



Canadian Natural

PRESSURE EQUIPMENT INSPECTION INTERVAL APPROVAL

Part 1 – Facility and Equipment Information

Facility / Field Name: South Bulrush Gas Plant and Oil Battery	Location: b-88-F/94-A-16, a-89-F/94-A-16
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Part 2 - Assessment Type

Interval assessment has been performed as per TC-OVR-PRO-INT-000036 – check applicable box

Individual Equipment: <input type="checkbox"/>	Provide the equipment number: _____
Multiple Equipment: <input checked="" type="checkbox"/> Refer to Section 4	Provide the equipment numbers or refer to Section 4 for the file location: _____
Like Service Comparison: <input type="checkbox"/>	Provide the equipment numbers or refer to Section 4 for the file location: _____

Part 3 – Summary of Findings / Issues / Action Items

The majority of the vessels at b-88-F and a-89-F were found to be in good condition and acceptable for a Grade 3 inspection interval with the one exception noted below. All Grade 3 pressure vessels will be put on a **6 year (72 month)** inspection interval.

The following pressure vessel was found to be lower than Grade 3

- Fuel Gas Scrubber NB2066 – Only one complete inspection was performed in 2008. **5 year (60 month) interval**

The following pressure vessels were found to be overdue for inspection even on a Grade 3 inspection interval and are to be inspected in 2016:

- Fuel Gas Scrubber NB2066 – b-88-F/94-A-16
- Inlet Separator RAE479 – a-89-F/94-A-16
- Fuel Gas Scrubber C3549 – a-89-F/94-A-16
- Separator CN96069 – a-89-F/94-A-16

Discrepancies were found within Maxitrak for location and service data. These errors will be corrected in Maxitrak to reflect the proper data.

PSV's were found to be acceptable for **5 Year (60 month)** and **6 Year (72 month)** intervals based on service history. Most valves will not be serviced in 2018 based on their new intervals. Some select valves were missing pre-pop data or had unacceptable pre-pop information and will be left on a 4 year interval and serviced in 2016.



- Filter Piping PSV SN# 16304 – **4 Year (48 month)** – Discs missing and body loose, possibly due to excessive vibration
- FG Dehy Glycol Contactor PSV SN# C008901 – **4 year (48 month)** - No pre-pop in 2012 with valve BER
- Sales Dehy Glycol Contactor PSV SN# CE-42794-1-A10 – **4 year (48 month)** – No pre-pop in 2012 with valve BER and significant damage found on servicing.
- Sales Header FG Scrubber PSV SN#19740 – **4 year (48 month)** – No service since 2004.

Part 4 – Inspection Interval

Previous Interval: All Vessels: 4 years	New Interval: Pressure Vessels: 6 years * PSV: Sweet/Sour-5/6 years* *exceptions noted above.	Assessment Spreadsheet File or Form Location: <u>R:\Integrity\FSJ-C\Bulrush\1060 Vessel Integrity\03 Risk Management\01 RBI Process\2016 Interval Revision</u>
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Note: If the assigned inspection interval is not the same for all equipment being assessed, the interval may be identified on the assessment Form or Spreadsheet.

Part 5 – Approvals / Rejection

Final Approval: Asset Integrity Name: <u>Cody Scheu</u> Cert. #: <u>IBPV#453</u>	Comments: Complete required inspections and update assessment.	<input checked="" type="radio"/> Accept <input type="radio"/> Reject  Signature
Final Approval: Operations (Foreman level or above) Name: <u>Marcel Johnson</u> Position: <u>Foreman</u>	Comments:	<input checked="" type="checkbox"/> Accept <input type="checkbox"/> Reject  Signature

Note: Excursion of the typical plant or field operating /production conditions (temperature, pressure, equipment failure) requires an Asset Integrity review of the original inspection interval assessment to confirm that the assigned inspection interval is still valid.

