INSPECTION REPORT

EM&I Jacques Ltd.

Pressure Vessel Survey			
Location:	Point Tupper	**EM&I J Report No.:**	PT-D2100C-090319-BR-R1
Client Name:		**Client Ref No.:**	PT-11573614-001-D2100C
Client Rep.:		**Inspector Name:**	Barry Ritchie
WO No.:		**Inspection Date:**	March 19, 2009
SPO No.:		**System:**	Propane
Workscope No.:	PT-2008-VESSEL-EXT-03	**EM&I J Job No:**	EMJ0132.33
Tag No.:	D-2100C	**Equipment Description:**	Propane Storage Vessel D-2100C
Date of Last Inspection:	NA	**Previous Records Seen:**	NA
Drawing No.:	LA-B23-F-22-8051-01-Z3, 98-CA-399735-1B-5, 98-CA-399735-4B-0		

Inspection Summary

Item	Condition				Comments
External Ladders, Access and Support Structure	Good	Fair	Poor	NA	
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.	☒	☐	☐	☐	
2. If applicable, check vessel supports for signs of deterioration, settlement, deflection, and/or corrosion.	☒	☐	☐	☐	See Photo #3
3. If applicable, check coatings for signs of deterioration, rusts spots, cracks, blistering, and/or coating disbondment.	☒	☐	☐	☐	
4. a) For horizontally mounted vessels, check for signs of trapped moisture, resulting in corrosion between cradle support and vessel shell.	☐	☒	☐	☐	Crack on South support See Photo #3 & 6
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.	☐	☐	☐	☒	
5. Check the grounding connection is correctly installed, with cable connections tight and ground wires in good condition.	☒	☐	☐	☐	See Photos #7-10
6. Check all bolted connections for any signs of corrosion or mechanical damage.	☒	☐	☐	☐	
7. If applicable, check the vessel sliding foot free to move and hold-down bolts are free.	☐	☐	☐	☒	
Vessel External Surfaces	Good	Fair	Poor	NA	
1. Check permanent identifying tags on vessel are legible and present the required information.	☒	☐	☐	☐	See Photo #11-14
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.	☒	☐	☐	☐	
3. If applicable, check bolted connections are in full contact with connected elements and connections for any signs of rust, corrosion or mechanical damage.	☒	☐	☐	☐	
4. If applicable, check insulation support bands and clips for signs of corrosion or breakage.	☐	☐	☐	☒	
5. Check all welded seams and connections for any signs of deterioration, corrosion, cracking, pitting or other sign of failure. Specify.	☒	☐	☐	☐	
6) If applicable, check insulation type, condition for any insulation damage and ingress of water. Record insulation type.	☐	☐	☐	☒	
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.	☒	☐	☐	☐	See Photos #21-27
8. If applicable, check weep holes in reinforcement plates are not plugged.	☐	☐	☐	☒	
External Piping / Instrument Attachments	Good	Fair	Poor	NA	
1. If applicable, check vessel trim, such as gauges, sight glasses, valves and other appurtenances, show signs of deterioration, or missing components, etc.	☒	☐	☐	☐	
2. If applicable, check if the PSV on the vessel is in calibration. Record tag number of PSV and calibration date.	☒	☐	☐	☐	See Photo #35
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.	☐	☒	☐	☐	Flange connections only

Inspection Summary

Item	Condition				Comments
Vessel Internal Surfaces	Good	Fair	Poor	NA	**External Only**
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.	☐	☐	☐	☒	
2. Check all welded joints for any signs of deterioration, corrosion, cracking, pitting or other sign of failure. Specify.	☐	☐	☐	☒	
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.	☐	☐	☐	☒	
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.	☐	☐	☐	☒	
5. Where applicable, check vessel internal cladding for signs of bulging, buckling, cracks, holes, etc. If any, specify type, location and extent.	☐	☐	☐	☒	
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.	☐	☐	☐	☒	
7. If possible, check gasket seals on all flanges for signs of corrosion and/or mechanical damage.	☐	☐	☐	☒	
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.	☐	☐	☐	☒	
2. If applicable, check vessel's internals for signs of corrosion, distortion and deterioration, missing components etc.	☐	☐	☐	☒	
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.	☐	☐	☐	☒	

Detail of Findings

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

UT thickness readings were taken on areas where coating breakdown was noted. No areas of concern

ID Tag:
Certified By: Trenergy Inc
MAWP: 210/-9 PSIG @ 149F
MDMT: -16.6F @ 250/-9 PSIG
Serial No.: 062
Year Built: 1998
CRN: 9094.8

