move		Condition:		No expansion slots for bolts							
		<input type="checkbox"/> Skirt <input type="checkbox"/> Free Of Debris		Condition:									
		<input type="checkbox"/> Hangers <input type="checkbox"/> Secure		Condition:									
		<input type="checkbox"/> Other:		Condition:									
Overall		General Condition:		Good		Electrical Grounding		<input checked="" type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> None					
Ext. Surface		<input type="checkbox"/> Painted <input type="checkbox"/> Insulated <input type="checkbox"/> Fire-proofed <input type="checkbox"/> Cladded		Condition:									
Ext. Fixtures		<input checked="" type="checkbox"/> Ladder <input checked="" type="checkbox"/> Platform <input type="checkbox"/> Other		Ladder and platform are in good condition									
Inspection Nozzles		<input checked="" type="checkbox"/> Manway <input type="checkbox"/> Port		Size: 22"		<input checked="" type="checkbox"/> Reinforcement Pad <input checked="" type="checkbox"/> Weep Hole Present							
Davit Arm		<input type="checkbox"/> Present <input type="checkbox"/> Greased <input type="checkbox"/> Double nutted		Condition:		No davit arm							
Piping	<input checked="" type="checkbox"/> PSV	<input type="checkbox"/> Supported	<input type="checkbox"/> Joined per code	<input type="checkbox"/> Drains properly	<input type="checkbox"/> Well Coated	Comment:		Top of vessel					
	<input checked="" type="checkbox"/> Inlet	<input type="checkbox"/> Supported	<input type="checkbox"/> Joined per code	<input type="checkbox"/> Free from leaks	<input type="checkbox"/> Well Coated	Comment:		disconnected					
	<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Supported	<input type="checkbox"/> Joined per code	<input type="checkbox"/> Free from leaks	<input type="checkbox"/> Well Coated	Comment:		disconnected					
	<input checked="" type="checkbox"/> Drain	<input type="checkbox"/> Supported	<input type="checkbox"/> Joined per code	<input type="checkbox"/> Free from leaks	<input type="checkbox"/> Well Coated	Comment:		disconnected					
	<input checked="" type="checkbox"/> Instrumentation	<input type="checkbox"/> Supported	<input type="checkbox"/> Free from leaks	<input type="checkbox"/> Well Coated	Comment:		condition						
	<input type="checkbox"/> Process fluid identified	<input type="checkbox"/> Flow direction marked	Comment:		LPG Gas								
Valves	<input checked="" type="checkbox"/> Manual Isolation Valve		<input checked="" type="checkbox"/> Free from leaks		Comment:								
	<input type="checkbox"/> Automated Control Valve		<input type="checkbox"/> Free from leaks		Comment:								
	<input type="checkbox"/> Vents and Drains Plugged		Comment:										
Gauges	<input checked="" type="checkbox"/> Pressure	Reading:	0		Condition:	Good condition 0-200 kPa							
	<input type="checkbox"/> Temperature	Reading:			Condition:								
Sight Glass		<input type="checkbox"/> Fluid Level		Reading %		N/A							
Inspection Summary		Weep holes are clear on repads. South saddle bolts need expansion slots and washes. No concerns for LPG bullet.											
Recommendations:												NCR	
		Install expansion slots for bolts on South saddle support.											
Integrity Status		Suitable for continued Service		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Immediate repairs required <input type="checkbox"/> Future repairs required							
Inventory Status		<input type="checkbox"/> In service <input type="checkbox"/> Out of service		<input checked="" type="checkbox"/> Stock									
Sign off	Inspection Interval		5 Years		Years or Changed to								
	PSV Interval		5 Years		Years or Changed to								
	Inspector Signature				Jurisdictional Inspector #		API 510# 38634						
	Chief/Senior Signature (if needed)				Jurisdictional Inspector #								

Form Last Revised xxxx

Enerplus_VT Report Vessel External Rev 5

Enerplus Resources Visual Internal Inspection Report – Pressure Vessels AI FR 024