PSV STATIC DATA											PSV SERVICE DATA											COMMENTS/TECHNICAL BASIS SUPPORTING INTERVAL REVISION	Review Comments	ACTION ITEMS
PROTECTING EQUIPMENT JUR#	PROTECTING EQUIPMENT NAME	PSV Status	PROTECTING PSV (SERIAL #)	PSV TAG #	MANUFACTURER	MODEL #	SET PRESS (PSI)	CAPACITY	CAP UNITS (SCFM-GPM/LB/HR)	GAS-LIQUID-STEAM	SERVICE INTERVAL (YRS)	LAST PSV SERVICE DATE	NEW PSV (Y/N)	PSV PRE-POP (Y/N)	PSV PRE-POP DEVIATION (%)	NUMBER OF SERVICE REPORTS REVIEWED	FIELD CONSEQUENCE DESIGNATION	AB-506 PSV Grade Interval	ACCEPTABLE PSV INSPECTION INTERVAL (Months)	NEXT PSV REGULATORY INSPECTION DATE				
A2984717	1st Stage Scrubber	IN SERVICE	12184	1027F	AXELSON	HF4602725134X	720	9908	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Protects 1st Stage Scrubber and 1st Stage Suction Bottle, tied into flare if failed would lose facility on ESD (GAS)	PSV good for Grade 3 interval based on reports.		
A2984731	1st Stage Suction Bottle	IN SERVICE	12184	1027F	AXELSON	HF4602725134X	720	9908	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Is covered under same PSV A2984717 (Gas)	PSV good for Grade 3 interval based on reports.		
C10143	2nd Stage Cooler	IN SERVICE	12226	1026F	AXELSON	HF4602745122SF	1300	8355	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Protects 2nd Stage Cooler and 2nd Stage Discharge Bottle, tied into flare if failed would lose facility on ESD (GAS)	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
A2984762	2nd Stage Discharge Bottle	IN SERVICE	12226	1026F	AXELSON	HF4602745122SF	1300	8355	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Is covered under same PSV C10143	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
C34466	1st Stage Cooler	IN SERVICE	12429	1029F	AXELSON	HF46027351235G	1000	10562	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Is covered under same PSV A2984724 (Gas)	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
A2984724	2nd Stage Suction Scrubber	IN SERVICE	12429	1029F	AXELSON	HF46027351235G	1000	10562	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Protects 2nd Stage Suction Scrubber, 1st Stage Discharge Bottle, 2nd Stage Suction Bottle, 1st Stage Cooler, tied into flare if failed would lose plant on ESD (GAS)	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
A2984748	1st Stage Discharge Bottle	IN SERVICE	12429	1029F	AXELSON	HF46027351235G	1000	10562	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Is covered under same PSV A2984724 (Gas)	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
A2984755	2nd Stage Suction Bottle	IN SERVICE	12429	1029F	AXELSON	HF46027351235G	1000	10562	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Is covered under same PSV A2984724 (Gas)	PSV good for Grade 3 interval based on reports, no concern on cleanliness.		
	FILTER PIPING	IN SERVICE	16304	6672F	MERCER VALVE	81-17151V09G11	100	387	SCFM	UNKNOWN	48	09/05/2012		N	0	2	major consequence	2	48	9/5/2016	2012 no pre-pop due to missing discs, failure could be due to vibration from location, if failed would lose facility on ESD (GAS)	Valve to remain 4 years and serviced in 2016 to determine if continued damage is found.	PSV should be replaced	
NB2066	Sales Header Fuel Gas Scrubber	IN SERVICE	19740	3777F	MERCER VALVE	91-17051V0561	50	78	SCFM	UNKNOWN	48	07/14/2004		Y	6.67	1	minor consequence	2	48	7/14/2008	Protects sales header fuel gas scrubber, can be bypassed, last inspection from 2004, 2002 inspection has no pre-pop or final test (GAS)	PSV needs to be serviced. Appears to have been missed multiple times.	Service PSV	
CN96070	Inlet Fuel Gas Scrubber	IN SERVICE	23665	1569F	MERCER VALVE	81-17151V09G11	166	608	SCFM	UNKNOWN	48	09/05/2012		Y	0.6	2	major consequence	2	60	9/5/2017	Protects inlet fuel gas scrubber, ties into flare if failed would lose facility on ESD (GAS)	PSV good for Grade 3 interval based on reports. No concerns on cleanliness. Replaced valve SN# 37833 as it was BER, but all parts were good, but no pre-pop done.		
