



Client	Murphy Oil Company Ltd.	Inspection Date	Aug 10, 2017		
Prov. Reg. #	AB 0616499	Inspection Type	VE / UT / PSV		
Equipment Type	Test Separator	Location	Kaybob - Laydown Yard		
Tag/Equip.	V-100	LSD	AB		
Status	Not In Service	Downhole LSD			
Manufacturer	Penfabco Ltd.	Area	FOX CREEK		
Serial Number	PE-12461	Year Built	2012		
CRN #	P7883.213	Service	Sour		
Comp/Unit Id	Test Sep.Blg,	Manway	None		
Nat.Board #		Coating	No		
Interim Insp'n		Interim Type			
Next Thorough Insp		Next Insp Type	VE / UT / PSV		
Length		Height	144 in		
Volume	Capacity	Client Reference			
Owner	Murphy Oil Company Ltd.	RT	1	HT	YES
Foreman		RAE Job No.	0010.17.004.011		
ABSA	Plant: H Vessel: P Process: W Special: S	ASME	Sec. VIII div. 1		
History Log	<p>Data dump from Murphy Equipment Inventory - entered 2017-02-02 Installed in September 2013.</p> <p>PSV Data verified as per the Engineered stamped P&ID drawing PSV Calculation entered 5-May 2020 Set Pressure: 9928 KPag Orifice Area (API): 0.503 in² Selected Orifice: G Calculated capacity 19125 SCFM (gas) Required Capacity: 2099 SCFM Gas, 1854 SCFM Air</p> <p>Vessel listed 'Not in Service' on 2021 AB Vessel in Service list updated by Daniel Mora and CI on June 17, 2021</p> <p>AB-10 - Not in Service - internal entry June 29, 2021 ABSA - A0616499 Alteration MAWP 2021-11-30</p> <p>MAWP was re-rated to 1408 PSI and is now it is Kaybob spare in Laydown area. AB-10 - Relocated - internal entry Dec2023</p>				



Component	Shell of Vessel		
MAWP	1408.0 PSI @ 160 °F	MDMT	-20 °F @ 1408.0 PSI
Material		Material Thickness	
Diameter	32 in	Length	
Corrosion Allowance	0.125 in		

Valve Tag No	PSV-651	Relief Type	Pressure Relief Valve
Manufacturer	Mercer	Set Pressure	1439.9 PSI
Serial Number	808604	Capacity	11315 SCFM
Model	91-43G51P27N1	Last Service	Apr 6, 2016
CRN	0G8841.5C	Next Service	2020
Service Co.	Rocky Mountain Valve	Service Interval	48 Months
Service Co. Tag	17823F	Inlet Size	2 in
ASME Stamp	UV	Outlet Size	2 in
NB Stamp	YES	Connection	Threaded
Relief Dest.	To Pop Tank	Valve Loc.	On Piping
Comments		Client Reference	

Component	Heads of Vessel		
Material		Material Thickness	
Corrosion Allowance	0.125 in		



Comments

The following RAE Procedure(s) was/were used in inspecting this vessel:

INS-624B Unfired Pressure Vessels Procedure

INS-670B Separator Inspection Procedure

NDE-701B UT-1 Ultrasonic Thickness Measurement Procedure

Figure: 1



Site LSD Sign



Building Observations

Access # of Doors:1 Gas test port: No
Catalytic Heater: Yes Fire eye: No Gas Detection: Yes
Drainage/Condition: Acceptable Lighting: Good
Supports : Piles\Skid
Floors : Checker plate steel
Equipment placed ergonomically: Yes

The building was generally in good condition and well supported.
The checker plate floor was clean and in good condition.
The building had adequate lighting for visual inspection.
The doors and windows functioned well and were in good condition.
There was generally good access to the equipment in the building.
There were no combustible materials located in the building.
The ground wire was securely attached to the building structure.

Figure: 2



Building General



Piping Observations

Are Mechanical connections acceptable for service? Acceptable

Clad: Yes Painted: Yes Insulated: Yes

Condition: Acceptable

Type: Shoe

Are there any dead legs: No

Piping supported adequately: Yes

The piping inside the building was painted and the piping located outside the building was cladded and insulated.

The piping was sufficiently supported.

There was no damage, distortion or stress evident on the piping.

The drain lines and instrumentation tubing had threaded and/or flanged connections, and showed no signs of leakage.