Date:	15-Aug-12	Description:	<input checked="" type="checkbox"/> Vessel	<input type="checkbox"/> Exchanger	<input type="checkbox"/> Boiler	E#	23052	
Inspector:	Mark Tomko	Equipment Name:	LPG Bullet				CRN#	F398.2
Agent Co:	Integrity Testing Services	Jurisdiction #	A0138997				Serial#	28319A
Owner:	Enerplus Resources	Manufacturer:	Western Rock Bit Co. Ltd.				Year Built:	1987
District:	North Central Plains:Joarcam	Field:	Joarcam Unit 2		LSD:	11-03-049-21W4M		
Scope:	A visual internal inspection was performed on all accessible shell and head surfaces, nozzles, welds etc.							
Access	<input checked="" type="checkbox"/> Manway <input checked="" type="checkbox"/> Inspection nozzle							
Opening	Gasket surfaces	<input checked="" type="checkbox"/> Compliant with code	Comment	Smooth and clean				
	Nozzle tube	<input type="checkbox"/> No pitting, erosion etc.	Comment					
Shell and Head Surfaces	Uniform corrosion	<input checked="" type="checkbox"/> Insignificant amount	Comment	Vessel welds and nozzles are in very good condition				
	Pitting corrosion	<input checked="" type="checkbox"/> None noted	Comment	No pitting found				
	Erosion	<input checked="" type="checkbox"/> None noted	Comment	Vortex breaker box is in good condition. Nozzles are good.				
	Internal Coating	<input type="checkbox"/> Full <input type="checkbox"/> Partial <input checked="" type="checkbox"/> None	Comment					
	Mechanical damage	<input checked="" type="checkbox"/> None noted	Comment					
Welds	Uniform corrosion	<input checked="" type="checkbox"/> Insignificant amount	Comment	More rust noted on top shell but insignificant around				
	Pitting corrosion	<input checked="" type="checkbox"/> None noted	Comment					
	Welding defects	<input checked="" type="checkbox"/> None noted	Comment	Welding is very good				
	NDE was performed by		Mark Tomko	Extent	100% of nozzle, long seam circ welds.			
	Type	<input checked="" type="checkbox"/> MPI <input checked="" type="checkbox"/> WF <input type="checkbox"/> B&W <input type="checkbox"/> Dry <input type="checkbox"/> LPI <input type="checkbox"/> UT <input type="checkbox"/> RT <input type="checkbox"/> Other:						
Results:	No linear indication noted.							
Nozzles	Obstructions	<input checked="" type="checkbox"/> None noted	Comment	None				
	Corrosion	<input checked="" type="checkbox"/> None noted	Comment	very light rust				
	Erosion	<input checked="" type="checkbox"/> None noted	Comment	Vortex box looks as new condition				
Attachments	<input checked="" type="checkbox"/> Vortex breaker	<input checked="" type="checkbox"/> Secure	<input checked="" type="checkbox"/> Good condition	Comment	as new condition			
	<input type="checkbox"/> Impingement plate	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
	<input type="checkbox"/> Suction tube	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
	<input type="checkbox"/> Demister	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
	<input type="checkbox"/> Heating coil	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
	<input type="checkbox"/> Fire tube	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
	<input type="checkbox"/>	<input type="checkbox"/> Secure	<input type="checkbox"/> Good condition	Comment				
Inspection Summary	No significant areas of concern. Manway and nozzle seal surfaces are in good condition.							
Recommendations:							NCR	
None. PSV is going in for service and is set at 250 PSI and is the same as the vessel MAWP.								
Integrity Status	Suitable for continued service	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Immediate repairs required		<input type="checkbox"/> Future repairs required	Replace		
Inventory Status	<input type="checkbox"/> In service <input type="checkbox"/> Out of service	<input checked="" type="checkbox"/> Stock						
Sign Off	Inspection Interval	5 Years		Years or Changed to				
	PSV Interval	5 Years		Years or Changed to				
	Inspector Signature			Jurisdictional Inspector#	API 510# 38634			
	Chief/Senior Signature (if needed)			Jurisdictional Inspector#				



P.E. No.: E#23052 Code/Div.: N/S
 Serial No.: 28319A C. Stamp: U
 P.R.N. ④ 0138997 Yr. Bilt.: 1987
 C.R.N.: F398.2 Manway: YES
 Manufacturer: WESTERN ROCK BIT CO. LTD.

