

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD:	04-16-060-22W5	Date:	23-Jan-2017	SAP Equipment ID:	66171741
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VESSEL STATIC DATA									
Plant	Foothills North			Op Unit	Bigstone			System WO#:	N/A
Prov. Insp. #	3069255			CRN	M6264.2			Equip Tag #	
Equipment Description	BLOW CASE, GROUP INLET 04-16						Serial #	C305A.HS	
Manufacturer	RUSHTON						Vessel Class	Pressure Vessel	
Internal Access:	No	Description:					Year Built	1994	
MAWP	9929	KPa	@	38	C		MDMT	-29	C
CODE :	U		RT :	2			PWHT :	No	
Diameter	In.	Length	(T/T)	OAL			Orientation:	Horizontal	
Shell	Mat'I		Thickness	in			Corr Allowance	in	
Head	Mat'I		Thickness	in			Corr Allowance	in	
Nozzle	Mat'I		Thickness	mm / in			Corr Allowance	mm / in	
Internal Coating:	No		Internal Clad :	No			Capacity	m ³	
Manway :	No		Inspection Port :	Yes			Support	Saddles	
Nozzle Rating	600	lbs. ANSI	Painted :	Yes			Insulated	No	

PROCESS DATA									
Product Description	Emulsion					Sweet	X	Sour	
Operating Pressure	1034	kPa	Operating Temperature	No gauge					

PSV STATIC DATA									
	Location / Service Company Tag	Size		Set	Capacity	Manufacturer	Model	Service	
SAP/Serial No.		Inlet	Outlet	Pressure	SCFM / Lbs./Hr. / GPM		/ Type	Date	
66172595 : 95C0045		0 mm	0 mm	9928 kpa	7068 (scfm)	CONSOLIDATED	1993C		

PSV, COMPRESSOR BLOWCASE

NDE Equipment records									
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date				

INSPECTION SUMMARY

External

The external visual inspection of the equipment revealed:

- No relevant indications of in-service corrosion/erosion/mechanical defects or damage
- No non-conformances
- No inspection deficiencies
- No requirements for inspection interval change

RECOMMENDATIONS

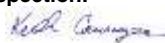
None

NONCONFORMANCES / INSPECTION DEFICIENCIES

None

PRESSURE VESSEL & COLUMN INSPECTION REPORT

REPORT CERTIFICATION

The signatures below certify that inspections/tests have been completed in accordance with the identified inspection strategy and that the specified equipment is considered fit for service until the date of next inspection.			
Inspected by	Keith Courneyea ISI #000246		Date 23-Jan-2017
Reviewed and Approved by	_____	_____	Date _____
Criticality Assessment Rerun	_____	Inspection Planning Rerun	_____
Assessed Next Inspection Date	_____	_____	_____

DETAILED INSPECTION VISUAL EXTERNAL

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)	N/A			
V2	General Corrosion	No			
V3	General Leaks	No			
V4	Vibration	No			
V5	Dissimilar Flange Rating	No			
V6	Ladder/Stairway	No			
V7	Heads	Good			
V8	Guy Wires	N/A			
V9	Electrical Ground	Good			
V10	Painted Inactive Corrosion	No			
V11	Coating/Painting	Good			
V12	Expansion Joint or Bellows	N/A			
V13	Gauge/Site Glass	Good			
V14	Shell	Good			
V15	Jacket	N/A			
V21	Support Other (Please explain)	N/A			
V22	Foundation	N/A			
V23	Anchor Bolts	N/A			
V24	Saddle/Skirt	Good			Saddles
V25	Davit	N/A			
V26	Fireproofing	N/A			
V31	Connections Other (Please explain)	N/A			
V32	Small Branches	N/A			
V33	Nozzles	Good			
V34	Manways	N/A			
V35	Reinforcing Pads	N/A			
V36	Inadequate Thread Engagement	No			
V37	Bolting	Good			
V38	Flanges	Good			
V39	Leak Clamps	N/A			
V41	Insulation Other (Please explain)	N/A			
V42	Damage	N/A			
V43	Penetrations	N/A			
V44	Insulation Jacket	N/A			
V45	Banding	N/A			
V46	Seals/Joints	N/A			
V51	Relief Devices Other (Please explain)	Good			Service in September or 2017. Report attached.
V52	Corrosion	No			
V53	Leaks	No			
V54	Restricted Inlet/Outlet	No			
V55	Manual Operation Lever	N/A			