MAWP: 1724/-62 KPAG @ 65C
MDMT: -27C @ 1724/-62 KPAG
Serial No.: 062
Year Built: 1998
CRN: 9094.8

PSV Tag:
L&S Job: 09-16828-3
Date: February 24, 2009
Set Pressure: 1723 KPA
Capacity: 18649 SCFM
Model: JPV 15A

Detail of Findings

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

	
Photo 1 – North face of North vessel support, paint coating in good condtion	Photo 2 – South face of North vessel support, coating breakdown and corrosion only on lower flange connection to concrete
	
Photo 3 – Steel to concrete connection, coating breakdown mainly on edges	Photo 4 – South face of South vessel support, paint in good condtion

Detail of Findings

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

Photo 5 – North face of South vessel support, paint coating in good condtion. Coating breakdown on lower flange mainly

Photo 6 – Close-up of lower flange and horizontal crack along top edge of concrete

Photo 7 – Earthing strap connection North vessel support

Photo 8 – Earthnig strap and connections on North vessel support

Detail of Findings

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

Photo 9 – Earthing strap connection on South vessel support

Photo 10 – Earthing strap on vessel support South side, general photo

Photo 11 – Showing ID plate

Photo 12 – Showing ID plate

Detail of Findings

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

Photo 13 – Showing ID plate

Photo 14 – Showing ID plate

Photo 15 – Nozzle N6, in generally good condtion, no areas of concern

Photo 16 – Nozzles N3B & N4B, coating breakdown and light corrosion located only on flange connection, studs and nuts CAT III

Detail of Findings

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

Photo 17 – Nozzle N2, coating breakdown only on flange connection. Studs and nuts uncoated but in good condtion, CAT III

Photo 18 – Nozzle N5, coating breakdown only located on flange connection, studs and nuts CAT III

Photo 19 – Manhole, coating breakdown on flanges only. Studs and nuts uncoated, CAT III

Photo 20 – N10, insulation bag in good condtion, studs and nuts CAT III

Detail of Findings

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

Photo 21 – General condtion of East side shell, only a few small isolated patches of coating breakdown and light corrosion located on the upper section of shell

Photo 22 – General condtion of East side shell, only a few small isolated patches of coating breakdown and light corrosion located on the upper section of shell

Photo 23 – General condtion of East side shell, only a few small isolated patches of coating breakdown and light corrosion located on the upper section of shell

Photo 24 – General good condtion of North dome end, photo taken facing South

Detail of Findings

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

Photo 25 – West side shell in general condtion, photo taken facing South

Photo 26 – West side shell in general condtion, photo taken facing South

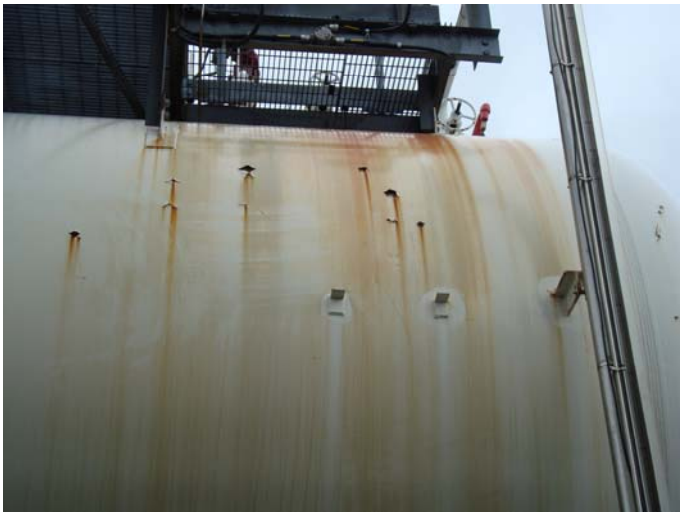


Photo 27 – West side shell in general condtion. Showing small isolated patches of coating breakdown and light corrosion, larges patch measuring approx 50mm x 20mm all photos taken facing South

Photo 28 – Small isolated patches of coating breakdown and light corrosion on the upper South-East side shell Dome end

Detail of Findings

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

Photo 29 – Nozzles N3A/N4A/N8/N1, coating breakdown and light to moderate corrosion located only on flanges. All studs and nuts are uncoated but are in good condtion, CAT III

