

INSPECTION REPORT



Pressure Vessel Survey			
Location:	Point Tupper	EM&I J Report No.:	PT-D2105B-090729-JT-R0
Client Name:		Client Ref No.:	PT-11564911-001-D2105B
Client Rep.:		Inspector Name:	James Tulk
WO No.:		Inspection Date:	July 29, 2009
SPO No.:		System:	Butane
Workscope No.:	PT-2009-D2105B-INT-01	EM&I J Job No.:	EMJ0132.43
Tag No.:	D-2105B	Equipment Description:	Butane Storage Vessel D-2105B
Date of Last Inspection:	NA	Previous Records Seen:	NA
Drawing No.:	98-CA-399735C		

Inspection Summary					
Restriction?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Comments:		
Item	Condition				Comments
External Ladders, Access and Support Structure	Good	Fair	Poor	NA	Internal Inspection Only
1. If applicable, check ladders, stairways, platforms and walkways that are connected to, or bearing on the vessel for signs of corrosion, missing components, or deterioration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. If applicable, check vessel supports for signs of deterioration, settlement, deflection, and/or corrosion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. If applicable, check coatings for signs of deterioration, rusts spots, cracks, blistering, and/or coating disbondment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. a) For horizontally mounted vessels, check for signs of trapped moisture, resulting in corrosion between cradle support and vessel shell.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
b) For vertically mounted vessels on skirt support or support legs, check for condensation, resulting in corrosion on the bottom cap/ inside skirt support surface or area of attachment of the support legs to the bottom cap.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5. Check the grounding connection is correctly installed, with cable connections tight and ground wires in good condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6. Check all bolted connections for any signs of corrosion or mechanical damage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. If applicable, check the vessel sliding foot free to move and hold-down bolts are free.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Vessel External Surfaces	Good	Fair	Poor	NA	Internal Inspection Only
1. Check permanent identifying tags on vessel are legible and present the required information.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See 'Details of Findings'
2. If applicable, check that all bolts/studs extend fully through their nuts, having a protrusion beyond the nut of not less than one thread; flange bolts have bolt heads all on the side of the joint.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. If applicable, check bolted connections are in full contact with connected elements and connections for any signs of rust, corrosion or mechanical damage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4. If applicable, check insulation support bands and clips for signs of corrosion or breakage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5. Check all welded seams and connections for any signs of deterioration, corrosion, cracking, pitting or other sign of failure. Specify.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6) If applicable, check insulation type, condition for any insulation damage and ingress of water. Record insulation type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7. Carry out visual inspection of the exterior surface of the vessel, including coatings for any signs of leaks, cracks, deformation, distortion, pitting, corrosion or other forms of deterioration. If so, specify type, location and extent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8. If applicable, check weep holes in reinforcement plates are not plugged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
External Piping / Instrument Attachments	Good	Fair	Poor	NA	Internal Inspection Only
1. If applicable, check vessel trim, such as gauges, sight glasses, valves and other appurtenances, show signs of deterioration, or missing components, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. If applicable, check if the PSV on the vessel is in calibration. Record tag number of PSV and calibration date.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See 'Details of Findings'
3. Inspect fittings, nozzles and other connections, including the surrounding vessel shell / head for any signs of distortion or cracks, wall loss, leakage, deterioration of coatings, etc. Specify extent and location.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Vessel Internal Surfaces	Good	Fair	Poor	NA	