DETAILED INSPECTION VISUAL INTERNAL

PRESSURE VESSEL & COLUMN INSPECTION REPORT

ID	Description	Condition	Location	NCR	Comments
V1	General Other (Please Explain)				
V2	Corrosion (depth, length, width)				
V3	Erosion				
V4	Distortion				
V5	Blisters				
V6	Deposits				
V7	Heads				
V8	Welds				
V9	Nozzles				
V10	Shell				
V11	Gasket Surfaces				
V21	Internals Other (Please explain)				
V22	Demister				
V23	Baffle/Wier				
V24	Sparger				
V25	Thermowells				
V26	Metallic Linings				
V27	Nonmetallic Linings				
V28	Trays				
V29	Tray Rings				
V30	Other Welded Attachments				

DETAILED INSPECTION OTHER TECHNIQUES

ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

DETAILED INSPECTION UT THICKNESS

CML	Nom. Thk	Current Reading	Short Term Corr Rate	Long Term Corr Rate	Remaining Life	Comments

PRESSURE VESSEL & COLUMN INSPECTION REPORT

PHOTOS



Location



Package overview



Nameplate



Vessel overview



Inlet piping



Outlet piping

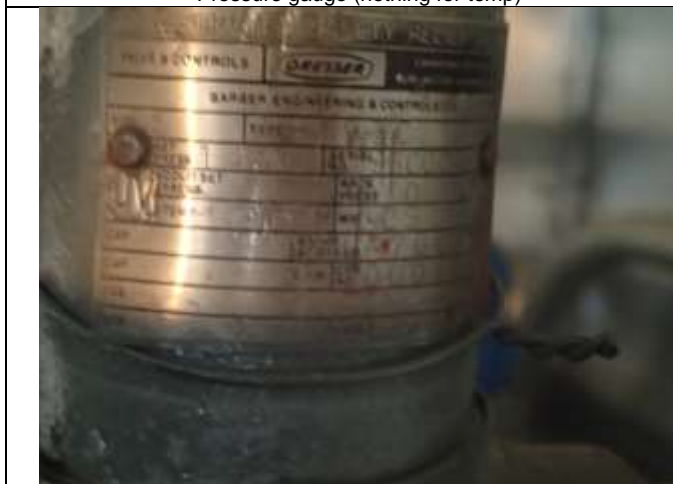
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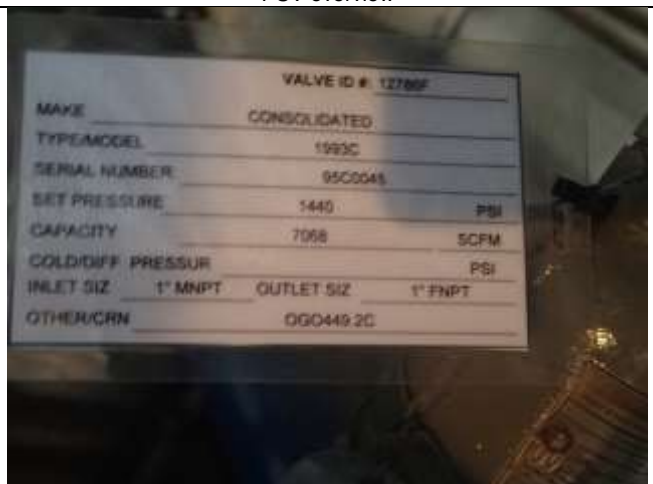
Pressure gauge (nothing for temp)



PSV overview



PSV nameplate



PSV service tag A



Service tag B (was serviced in 2017)



Package Grounding

Customer: Husky Oil Operations Ltd.
Facility/Loc:
Cust PO: TBA
Cust Ref:
Tag : **PSV 171**

Product: Relief Valve
Service Req'd: Repair
Received: 14-Sep-2017
Seal: Intact
Seal ID: RMV

Code Case : NB
Code Symbol: UV

EQUIPMENT DATA

Mfr : Consolidated
Model: 1993C
CRN #: 0G0449.2
Serial No: 95C0045
Inlet Size: 1" MNPT
Orifice: .292
Outlet Size: 1.5" FNPT

Body Mat: Standard
Bonnet Mat:
Trim Mat:
Soft Seat Mat:
Cap Type: Plain
Spring: AA52CR

Service: Compressible
Set Pressure: 1440.00 PSIG
CDTP: 0.00
Capacity: 7068 SCFM
Temp: 80 F
Constant BP: 0
Variable BP: 0

PRE-TEST

Pre-tested: YES
Pre-test By: Josh Bougie
Leaked: NO
Pre-test Note: FUNCTIONS GOOD AT 90% / NO LEAKS FOUND

