



Pressure Vessel Inspection Report - EXTERNAL

PIM Sales Order #:	133- 03	Date:	June 06 ,2024
PIM Work Order #:	IS- 01	Equipment #:	Suction Scrubber A193905

Client:	
Facility:	Vessel Name: Suction Scrubber
Location (LSD): Beiseker, AB	Equipment Number:
Status: In-Service Inspection on Operating Equipment <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number: Orientation: Vertical
In-Service Inspection on Non-Operating Equipment <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Remains In-Service: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Type of Inspection: <input checked="" type="checkbox"/> Baseline <input type="checkbox"/> Interval <input type="checkbox"/> Repair/Alteration	

1.0 NAMEPLATE DATA

Jurisdictional		CRN: F8802.2	
Registration Number: A193905		Year Built: 1986	
Manufacturer: Thermo Design Engineering Ltd.		Size (diameter x length-estimate): 30" x 128.5"	
Vessel Serial Number: 330		Shell Thickness: 0.375 " (9.52 mm)	
Shell Thickness: 0.375 " (9.52 mm)		Shell material: SA-516-70	
Head Thickness: 0.357 " (9.07 mm)		Head material: SA-516-70	
Tube Wall Thickness: n/a "		Tube Material: n/a	
Tube diameter: n/a "		Tube length: n/a	
Channel Thickness: n/a "		Channel material: n/a	
Design Pressure:	Shell: 375 psi (1586 kPa)	Operating Pressure:	Shell: 0 psi
MAWP psi	Tubes: n/a		Tubes: n/a
Design Temperature:	Shell: 100 °F (38°C)	Operating Temperature:	Shell: n/a °F
MDMT -45 °C	Tubes: n/a		Tubes: n/a
X-ray: Partial RT-2		Heat treatment: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Code Parameters: ASME, SEC VIII, DIV I		Code Case:	Joint efficiency (if on nameplate): 1.0
Corrosion Allowance: 0.0326" (0.83 mm)		Manway: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

2.0 PRESSURE SAFETY VALVE NAME PLATE DATA

Manufacturer / Model/ Serial # & Code Stamp	Size (Inlet x Outlet)	Set Pressure (psi)	Capacity (scfm)	CRN	Tag Number (s)	Set Date
Manufacturer:						
Model:						
Serial #:						
Code Stamp:						
Location of PRV:	<input type="checkbox"/> On Vessel	<input type="checkbox"/> In System	<input type="checkbox"/> Tube Side	<input type="checkbox"/> Open to Atmosphere	<input type="checkbox"/> Non Code	<input type="checkbox"/> Vent to Relief System
Inlet Isolation Valve:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If Yes - Is there a procedure documented for control of lock out?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are the Valves Locked Out?	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	Comments:			
Is PSV capacity verified to design condition?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NO PSV			

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3.0 SERVICE CONDITIONS INDICATE ALL THAT APPLY					
<input type="checkbox"/> Sweet	<input type="checkbox"/> Sour	<input type="checkbox"/> Process Oil	<input type="checkbox"/> Gas	<input type="checkbox"/> Water	<input type="checkbox"/> Low Temp
<input type="checkbox"/> Amine	<input type="checkbox"/> LPG	<input type="checkbox"/> Condensate	<input type="checkbox"/> Air	<input type="checkbox"/> Glycol	<input type="checkbox"/> Thermal Fluid
Other (Describe): Unknown					
4.0 PIPING DATA					
Primary Flange Rating:	150	ASME B31.1 <input type="checkbox"/>	B31.3 <input checked="" type="checkbox"/>	B31.5 <input type="checkbox"/>	Other Normal
Piping Design Pressure:	<input checked="" type="checkbox"/> psi <input type="checkbox"/> kpa	Piping Operation Pressure:		0 <input checked="" type="checkbox"/> psi <input type="checkbox"/> kpa	
Nearest Vessel Design Pressure:	<input checked="" type="checkbox"/> psi <input type="checkbox"/> kpa	Diameters Welded:			
Comments:	No Piping with vessel		Diameters Threaded: No piping		

Fill out all forms as completely as possible. All information is important!
Use back of sheets to record additional information or sketch if required.