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Inspection Summary

Restriction?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Comments:			
Item	Condition				Comments	
1. Check for signs of corrosion, erosion, cracks, blisters, pitting, distortion, or other forms of deterioration on the internal vessel surfaces. If any, specify type, location and extent.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 1	
2. Check all welded joints for any signs of deterioration, corrosion, cracking, pitting or other sign of failure. Specify.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 2	
3. Check all man-ways, nozzles and connections for distortion, cracks, corrosion, wall loss and other type of defects or failures. If any defects are noted, specify type, extent and location.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Note 3	
4. If applicable, compare the results of performed wall thickness survey with previous reports for areas of wall thickness loss. Identify areas on inspection report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
5. Where applicable, check vessel internal cladding for signs of bulging, buckling, cracks, holes, etc. If any, specify type, location and extent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
6. Where applicable, check the vessel internal coating for signs of deterioration, such as: rust spots, blisters, coating disbandment, etc. If any, specify type, location and extent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
7. If possible, check gasket seals on all flanges for signs of corrosion and/or mechanical damage.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Man-way only See Note 4	
Internal Equipment/Piping /Supports			Good	Fair	Poor	NA
1. Where applicable, check supports for vessel's internal equipment and components for signs of corrosion, distortion and deterioration.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Angle iron support legs See Note 5	
2. If applicable, check vessel's internals for signs of corrosion, distortion and deterioration, missing components etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vortex Breaker #N2 See Note 6	
3. If applicable, check if bolted connections are in full contact with connected elements and connections are free from rust or other deleterious material that may prohibit full contact.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings

Note 1) No signs of cracks, blisters, distortion, erosion/corrosion, or any forms of deterioration evident on interior shell. Generalized pitting found scattered throughout shell having no significant depth (less than 0.5mm). Only one corrosion pit standing out among all others and was recorded to have a depth of approximately 0.5mm. This is an acceptable depth found to be well within the corrosion allowance. Mechanical marks were found throughout interior of shell and have been existing since fabrication. The more pronounced marks were recorded, measured, and photographed. See list below for location and depth of mechanical marks:

Photo 6 - Mechanical marks created by excessive grinding upon removal of possible defects during fabrication, located between circ welds #8 and #9 having a depth of approximately 0.5mm and less. Acceptable for service.

Photo 7 - Mechanical marks created by excessive grinding upon removal of possible defects during fabrication. These two marks are located between circ welds #7 and #8 having a depth of approximately 0.6mm and less. Acceptable for service.

Photo 8 - Mechanical marks created by excessive grinding upon removal of possible defects during fabrication. These three marks are located between circ welds #5 and #6 having a depth of 0.5mm, 0.6mm, and approximately 0.7mm. As well, one localized corrosion pit was also evident in the immediate area having a depth of 0.5mm. Acceptable for service.

Photos 9 and 10 - Mechanical marks created by excessive grinding upon removal of possible defects during fabrication. These marks are located between circ welds #3 and #4 having a depth of approximately 0.6mm and less. Acceptable for service.

Photo 11 = Two mechanical marks created during fabrication of vessel. These two marks are located just south of circ weld #3. The upper mark on the photo has a depth of 0.7mm but the lower mark has a depth of 1.3mm and it appears to have been created during the removal of a welded dog leg. Upon doing so, a portion of the original wall plate interior surface went with it.

Photo 12 = Mechanical marks created by excessive grinding upon removal of possible defects during fabrication. This area of marks were found to have a maximum depth of 0.7mm and are located between circ welds #2 and #3 looking East

Note 2) During inspection there was no evidence of corrosion, cracking, pitting, or deterioration found on welded joints. Acceptable for service.

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Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings

Note 3) No signs of distortion, cracks, corrosion, wall loss or any type of defect on man-way, nozzels, or on connections found. Acceptable for service.

Note 4) No evidence of corrosion/erosion or any mechanical damage on man-way gasket and cover seals. Acceptable for service.

Note 5) No signs of cracking, corrosion, erosion, distortion, or any deterioration on support legs for the vortex breaker

Note 6) No evidence of corrosion, distortion, missing components, or any deterioration on vortex breaker for nozzle N2 outlet

*Note: Only lower half of vessel's interior in question could be properly inspected. No scaffold to access the upper half of vessel.