Size: N/S Radiography: RT-1
 Service: N/S Insulated: NO
 PWHT: N/S N.B. No.: N/S

Design & Materials Data

HEAD:
 Material: SA-516-70 Nom.: 0.8415" C.A.: 0.625"
 Material: _____ Nom.: _____ C.A.: _____
 SHELL
 Material: SA-516-70 Nom.: 0.8415" C.A.: 0.625"
 Material: _____ Nom.: _____ C.A.: _____
 BOOT
 Head Mat'l.: _____ Nom.: _____ C.A.: _____
 Shell Mat'l.: _____ Nom.: _____ C.A.: _____
 CHANNEL
 Material: _____ Nom.: _____ C.A.: _____

MAWP Shell Side: 250 PSI @ Temp.: 115°F
 MAWP Tube Side: _____ @ Temp.: _____

Comments: _____

CLIENT	ENERPLUS RESOURCES	
FACILITY	NORTH CENTRAL PLAINS – JOARCAM FIELD JOARCAM UNIT 2 LSD 11–03–049–21W4M	
ITEM	LPG BULLET	
BY: M.T.	DATE: 2012/08	DWG.#: 006

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006
TML No.: 5 NORTH HEAD T-B

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 25.28 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 25.00 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
5.01	21.23	1.58	19.65	21.23	N/A	25.40	0.0000	0.0000	100.00	.	NO
5.02	21.23	1.58	19.65	21.23	N/A	25.20	0.0000	0.0000	100.00	.	NO
5.03	21.23	1.58	19.65	21.23	N/A	25.10	0.0000	0.0000	100.00	.	NO
5.04	21.23	1.58	19.65	21.23	N/A	25.00	0.0000	0.0000	100.00	.	NO
5.05	21.23	1.58	19.65	21.23	N/A	26.00	0.0000	0.0000	100.00	.	NO
5.06	21.23	1.58	19.65	21.23	N/A	25.00	0.0000	0.0000	100.00	.	NO

TML No.: 10 N.BTM SHELL N-S

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 22.45 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 22.30 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
10.01	21.37	1.58	19.79	21.37	N/A	22.30	0.0000	0.0000	100.00	.	NO
10.02	21.37	1.58	19.79	21.37	N/A	22.40	0.0000	0.0000	100.00	.	NO
10.03	21.37	1.58	19.79	21.37	N/A	22.70	0.0000	0.0000	100.00	.	NO
10.04	21.37	1.58	19.79	21.37	N/A	22.40	0.0000	0.0000	100.00	.	NO
10.05	21.37	1.58	19.79	21.37	N/A	22.40	0.0000	0.0000	100.00	.	NO
10.06	21.37	1.58	19.79	21.37	N/A	22.50	0.0000	0.0000	100.00	.	NO

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or -12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - If Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPIPE Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 15 MID N.BTM SH N-S

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 21.90 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 21.70 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
15.01	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
15.02	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO
15.03	21.37	1.58	19.79	21.37	N/A	21.90	0.0000	0.0000	100.00	.	NO
15.04	21.37	1.58	19.79	21.37	N/A	22.00	0.0000	0.0000	100.00	.	NO
15.05	21.37	1.58	19.79	21.37	N/A	22.00	0.0000	0.0000	100.00	.	NO
15.06	21.37	1.58	19.79	21.37	N/A	22.00	0.0000	0.0000	100.00	.	NO