Photo 30 – South-West upper side shell, same as photo 27

Photo 31 – Nozzle N9, coating breakdown on flange connection only studs and nuts have lost paint coating but are still in good condtion, CAT III

Photo 32 – General good condtion of top section of vessel

Detail of Findings

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

Photo 33 – Typical condtion of deluge pipe support

Photo 34 – Nozzle N7, coating breakdown only on flange connection. Studs and nuts CAT II

Photo 35 – PSV calibration Tag

Photo 36 – Coating breakdown and light corrosion on top of North dome, East side

Detail of Findings

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

Photo 37 – Coating breakdown and light corrosion on top of North dome, East side

Photo 38 – Very small isolated patches of coating breakdown on North dome, top Centre

Photo 39 – General view along top section of vessel, all good condtion, photo taken facing South

List of Attachments

Attachment 1: PT-D2100C-090315-VR-UT (Page 1 to 2)
Attachment 2: PT-D2100C-090511-JL-UT (Page 1 to 3)
Attachment 3: UT Diagram

End of Report

INSPECTION REPORT

EM&I Jacques Ltd.

Ultrasonic Inspection Survey for Vessel Inspection			
Location:	Point Tupper	**EM&I J Report No.:**	PT-D2100C-090315-VR-UT
Client Name:	Exxon Mobil Sable	**Client Ref No.:**	PT-11573614-001-D2100C
Client Rep.:	Dale Groves	**Inspector Name:**	Victor Ritchie
WO No.:	11573614	**Inspection Date:**	March 15, 2009
SPO No.:	4501869140	**Inspection Time:**	Various
Workscope No.:	PT-2008-VESSEL-EXT-03	**System:**	Propane
Previous Report No.	NA	**EM&I J Job No:**	EMJ0132.33
Ref. Drawing No.:	LA-B23-F-22-8051-01-Z3, 98-CA-399735-1B-5, 98-CA-399735-4B-0		
Technician Certifications:	PCN UT 2	**Certification Expiry Date:**	January 29, 2014
Inspection Code:	NA	**Inspection Procedure:**	EM&I
Item Inspected:	D2100C	**Material (Incl. Vol.):**	CS
Surface Condition:	As coated	**Surface Temp:**	Ambient

Instrument	**Type:** Epoch LTC	**Equipment S/N:** 090100701	**Cal Due Date:** January 24, 2010
Instrument Settings	**Reference Level:** 80fsh	**Gain:** 50db	**Reject Settings:** NA
Search Unit Cables	**Type:**	**Length: 5'**	**Transfer Value:**

Calibration Block:	Step wedge 2.5-12.5mm	**Calibration Block S/N:**	CB2
Simulation Block:	NA	**Couplant:**	Ultragel
Computerized Program:	NA		

Transducer Mfg:	Type:	Model No.:	Angle:	Frequency:	Size:
Panametrics	dual element	D790SM	0	5MHz	10mm

Inspection Summary

Restricted Access?	☐ Yes	☒ No	Comments:

Comments:

UT measurments were taken using side wall echo technique and readings were recorded.
This does not constitute a UT survey.
See below for locations and readings. All readings are in millimeters.

Inspection Summary

Item Identification	Test Point	Diameter (inches)	Nominal Wall Thickness (mm)	Minimum Wall Thickness (mm)	Average Wall Thickness (mm)
Shell Bottom	TP1	144"	28.6	30.5	N/A
Shell Bottom	TP2	144"	28.6	30.7	N/A
Shell Bottom	TP3	144"	28.6	30.6	N/A
Shell Bottom	TP4	144"	28.6	30.9	N/A
Shell Bottom	TP5	144"	28.6	30.8	N/A
Shell Bottom	TP6	144"	28.6	30.9	N/A
Shell Bottom	TP7	144"	28.6	30.7	N/A
Shell Bottom	TP8	144"	28.6	30.3	N/A
Shell Bottom	TP9	144"	28.6	30.6	N/A
Shell Bottom	TP10	144"	28.6	30.8	N/A
Shell Bottom	TP11	144"	28.6	31.0	N/A
Shell Bottom	TP12	144"	28.6	30.9	N/A
Shell Bottom	TP13	144"	28.6	30.7	N/A
Shell Bottom	TP14	144"	28.6	31.1	N/A
Shell Bottom	TP15	144"	28.6	30.8	N/A
Shell Bottom	TP16	144"	28.6	30.9	N/A
Shell Bottom	TP17	144"	28.6	31.0	N/A
Shell Bottom	TP18	144"	28.6	30.8	N/A
Shell Bottom	TP19	144"	28.6	30.4	N/A
Shell Bottom	TP20	144"	28.6	30.3	N/A
Shell Bottom	TP21	144"	28.6	30.6	N/A
Shell Bottom	TP22	144"	28.6	30.9	N/A
Shell Bottom	TP23	144"	28.6	31.3	N/A
Shell Bottom	TP24	144"	28.6	30.9	N/A
Shell Bottom	TP25	144"	28.6	30.8	N/A
Shell Bottom	TP26	144"	28.6	30.4	N/A
Shell Bottom	TP27	144"	28.6	30.3	N/A
Shell Bottom	TP28	144"	28.6	30.3	N/A
Shell Bottom	TP28	144"	28.6	30.4	N/A
Shell Bottom	TP29	144"	28.6	30.6	N/A
Shell Bottom	TP30	144"	28.6	30.6	N/A
Shell Bottom	TP32	144"	28.6	30.9	N/A
Shell Bottom	TP33	144"	28.6	30.4	N/A
Shell Bottom	TP34	144"	28.6	30.6	N/A
Shell Bottom	TP35	144"	28.6	30.7	N/A
Shell Bottom	TP36	144"	28.6	30.9	N/A