Figure: 3



Piping General



Figure: 6



PSV Service Tag

Figure: 7



PSV General



External Observations

Certificate of inspection permit : No
Grounded : Yes CUI checked : No
Attachments : No Drains :Automatic
Vessel Orientation : Vertical Installation :Partial
Ladders/Platforms : N/A
Support Structure : Skirt
External Covering : Coated
Condition : Acceptable
Manway : No
Nameplate attached and legible : Yes

The nameplate was legible and securely mounted to the vessel.
The heads, shell, nozzles and bolting appeared to be in good condition.
There was no damage or distortion evident on the vessel surface.
There was no stress evident on piping or nozzle connections.
The gauges were in good condition.
There was scattered external corrosion visible on the vessel surfaces.
There were no structural attachments fixed to the vessel.

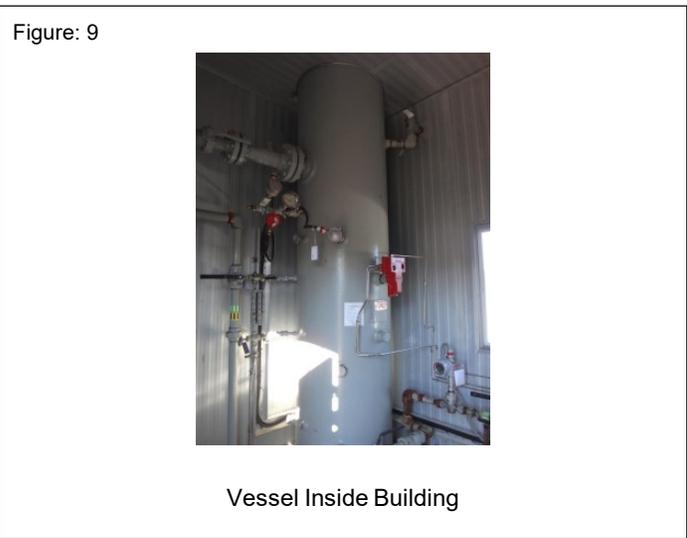
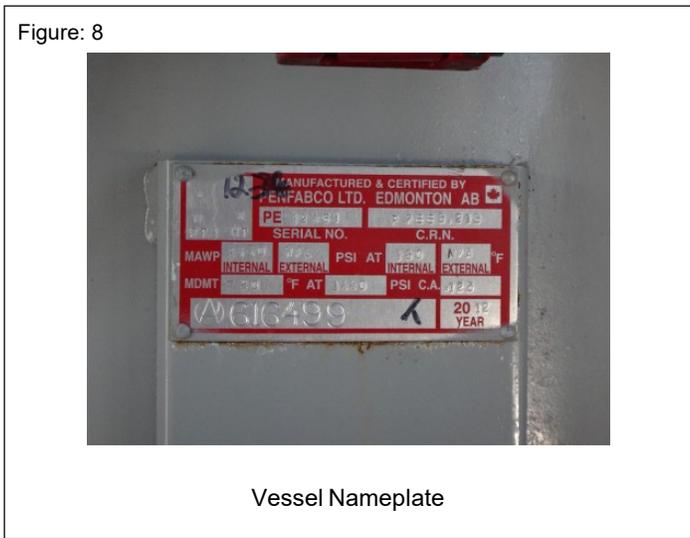




Figure: 10



Vessel Outside Building

Figure: 11



Vessel Support

Figure: 12



Vessel Bottom Head

Internal Observations

No internal inspection were completed.

UT1 Observations

See attached ultrasonic testing (UT) report.

General Observations

Equipment was not in operation at time of inspection. (Field Shutdown)

There was no vibration apparent at the time of inspection.

No vibration induced damage was evident.

The gauge(s) and associate equipment all appeared to be in good condition and operational.

Recommendations

1. The vessel is fit for service.
2. The PSV service report needs to be sent to RAE Engineering and Inspection Ltd. for review and data entry.
3. No PSV capacity calculation found at the time of inspection, therefore conduct calculations to close out NCR.