TML No.: 20 S.MID BTM SH N-S

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 22.22 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 22.10 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
20.01	21.37	1.58	19.79	21.37	N/A	22.20	0.0000	0.0000	100.00	.	NO
20.02	21.37	1.58	19.79	21.37	N/A	22.30	0.0000	0.0000	100.00	.	NO
20.03	21.37	1.58	19.79	21.37	N/A	22.20	0.0000	0.0000	100.00	.	NO
20.04	21.37	1.58	19.79	21.37	N/A	22.10	0.0000	0.0000	100.00	.	NO
20.05	21.37	1.58	19.79	21.37	N/A	22.40	0.0000	0.0000	100.00	.	NO
20.06	21.37	1.58	19.79	21.37	N/A	22.10	0.0000	0.0000	100.00	.	NO

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or -12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - If Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPIPE Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 25 S.BTM SHELL N-S

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 21.82 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 21.80 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
25.01	21.37	1.58	19.79	21.37	N/A	21.90	0.0000	0.0000	100.00	.	NO
25.02	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO
25.03	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO
25.04	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO
25.05	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO
25.06	21.37	1.58	19.79	21.37	N/A	21.80	0.0000	0.0000	100.00	.	NO

TML No.: 30 UPR N.SHELL N-S

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 21.67 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 21.50 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
30.01	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
30.02	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
30.03	21.37	1.58	19.79	21.37	N/A	21.50	0.0000	0.0000	100.00	.	NO *
30.04	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
30.05	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
30.06	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or -12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - if Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPIPE Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 35 S.SIDE SHELL T-B

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 21.70 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 21.70 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
35.01	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
35.02	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
35.03	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
35.04	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
35.05	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *
35.06	21.37	1.58	19.79	21.37	N/A	21.70	0.0000	0.0000	100.00	.	NO *

TML No.: 40 SOUTH HEAD T-B

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 25.38 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 25.00 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
40.01	21.23	1.58	19.65	21.23	N/A	25.70	0.0000	0.0000	100.00	.	NO
40.02	21.23	1.58	19.65	21.23	N/A	25.60	0.0000	0.0000	100.00	.	NO
40.03	21.23	1.58	19.65	21.23	N/A	25.30	0.0000	0.0000	100.00	.	NO
40.04	21.23	1.58	19.65	21.23	N/A	25.00	0.0000	0.0000	100.00	.	NO
40.05	21.23	1.58	19.65	21.23	N/A	25.60	0.0000	0.0000	100.00	.	NO
40.06	21.23	1.58	19.65	21.23	N/A	25.10	0.0000	0.0000	100.00	.	NO

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or -12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - If Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPipe Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 45 8"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 13.13 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 12.90 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
45.01	12.70	1.58	11.12	12.70	N/A	13.40	0.0000	0.0000	100.00	.	NO
45.02	12.70	1.58	11.12	12.70	N/A	13.10	0.0000	0.0000	100.00	.	NO
45.03	12.70	1.58	11.12	12.70	N/A	12.90	0.0000	0.0000	100.00	.	NO *
45.04	12.70	1.58	11.12	12.70	N/A	13.10	0.0000	0.0000	100.00	.	NO

TML No.: 50 24"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 13.63 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 12.30 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
50.01	12.70	1.58	11.12	12.70	N/A	15.10	0.0000	0.0000	100.00	.	NO
50.02	12.70	1.58	11.12	12.70	N/A	13.70	0.0000	0.0000	100.00	.	NO
50.03	12.70	1.58	11.12	12.70	N/A	12.30	0.0000	0.0152	38.72	.	NO *
50.04	12.70	1.58	11.12	12.70	N/A	13.40	0.0000	0.0000	100.00	.	NO

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or - 12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - if Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPipe Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 55 6"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 11.35 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 11.10 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
55.01	10.97	1.58	9.39	10.97	N/A	11.10	0.0000	0.0000	100.00	.	NO *
55.02	10.97	1.58	9.39	10.97	N/A	11.40	0.0000	0.0000	100.00	.	NO
55.03	10.97	1.58	9.39	10.97	N/A	11.50	0.0000	0.0000	100.00	.	NO
55.04	10.97	1.58	9.39	10.97	N/A	11.40	0.0000	0.0000	100.00	.	NO

TML No.: 60 3"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 8.23 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 7.90 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
60.01	7.62	1.58	6.04	7.62	N/A	8.40	0.0000	0.0000	100.00	.	NO
60.02	7.62	1.58	6.04	7.62	N/A	7.90	0.0000	0.0000	100.00	.	NO *
60.03	7.62	1.58	6.04	7.62	N/A	8.10	0.0000	0.0000	100.00	.	NO
60.04	7.62	1.58	6.04	7.62	N/A	8.50	0.0000	0.0000	100.00	.	NO

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or - 12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - if Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPipe Mathematics.