End of Report

INSPECTION REPORT

EM&I Jacques Ltd.

Ultrasonic Inspection Survey for Vessel Inspection			
Location:	Point Tupper	**EM&I J Report No.:**	PT-D2100C-090511-JL-UT
Client Name:	Exxon Mobil Sable	**Client Ref No.:**	PT-11573614-001-D2100C
Client Rep.:	Dale Groves	**Inspector Name:**	John Lee
WO No.:	11573614	**Inspection Date:**	March 11, 2009
SPO No.:	4501869140	**Inspection Time:**	Various
Workscope No.:	PT-2008-VESSEL-EXT-03	**System:**	Propane
Previous Report No.	NA	**EM&I J Job No:**	EMJ0132.33
Ref. Drawing No.:	LA-B23-F-22-8051-01-Z3, 98-CA-399735-1B-5, 98-CA-399735-4B-0		
Technician Certifications:	PCN UT 2	**Certification Expiry Date:**	May 21, 2012
Inspection Code:	NA	**Inspection Procedure:**	EM&I
Item Inspected:	D-2100C	**Material (Incl. Vol.):**	C/S
Surface Condition:	As coated	**Surface Temp:**	Ambient

Instrument	**Type:** Epoch LTC	**Equipment S/N:** 090108103	**Cal Due Date:** March 11, 2010
Instrument Settings	**Reference Level:** 80fsh	**Gain:** 60db	**Reject Settings:** NA
Search Unit Cables	**Type:**	**Length: 5'**	**Transfer Value:**

Calibration Block:	Step wedge 2.5-12.5mm	**Calibration Block S/N:**	09-1652
Simulation Block:	NA	**Couplant:**	Ultragel II
Computerized Program:	NA		

Transducer Mfg:	Type:	Model No.:	Angle:	Frequency:	Size:
Panametrics	dual element	D790SM - 625220	0	5MHz	10mm

Inspection Summary

Restricted Access?	☐ Yes	☒ No	**Comments:** Rope Access Required

Comments:

UT spot readings were taken and the readings were recorded.
See below and Attachment 3 for locations and readings. All readings are in millimeters.

Readings on North cap where taken facing South and South cap readings were taken facing North.

Inspection Summary

Item Identification	Test Point	Diameter (inches)	Nominal Wall Thickness (mm)	Minimum Wall Thickness (mm)	Average Wall Thickness (mm)
North Cap	12 O'clock	End	28.2	32.0	
North Cap	3 O'clock	End	28.2	31.7	
North Cap	6 O'clock	End	28.2	32.1	
North Cap	9 O'clock	End	28.2	31.2	
North Cap	Centre	End	28.2	32.1	
South Cap	12 O'clock	End	28.2	32.7	
South Cap	3 O'clock	End	28.2	32.1	
South Cap	6 O'clock	End	28.2	31.0	
South Cap	9 O'clock	End	28.2	32.7	
South Cap	Centre	End	28.2	31.6	
Panel 1	West	144"	28.6	29.9	
Panel 1	Centre	144"	28.6	30.0	
Panel 1	East	144"	28.6	30.1	
Panel 2	West	144"	28.6	29.6	
Panel 2	Centre	144"	28.6	30.4	
Panel 2	East	144"	28.6	29.7	
Panel 3	West	144"	28.6	29.4	
Panel 3	Centre	144"	28.6	30.1	
Panel 3	East	144"	28.6	30.0	
Panel 4	West	144"	28.6	30.0	
Panel 4	Centre	144"	28.6	30.1	
Panel 4	East	144"	28.6	29.8	
Panel 5	West	144"	28.6	29.8	
Panel 5	Centre	144"	28.6	30.9	
Panel 5	East	144"	28.6	29.9	
Panel 6	West	144"	28.6	30.2	
Panel 6	Centre	144"	28.6	30.1	
Panel 6	East	144"	28.6	30.1	
Panel 7	West	144"	28.6	29.3	
Panel 7	Centre	144"	28.6	29.8	
Panel 7	East	144"	28.6	29.2	
Panel 8	West	144"	28.6	30.1	
Panel 8	Centre	144"	28.6	30.1	
Panel 8	East	144"	28.6	29.7	