G - Good	F - Fair	P = Poor	N/A = Not Applicable
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External Inspection Items	G	F	P	N/A	COMMENTS
NDE methods UT/MPI report done on vessel Chief Inspection to review methods	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See UT Report Attached
External Condition Assess paint, record location, size and depth of corrosion or damage.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Tell Tale Drilled <input checked="" type="checkbox"/> Not Tell Tale Drilled
Nozzle Assess and record paint look for leakage, and stud engagement and corrosion, verify / inspect gussets. Record any damage, deflection, etc.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Some corrosion on flange face.
Leakage Record Report leakage at flanges, threaded joints, weep holes on repads, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No records
Saddle Record corrosion, buckling, dents, etc. Look at vessel surface area near supports and attachment welds. Verify no signs of leakage at attachment to vessel and ground wire attached.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No cracks. Skirt.
Anchor Bolts Hammer tap to ensure secure. Record corrosion, cracking in threads or signs of deformation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Anchor holes look acceptable.
Concrete Foundation Record cracks, spalling, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Gauges Verify gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
External Piping Verify pipe is supported. (Clamps, supports, shoes, etc. in place). Record any structural overload, deflection, verify paint condition, external corrosion, studs and nuts, etc.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 bolted flanges and 8 threaded connections. Threads appear good.

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External Inspection Items	G	F	P	N/A	COMMENTS
Valving Verify/record visible leaks properly supported and CSO/CSC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No Valves
PSV Verify set is at or below vessel MAWP. Discharge piping is greater to or equal to valve outlet and is properly supported / routed. Verify PSV seals/ tags. Status of block valves, check car seal log.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
PSV Verify properly installed and is supported adequately for the discharge loads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Insulation/Cladding Verify condition around appurtenances no damage present, and there is no ingress of moisture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Ladder/Platform Describe condition, supports Hazards and compliance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Recommendations or corrective actions: Vessel is Fit for Service OR Describe Corrective Actions (Operations to, discuss with Chief Inspector where necessary, and get remedial action implemented)					
Observations and Findings:					
Internally shows rust throughout (Extent of rust unknown).					
Recommendations:					
<input type="checkbox"/> Replace PSV <input type="checkbox"/> Add PSV <input type="checkbox"/> Add Autodrain <input type="checkbox"/> Replace PI <input type="checkbox"/> Add PI <input type="checkbox"/> Other - Specify					
Summary:					
Inspection Interval <u> 1 </u> # years PSV Service Interval <u> 1 </u> # years (Determined by Chief Inspection guidelines of Peregrine Integrity Management Owner-User Inspection Program)					
Vessel Scrapped - All three conditions below must be satisfied					
Vessel has been removed from service and there is no intention to return it to pressure service. The nameplate has been removed and all other identification has been removed. The vessel is in a condition that it cannot be pressurized. i.e. A hole has been cut in the vessel, or a nozzle has been removed, or a head has been cut off.					
<input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____ (yyyy-mm-dd)					
Vessel sold and transferred the registration of the vessel to:					
TO: _____ Date: _____ (yyyy-mm-dd)					

Inspected By:	<u>Patrick McLean</u> API-510 # 116881, CGSB 13209	Date:	<u>2024-06-06</u> yyyy-mm-dd
Verified By Chief Inspector:	<u>Paul Frederick</u> ABSA ISI # A-82133 (Cert # 000357); API-510 # 51039 TSASK Class I # 80543, National Board # 1654533	Date:	<u>2024-06-13</u> yyyy-mm-dd



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ACTION ITEMS LIST

Action Item	Responsible Party	Date Resolved

Report #: Pressure Vessel Inspection Report - External
 Date: 2024-06-06
 Client: Gunning Services
 SO #: 133- 03