Enerplus Resources

Unit: S-053

FACILITY:	JOARCAM FIELD	MANUFACTURER:	WESTERN ROCKBIT CO. LTD.
LSD:	11-03-049-21W4M	DESIGN PRESSURE:	1724 kPa / 250 psi
ITEM DESC.:	LPG BULLET	DESIGN TEMP.:	46 C / 115 F
EQUIP / OIP#:	E23052		
PROV. REG. #:	A0138997	VESSEL CORROSION ALLOWANCE:	1.58 mm
SERIAL #:	28319A		
CRN.:	F398.2	TOTAL CAUTION / ACTION TML:	0

Item # 006

TML No.: 65 3"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 8.00 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 7.90 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
65.01	7.62	1.58	6.04	7.62	N/A	8.00	0.0000	0.0000	100.00	.	NO
65.02	7.62	1.58	6.04	7.62	N/A	7.90	0.0000	0.0000	100.00	.	NO *
65.03	7.62	1.58	6.04	7.62	N/A	8.00	0.0000	0.0000	100.00	.	NO
65.04	7.62	1.58	6.04	7.62	N/A	8.10	0.0000	0.0000	100.00	.	NO

TML No.: 70 6"CIRC NOZ 150#

DATE BUILT: 01/1987

AVERAGE THICKNESS MEASURED: 11.18 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 11.00 mm.

Pts.	Nom. Thick. mm	CA + Steel Mfg.Tol. mm	Nom. -CA -Toll. mm	B/L Survey Thick. mm	Prev. Survey Thick. mm	Last Survey Thick. mm	Short Term CR mm/yr	Long Term CR mm/yr	Rem. Half Life yr	Future UT Reading mm/yy	Action/Caution Required Item
				01/1987		08/2012					
70.01	10.97	1.58	9.39	10.97	N/A	11.20	0.0000	0.0000	100.00	.	NO *
70.02	10.97	1.58	9.39	10.97	N/A	11.50	0.0000	0.0000	100.00	.	NO
70.03	10.97	1.58	9.39	10.97	N/A	11.00	0.0000	0.0000	100.00	.	NO *
70.04	10.97	1.58	9.39	10.97	N/A	11.00	0.0000	0.0000	100.00	.	NO *

If Baseline (B/L) Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.
Minimum Thickness is calculated

Design Minimum Thickness = Nom. Thick. - CA - Manufacturing Steel Tolerance.

Manufacturing Tolerance of pipe and forged fittings is + or - 12.5% (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

Manufacturing Tolerance of plate is + or - 0.25mm (0.010") (May or may not apply dependent upon the Client's Owner-User Integrity Management System).

(*) and GREEN Represent 25% of the last thickness readings, which have the shortest remaining half life.

BLUE (Caution TML Point) - if Corrosion Rate exceed a 0.250mm / 0.009 in. per yr. or Half Life is less than 15 years.

RED (Action TML Point) - If Remaining Half Life is 0 and Last Survey Thickness is below Nominal-CA-Tolerance Thickness.

CA - Corrosion Allowance, CR - Corrosion Rate (Brown if CR >= 0.500mm/yr.).

Calculated T-Min. Thickness - Using UPipe Mathematics.