PSV Tag:

Repaired By: Land & Sea Instrumentation Ltd

L&S Job: 09-16511-3

Date: January 14, 2009

Set Pressure: 1274 KPA

Capacity: 24890 SCFM

Model: JPVM 15A

Nameplate Info:

Certified By: Patterson Industries Limited

MAWP: 185 & -9 PSIG @ 149F

MDMT: -16.6F @ 185 & -9 PSIG

Serial No.: 98CA973502

Year Built: 1998

CRN: 9095.8

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings



Photo 1 – Profile shot looking South inside vessel



Photo 2 – Looking down at nozzles N3B-4" and N4B-2" at South end of vessel

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings



Photo 3 – Looking down at nozzle N6-2” thermowell on South head



Photo 4 – Looking up at nozzles N3A-3”, N4A-2”, N8-6”, and N1-4” at South end of vessel interior

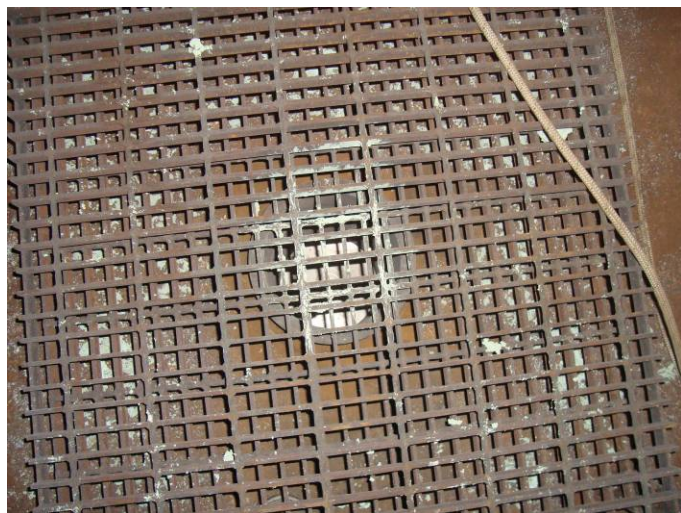


Photo 5 – Looking down at nozzle N2-8” outlet and vortex breaker



Photo 6 – Mechanical marks on shell looking West inside vessel between #8 and #9 circ welds

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings

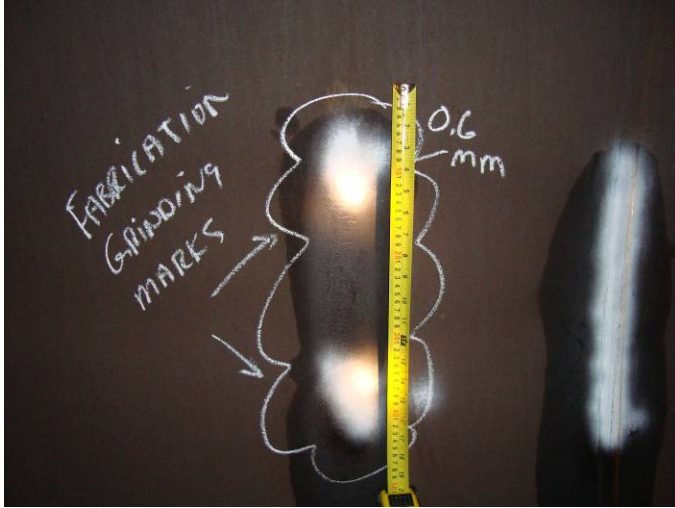


Photo 7 – Mechanical marks on interior shell looking West between #7 and #8 circ welds



Photo 8 – Mechanical marks on localized corrosion pit looking West between #6 and #7 circ welds



Photo 9 – Mechanical marks on interior shell between circ welds #3 and #4



Photo 10 – Mechanical marks on interior shell between circ welds #3 and #4

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings



Photo 11 – Mechanical marks on interior shell just south of circ weld #3, looking West



Photo 12 – Mechanical marks on interior shell surface between circ welds #2 and #3, looking East



Photo 13 – Looking down at nozzle N5-3" from the interior at the North end



Photo 14 – Looking down at manway M-24" from interior of vessel at North end

Detail of Findings

Instructions: With the aid of Drawing(s), Sketch(es) and Photo(s) describe findings