Marnes du Plessis

Alberta IBPV #A-74773
TSASK Pressure Equipment Class I #250
CWB Level II #8117

Cobus du Plessis

Alberta IBPV #A-60923

Inspector : Marnes du Plessis

Reviewed By: Cobus du Plessis



RAE Engineering and Inspection Ltd
 4810 - 93 Street Edmonton, AB, T6E 5M4
 ph: 780-469-2401 fx: 780-468-2422

Inspection Date: 10-Aug-17
 Page: 1 of 4
 RAE Report #: 17-0010.17.004.011-CT-UT-39
 Project #: 0010.17.004.011
 Location/LSD: Kaybob / 13-18-64-17W5M
 Procedure: UT-1 - #701B Rev. 6
 Acceptance Code: ASME VIII, Div. 1

Ultrasonic Thickness Examination

Client: Murphy Oil Company Ltd.
 Address: 4000, 520 - 3 Ave, SW, Calgary, AB, T2P 3Y3
 Client P.O.#: N/A
 Client Representative: N/A

JOB DESCRIPTION

Item Number: A0616499
 Item Description: Vertical Separator
 Material: Carbon Steel
 Surface: Painted Bare Steel Machined
 Condition: As Ground Shot Blasted As Welded
 Surface Temp: < 0 °C 0-120 °C 120-260 °C >260 °C

EQUIPMENT, TECHNIQUE & CALIBRATION

Instrument Mfr:	GE	Model:	DMS-Go +	S/N:	15100059	Cal. Due:	Dec-5-2017								
Cal Block S/N:	14-1220	1 or 2 Point Cal:	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	Calibrated Range:	0.500 - 1.000	Couplant:	UT-X								
Probe Model	Freq MHz	Angle	Dia. (in)	Probe Type		Manufacturer	Serial #	Cable length	Delay line	Vel. (m/sec)	Transfer Value	Ref dB	Ref %FSH	Scan dB	Range (in)
1	063-200-106	5.0	0°	0.25	<input type="checkbox"/> Single <input checked="" type="checkbox"/> Dual	Stresstel	15A01J49	4'	<input type="checkbox"/>	5850	NA	60	80	As Needed	3
2					<input type="checkbox"/> Single <input type="checkbox"/> Dual				<input type="checkbox"/>						
3					<input type="checkbox"/> Single <input type="checkbox"/> Dual				<input type="checkbox"/>						
4					<input type="checkbox"/> Single <input type="checkbox"/> Dual				<input type="checkbox"/>						

Scope: Conduct 0° straight beam ultrasonic testing on a vertical separator looking for any signs of wall thinning due to corrosion, erosion, laminations or inclusions.

Results: Nominal and minimum measurements were not provided. The measurements obtained show the thickness to be consistent throughout scan locations.

There were no signs of wall thinning, internal corrosion, erosion, laminations or inclusions at the time of inspection.

Please see the following pages for the pictures of the nameplate and the overall view, the isometric drawings, and the thickness measurements.

Client Representative	PRINT	SIGNATURE	CGSB#:	18297	CGSB Level:	1
1 ST Technician	Chelsea Tomsett PRINT	 SIGNATURE	SNT#:		SNT Level:	
2 ND Technician	PRINT	SIGNATURE	CGSB#:		CGSB Level:	
			SNT#:		SNT Level:	

	RAE Engineering and Inspection Ltd 4810 - 93 Street Edmonton, AB, T6E 5M4 ph: 780-469-2401 fx: 780-468-2422	Inspection Date:	10-Aug-17	Ultrasonic Thickness Examination
		Page:	2 of 4	
Client:	Murphy Oil Company Ltd.	RAE Report #:	17-0010.17.004.011-CT-UT-39	
Item Number:	A0616499	Project #:	0010.17.004.011	
Item Description:	Vertical Separator	Location/LSD:	Kaybob / 13-18-64-17W5M	
		Procedure:	UT-1 - #701B Rev. 6	
		Acceptance Code:	ASME VIII, Div. 1	

Photographs of Equipment



Nameplate



Overall View of Equipment

Client Representative	PRINT	SIGNATURE	CGSB#:	18297	CGSB Lvl:	1
1 ST Technician	Chelsea Tomsett PRINT	 SIGNATURE	SNT#:		SNT Lvl:	
2 ND Technician	PRINT	SIGNATURE	CGSB#:		CGSB Lvl:	
			SNT#:		SNT Lvl:	