Pre-test 1: 1438 PSIG
Pre-test 2: 1435 PSIG
Pre-test 3: 1434 PSIG

Fittings: NO
Inlet: Oily
Outlet: Clean
Shipping Crate: NO

CRITICAL DIMENSIONS

<u>NOZZLE</u>	<u>Mfr Spec</u>	<u>As Found</u>	<u>DISC</u>	<u>Mfr Spec</u>	<u>As Found</u>	<u>OTHER</u>	<u>Mfr Spec</u>	<u>As Found</u>
Length	0.906	0.910	Thickness	0.490	0.493	Spindle/Collar	0.007	.002
Seat Step	0.265	0.275	Inside Step	0.010	0.020			
Seat ID	0.684	0.685	OutsideStep	0.000				
Seat OD	0.798	0.798	Seat	0.000				

PARTS EVALUATION

<u>PARTNAME</u>	<u>CLEAN</u>	<u>OILY</u>	<u>RUSTY</u>	<u>CARBON</u>	<u>OTHER</u>	<u>CONDITION</u>	<u>WORK PERFORMED</u>
Disc	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty, Marked	Cleaned/Lapped
Nozzle	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty, Marked	Cleaned/Lapped
Cap-lever Assy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Comp Screw And Locknut	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Spring And Buttons	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Spindle / Stem	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Stem Retainer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Disc Holder	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Guide / Upper Ring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Lower Ring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ring Pin(S)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Gasket / Seals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Connection Ends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Body	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse
Base	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dirty	Cleaned/Reuse

Disassembled By: Josh Bougie

Inspected By: Rick Fetch

Assembled By: Josh Bougie

FINAL TEST

Date Tested: 14-Sep-2017
Test Method: Bench
Set Definition: Pop
Test Media: Air
Tested By: Rick Fetch

Gauge 1: TW 16
Gauge 2: TW 10
Perform BP Test: Yes
Back Pressure: 30 PSIG
BP Gauge: TW 18A

Final Set Pressure: 1440.00 PSIG
Leakage Rate: 10 BPM
Upper BlowDown Ring: N/A
Lower BlowDown Ring: NOTCHES
Seat Tightness Test: 1296.00 PSIG

Pilot Type:
Pilot Test Fluid:

Pilot Gauge 1:
Pilot Gauge 2:

Pilot Final Set Pressure: 0
Pilot Leakage Rate: 0
Pilot Seat Tightness Test: 0

FINAL INSPECTION

Shipment Check : Seals Intact, Painted, Service/Repair Tags Verified

Final Inspection : Josh Bougie

VR Tag Applied By:

Definitions

Wear and Conditions

Bent - Altered from an originally straight or even condition.

Blown - (Specific to bellows) pressure has exceeded the operational limits of the bellows and has resulted in the catastrophic failure of the part.

Catastrophic Wear - Rapidly occurring or accelerating surface damage, deterioration, or change of shape caused by wear to such a degree that the service life of the part is appreciably shortened or its function is destroyed.

Collapsed - (Specific to Farris gaskets) the corrugations in the metal gasket are no longer functioning to form part of the seal.

Corrosion - the gradual destruction of metal due to a chemical reaction with the environment characterized by rust, pitting and pinhole porosity

Cracked - a break without the complete separation of parts.

Dirty -requires cleaning only.

Eroded - a form of wear in which there is a progressive loss of original material from a solid surface due to mechanical interaction between that surface and a fluid.

Galling - A form of surface damage arising between two sliding solids, distinguished by roughening, and the creation of protrusions above the original surface and may involve material transfer.

Marked -surface is showing abrasions that will alter or hinder valve performance.

Missing - There is a part listed on the manufacturers parts list, critical to the designed operation, which has been found absent and unaccounted for.

Nonconcentric - the deformation of a circular part in which there is an absence of a common center.

Non-OEM - a part identified as not being from the original equipment manufacturer.

Out of Tolerance - a specific dimension has been determined to be out of the stated acceptable range listed by the manufacturer.

Pinhole Porosity - small spaces in a material characterized by small holes appearing porous; compromising the isolation of a pressure zone.

Pitting - A form of wear characterized by the presence of surface cavities the formation of which is attributed to processes such as fatigue, local adhesion, or cavitation.

Requires Replacement - The particular part needs to be changed out in order to meet the construction and/or operational requirements as specified by the valve owner.

Scoring - A severe form of wear characterized by the formation of extensive grooves and scratches in the direction of sliding.

Seized - Two parts are jammed together to become stuck and cannot be removed by conventional means.

Spalling - (Specific to seats) the separation of material from a surface in the form of flakes or chips resulting from an impact event.