MAGNETIC PARTICLE EXAMINATION REPORT

REPORT No.: MT - 1874 - 01 - MT

Page: 1 of 2

Client: Enerplus Resources

District: North Plains Central: Joarcam LSD: 11-03-049-21W4M

Facility: Joarcam Unit 2

Item(s) Examined: LPG Bullet

Acceptance Criteria: ASME SEC VIII DIV 1 Rev. / Date: 2010

Procedure No.: ITS-MT04 Wet Fluorescent Rev. / Date: Rev 1 / Oct 2011

Technique No.: 3 Rev. / Date: Rev 1 / Oct 2011

ITS Job No.: 1874

Date: 15-Aug-12

Time: 4:00 PM

W.O. No.: N/A

P.O. No.: N/A

Cost Code: N/A

AFE: AF120256

Other: N/A

Equipment Data:

PRN: (A) A0138997 Serial No.: 28319A Equip. No.: E23052 CRN: F398.2

Material: Carbon Stell Thickness: N/S Other: N/A

Surface Condition:

☒ Base Metal ☐ Machined ☐ Shot Blasted ☒ Wire Wheeled ☐ As Ground ☐ As Welded ☐ Painted ☐ Coated ☐ Other:

☐ < -20°C (-5°F) ☒ -20°C (-5°F) to 54°C (130°F) ☐ 55°C (131°F) to 315°C (600°F) ☐ > 315°C (600°F)

Equipment:

Equipment	Serial No.	Cal. Due Date	MT Technique and Examination Medium:	
<input checked="" type="checkbox"/> Hand Yoke: Contour Probe	17167	26-Jan-13	<input checked="" type="checkbox"/> AC	<input type="checkbox"/> DC
<input type="checkbox"/> Perm. Magnet:			<input checked="" type="checkbox"/> Wet	<input type="checkbox"/> Dry
<input type="checkbox"/> Coil:			Manufacturer: Circle Systems Inc.	Batch No.:
<input checked="" type="checkbox"/> Blacklight: Spectoline BIB-150P	1664302	19-Mar-12	<input type="checkbox"/> Cleaner:	
<input checked="" type="checkbox"/> Light Meter: Model DSE-100X	1706820	2-Mar-13	<input type="checkbox"/> Color Contrast:	
<input type="checkbox"/> Visible Light:	>	Footcandles	<input checked="" type="checkbox"/> Particles: Miglow 810	15856
Fluorescent Examination Blacklight Intensity Check; Pre: 4840 $\mu\text{W}/\text{cm}^2$ Post: 3560 $\mu\text{W}/\text{cm}^2$			<input type="checkbox"/> Other:	

Examination Details:


SCOPE: A wet fluorescent magnetic particle examination was carried out on all LPG bullets internal welds to ensure that there is no in service defects in the welds and heat affected zone of those welds.

RESULTS: No indications noted.

CONCLUSION: Welds are acceptable to above code .

Client Representative: Sign: Date:

Technician(s):


Sign:  Mark Tomko

Print: Mark Tomko

1st Technician

Level: CGSB 2 SNT ACCP/ASNT

Certification No.: 8247


Sign:  Andrew Soto

Print: Andrew Soto

2nd Technician / Assistant

Level: CGSB 2 SNT ACCP/ASNT

Certification No.:

Report Review: 

CONTINUATION EXAMINATION REPORT

REPORT No.: **MT - 1874 - 01 - MT**

Page: **2** of **2**

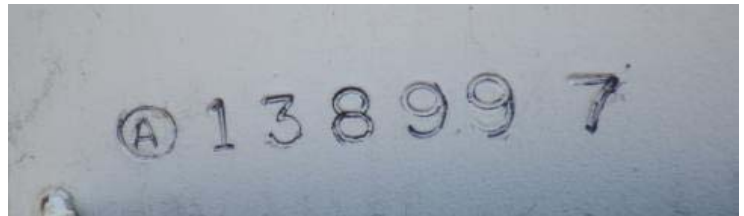
Client: **Enerplus Resources**

ITS Job No.: **1874**

Item(s) Examined: **LPG Bullet**

Date: **August 15, 2012**

PHOTOS



NAME PLATE



OVERALL VIEW

1st Technician:

Print: **Mark Tomko**

Sign: *Mark Tomko*