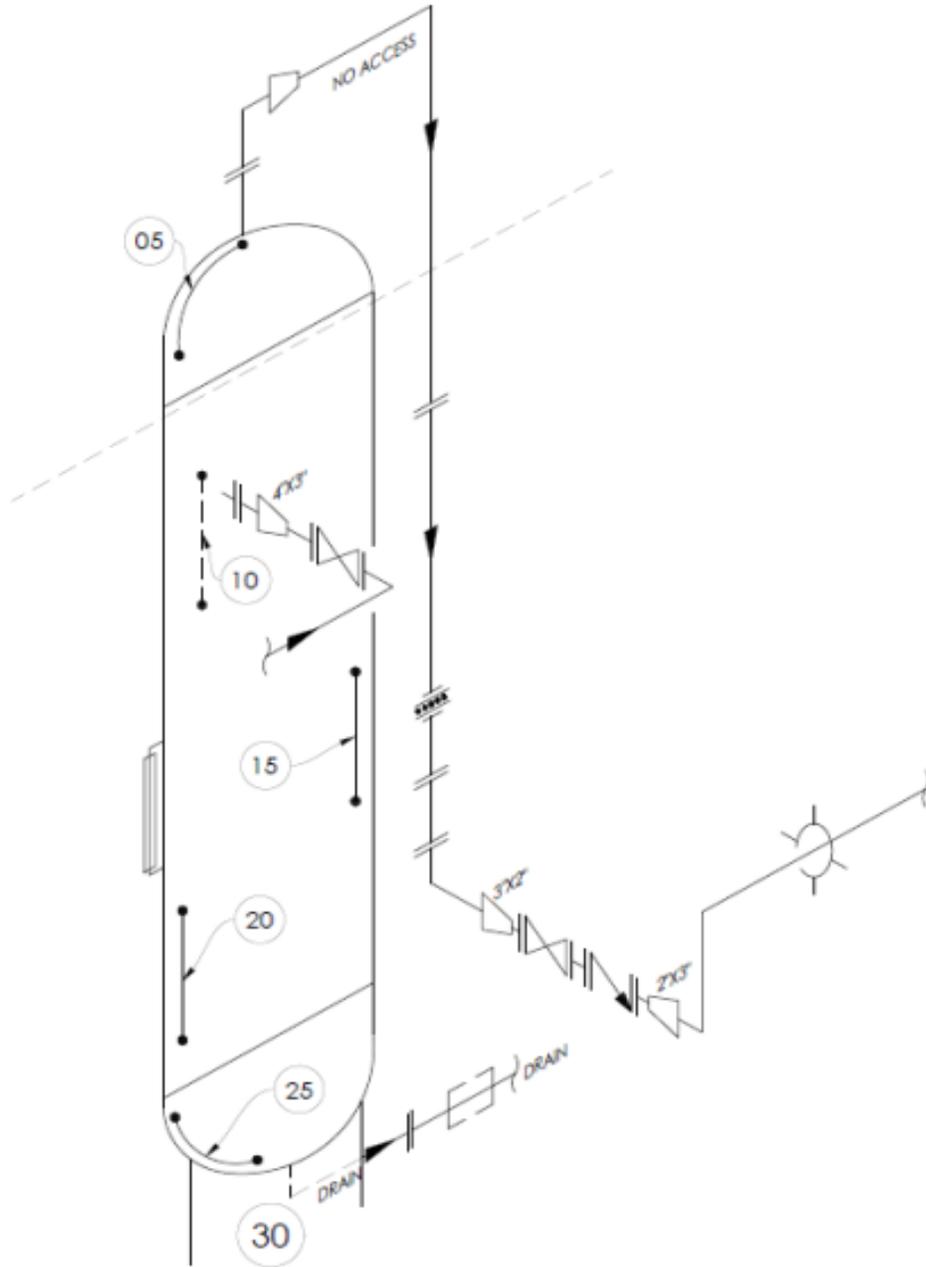
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Ultrasonic Thickness Examination

Client: Murphy Oil Company Ltd.
 Item Number: A0616499
 Item Description: Vertical Separator

ISO Drawing of Equipment and TMLs



Client Representative	PRINT	SIGNATURE	CGSB#:	18297	CGSB Lvl:	1
1 ST Technician	Chelsea Tomsett PRINT	<i>Chelsea Tomsett</i> SIGNATURE	SNT#:		SNT Lvl:	
2 ND Technician	PRINT	SIGNATURE	CGSB#:		CGSB Lvl:	
			SNT#:		SNT Lvl:	