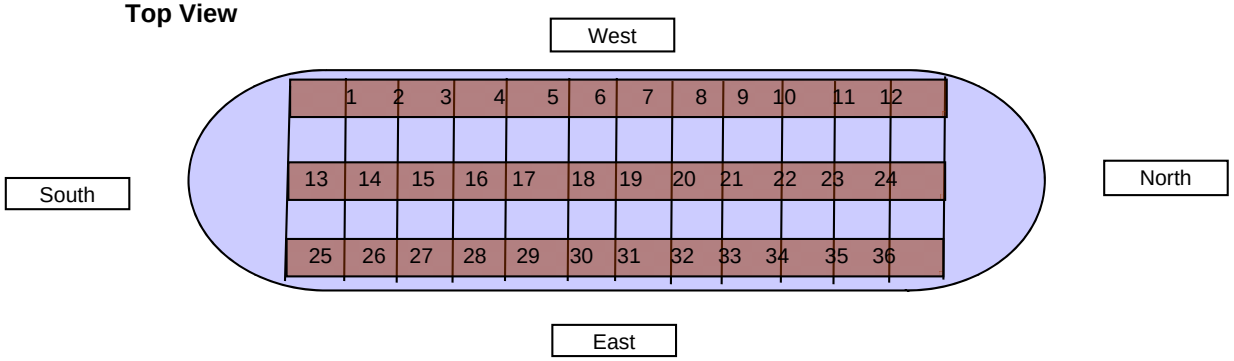
Inspection Summary

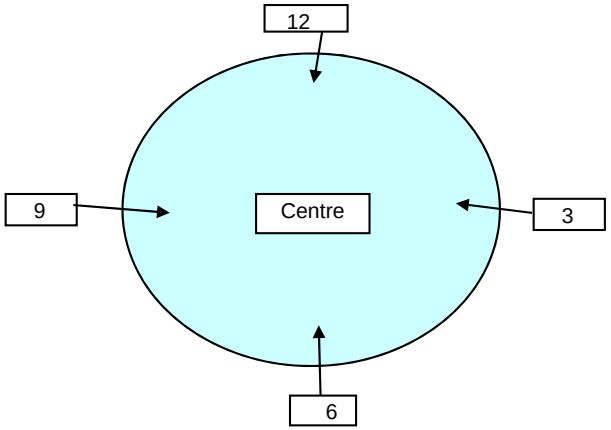
Item Identification	Test Point	Diameter (inches)	Nominal Wall Thickness (mm)	Minimum Wall Thickness (mm)	Average Wall Thickness (mm)
Panel 9	West	144"	28.6	29.7	
Panel 9	Centre	144"	28.6	30.2	
Panel 9	East	144"	28.6	30.1	
Panel 10	West	144"	28.6	29.7	
Panel 10	Centre	144"	28.6	29.8	
Panel 10	East	144"	28.6	29.7	
Panel 11	West	144"	28.6	30.1	
Panel 11	Centre	144"	28.6	30.1	
Panel 11	East	144"	28.6	30.3	
Panel 12	West	144"	28.6	29.9	
Panel 12	Centre	144"	28.6	29.9	
Panel 12	East	144"	28.6	30.0	

End of Report

Three UT readings were taken on each plate. One on the East, one top Center, and one on the West side. The areas are numbered and readings were recorded on the UT report. Only the lowest readings were reported.

Top View





UT readings were taken on vessel end caps at the Centre and at 12,3,6 & 9 O'clock positions. Lowest readings were recorded.