EXTERNAL - Suction Scrubber
A193905

Equipment Photos

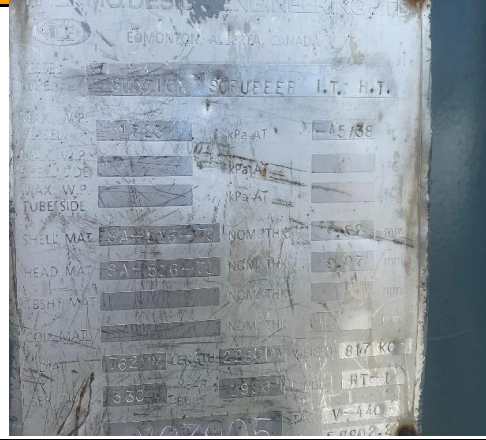


Photo 1: Nameplate

Photo 2: Nameplate

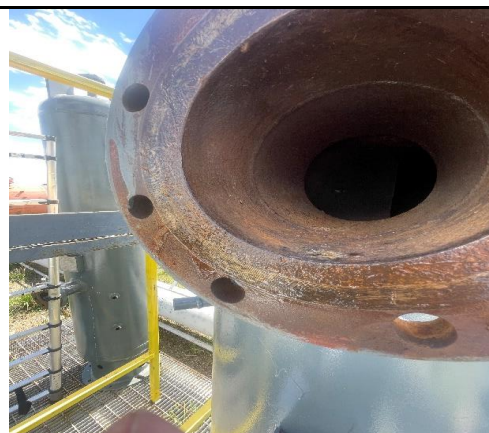


Photo 3: Vessel Overview

Photo 4: Surface Corrosion on Flange Face



Photo 5: Surface Corrosion on Flange Face

Photo 6: Internal Rust

Report #: Pressure Vessel Inspection Report - External
 Date: 2024-06-06
 Client: Gunning Services
 SO #: 133- 03

EXTERNAL - Suction Scrubber
A193905

Equipment Photos



Photo 7: Internal Rust



Photo 8: Internal Rust



Photo 9: Nameplate has 2 mounts



Photo 10: Threaded connection



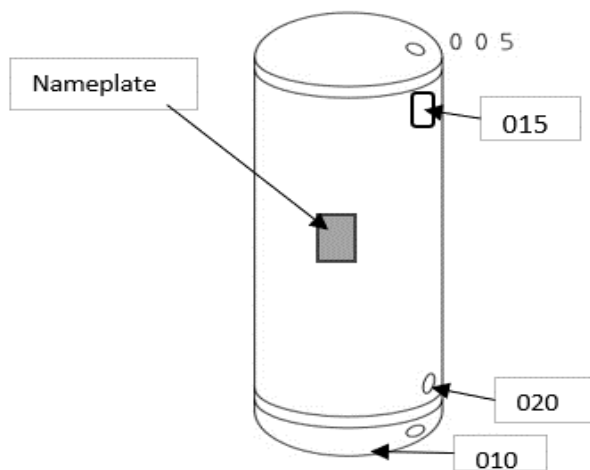
Photo 11: Skirt

Ultrasonic Thickness External Report

PIM Sales Order #	133- 03	Manufacturer:	Date:	June 06 ,2024
PIM Sales Order #	TE-01	Thermo Design Engineering Ltd.	Report #:	PIM-UT- 133-03-20240606-001

Client:	Gunning Services	Tag #:	Suction Scrubber
Facility:	Gunning Beiseker Yard, AB	Serial #:	330
Location:	Beiseker, AB	Provincial	A193905
Equipment Description:	Suction Scrubber	Registration #:	

CONDITION MONITORING LOCATIONS (TML's)



INFORMATION - UT EQUIPMENT DETAILS

METHOD	<input checked="" type="checkbox"/> Thickness	<input type="checkbox"/> Flaw Detection	<input type="checkbox"/> Contact	<input type="checkbox"/> Immersion			
INSTRUMENT	Olympus	MODEL	EPOCH-600	S/N	130573012	DATE	2024-08-15
CAL. BLOCK	Step Wedge	S/N	21-2552	CABLE-TYPE	Coaxial	LENGTH	48"
CAL. BLOCK		S/N		COUPLANT	UT-Ultra-GEL		
CAL. BLOCK		S/N		SPECIAL EQUIP			