Photo 15 – Looking down at nozzle N10-3” from interior of vessel



Photo 16 – Looking up at nozzle N7-4” from inside of vessel at North end



Photo 17 - Nameplate

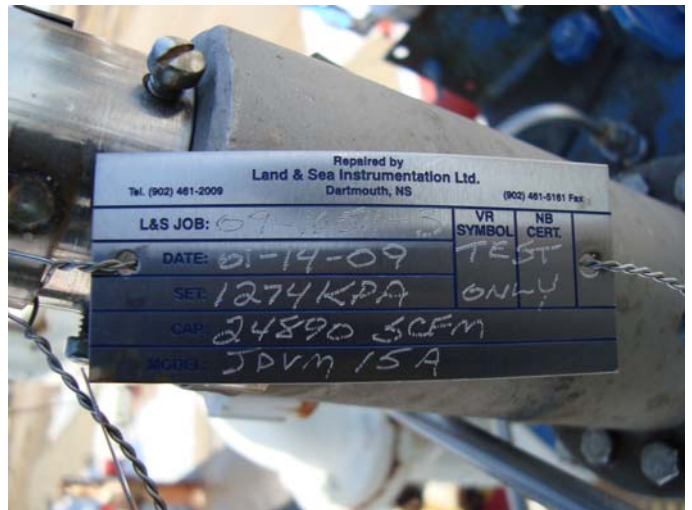


Photo 18 – PSV tag

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List of Attachments

Attachment 1: PT-D2105B-090729-NE-MPI
Attachment 2: 98-CA-399735-1C-5

End of Report

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Magnetic Particle Inspection

Location:	Point Tupper	EM&I J Report No.:	PT-D2105B-090729-NE-MPI
Client Name:	Exxon Mobil Sable	Client Ref No.:	PT-11564911-001-D2105B
Client Rep.:	Dale Groves	Inspector Name:	Neil English
WO No.:	11564911	Inspection Date:	July 29, 2009
SPO No.:	4501905471	Inspection Time:	Various
Workscope No.:	PT-2009-D2105B-INT-01	System:	Butane
Previous Report No.	NA	EM&I J Job No:	EMJ0132.43
Ref. Drawing No.:	98-CA-399735C	Item Inspected:	Butane Storage Vessel D-2105B
Technician Certifications:	CGSB,MPI LEV 2	Certification Expiry Date:	December 31, 2011
Inspection Code:	ASME VIII	Inspection Procedure:	MT401, ASME
Acceptance Criteria:	API		
Material:	C/S	Surface Condition:	Wire Brush Cleaned
		Temp:	Ambient
		Field Indicator:	Type 2 Foil Strip
Lighting Type:	Artificial	Black Light S/N:	N/A
		Light Level:	1000 LUX
Contrast: White	Manufacturer: Ardrox	Type: 8901w	Batch: 65082407
Ink:	Manufacturer: Ardrox	Type: 8031, Black	Batch: 32111507
Equipment:	Type: Electro Spec ES-X	S/N: 9600	Calibration Due: January 31, 2010
			Current Type: AC Cont.

Inspection Summary

Restriction?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Comments:
<p>Magnetic Particle Inspection was performed on Butane Storage Vessel D-2105B, on the Nozzles and Man-way cover.</p> <p>Equipment Description: 24" Man-way N2 (8" Liquid Outlet) N3B (3" Level control) N4B (2" Level indication) N5 (3" Transfer) N6 (2" Thermowell) N10 (Purge c/w Blind)</p> <p>Magnetic Particle Inspection was also carried out on selected Circumferential Weld Seams, Longitudinal Weld Seams and T-junction Weld Seams as per James Tulk, API 510 Inspector.</p> <p>Results: Upon Magnetic Particle Inspection of Butane Storage Vessel D-2105B, no indications present at time of inspection, refer to PT-11564911-001-D2105B for Photos and more info.</p>			

End of Report

Inspector Name:	Neil English	Signature:	See Field Copy	Date:	
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