INFORMATION - TRANSDUCERS AND CALIBRATIONS

	TEST ANGLE	PROBE TYPE		FREQ (MHZ)	SER NO.	PROBE DIA.	TRANSFER VALUE	TEST FROM		REFERENCE REFLECTOR	REFERENCE		SCAN SENSITIVITY	RANGE
		Single	Dual					FRONT	BACK		dB	% FSH		
1	<input checked="" type="checkbox"/> 0°	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5	813564	0.500"		<input checked="" type="checkbox"/>	<input type="checkbox"/>	1st BW	Various	80	Various	2"
2	<input type="checkbox"/> 45°	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>					
3	<input type="checkbox"/> 60°	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>					
4	<input type="checkbox"/> 70°	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>					
5	<input type="checkbox"/> —	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>					

Peregrine UT Technician

Inspector Name:	Patrick McLean	Qualifications:	CGSB 13209: UT2, MT2, PT2
			SNT: UT2, MT3, PT3

Ultrasonic Thickness External Report

PIM Sales Order #	133- 03	Manufacturer: Thermo Design Engineering Ltd.	Date:	June 06 ,2024
PIM Work Order #	TE- 01		Report #:	Suction Scrubber
			REG #:	A193905

TEST SURFACE AND THICKNESS READINGS

Surface Condition:	<input checked="" type="checkbox"/> Painted	<input type="checkbox"/> As Welded	<input type="checkbox"/> Machined	<input type="checkbox"/> Shot Blasted	<input type="checkbox"/> Clean Bare Metal
Surface Temperature:	<input type="checkbox"/> <0°C (32°F)	<input checked="" type="checkbox"/> 0° (32°F) to 120°C (250°F)	<input type="checkbox"/> 120°C (250°F) to 260°C (500°F)	<input type="checkbox"/> >260°C (500°F)	

DATA RESULTS - UT DATA

1) TML Number	005	010	015	020	025	030	035
TML Description	Top Head	Bottom Head	Top Shell	Bottom Shell			
Direction:							
Flange Rating:							
Pipe Schedule:							
Nominal Thickness:	0.357 "	0.357 "	0.375 "	0.375 "			
Mill Tolerance:	0.000 "	0.000 "	0.010 "	0.010 "			
Corr. Allowance:	0.0326 "	0.0326 "	0.0326 "	0.0326 "			
Minimum Thickness:	0.324 "	0.324 "	0.332 "	0.332 "			
Readings							
Jun 06, 2024	1)	0.360 "	0.385 "	0.366 "	0.360 "		
Jun 06, 2024	2)	0.366 "	0.391 "	0.364 "	0.366 "		
	3)						
	5)						
	6)						
	7)						
	8)						
	9)						
	10)						
	11)						
	12)						
	13)						
	14)						
	15)						
	16)						

Comments:

1)

Ultrasonic Thickness External Report

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PIM Work Order #	TE- 01		Report #:	Suction Scrubber
			REG #:	A193905

2) TML Number	040	045	050	055	060	065	070
TML Description							
Direction:							
Flange Rating:							
Pipe Schedule:							
Nominal Thickness:	"	"	"	"	"	"	"
Mill Tolerance:	"	"	"	"	"	"	"
Corr. Allowance:	"	"	"	"	"	"	"
Minimum Thickness:	0.000"	0.000"	0.000"	0.000"	0.000"	0.000"	0.000"

Readings							
Jun 06, 2024	1)	"	"	"	"	"	"
Jun 06, 2024	2)	"	"	"	"	"	"
	3)						
	4)						
	5)						
	6)						
	7)						
	8)						
	9)						
	10)						
	11)						
	12)						
	13)						
	14)						
	15)						
	16)						

Comments:

2)