A0164200	Fuel Gas Dehy Glycol Contactor	IN SERVICE	C008901	21248F	MERCER VALVE	91-22E51T171	1250	4418	SCFM	UNKNOWN	48	09/05/2012	Y	N	0	2	major consequence	2	48	9/5/2016	New PSV, replaced valve 2960F protects fuel gas dehy glycol contactor, tied into flare if failed would lose facility on ESD (GAS)	PSV to remain at grade 2 with a 48 month interval. Valve 2960F passed 2008 pre-pop with 0.08% deviation, but was not popped in 2012 and was found to be BER with damage to disc and nozzle. Valve to be serviced in 2016.		
C3566	Fuel Gas Scrubber	IN SERVICE	C017983	24127F	MERCER VALVE	91-17D51V07E1	150	329	SCFM	UNKNOWN	60	12/08/2013	Y	Y	0	3	major consequence	3	72	12/8/2019	New PSV Dec 2013, previous PSV 6674F. Protects fuel gas scrubber, tied into flare if failed would lose facility on ESD (GAS)	Previous PSV had successful pre-pop in 2012 and 2008. Good pre-pop in 2013 when the valve was replaced. New valve good for grade 3 and 72 month interval.		
C34469	Sales Dehy Glycol Filter Pot	IN SERVICE	C017986	24126F	MERCER VALVE	91-12D51T07L1	150	42	USGPM	UNKNOWN	60	12/08/2013	Y	Y	-0.57	2	major consequence	2	60	12/8/2018	New PSV Dec 2013, previous PSV 21246F. Protects glycol filter pot, tied into flare if failed would lose facility on ESD (LIQUID)	Previous PSV was new in 2012 as previous valve was the wrong type for the service. Tested in 2013 with successful pre-pop. Only one year of service prior to pre-test. Maximum grade 2 interval, will be set for 5 years.		
C34470	Sales Dehy Glycol Filter Pot	IN SERVICE	C017986	24126F	MERCER VALVE	91-12D51T07L1	150	42	USGPM	UNKNOWN	60	12/08/2013	Y	Y	-0.57	2	major consequence	2	60	12/8/2018	Is covered under same PVS C34469 (LIQUID)	Previous PSV was new in 2012 as previous valve was the wrong type for the service. Tested in 2013 with successful pre-pop. Only one year of service prior to pre-test. Maximum grade 2 interval, will be set for 5 years.		
A3098523	Inlet Separator	IN SERVICE	CE-41879-A10	1225F	FARRIS	26GA12-120S7	720	7081	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	3	72	9/5/2018	Protects Inlet Separator, tied into flare if failed would lose facility on ESD (GAS)	Valve good for grade 3. Successful pre-pops and no concerns with cleanliness.		
A3098509	Sales Dehy Glycol Contactor	IN SERVICE	CE-42794-1-A10	1883V	FARRIS	26EA13-120	1440	5650	SCFM	UNKNOWN	48	09/05/2012		N	0	2	major consequence	2	48	9/5/2016	Protects sales dehy glycol contactor, 2012 found PSV in poor condition pre-pop not possible, rebuilt PSV, tied into flare if failed would lose facility on ESD (GAS)	No pre-pop in 2012. Valve found with stem seized, galling on guide, and disc and nozzle dented. 2008 pre-pop passed. Valve set at grade 2 with 4 year interval, no extension based on recent testing. To be serviced in 2016.		
A3120213	Sour Fuel Gas Scrubber	IN SERVICE	SE-18709-3	3996F	CROSBY	JOS-15/A	165	4520	SCFM	UNKNOWN	48	09/05/2012		Y	1.8	2	major consequence	3	72	9/5/2018	Protects sour fuel gas scrubber, tied into flare if failed would lose facility on ESD (GAS)	Good pre-pops in 2008 and 2012 after 4 years of service each. Service rating minor with no concerns on cleanliness. Valve good for Grade 3 with a 72 month interval.		
a-89-F/B4-A-16																								
8P5678BC	Discharge Bottle	OUT OF SERVICE	00123	PSV8P5678BC	TAYLOR VALVE		1440	431	SCFM	UNKNOWN		09/01/1995	0	0	0							Vessel is Out of Service	Valve out of service. No interval required.	
C3549	Fuel Gas Scrubber	IN SERVICE	15624	6671F	MERCER VALVE	81-17151V09G11	150	557	SCFM	UNKNOWN	48	09/05/2012		Y	1.33	2	minor consequence	3	72	9/5/2018	Protects instrument controllers, if failed would only lose battery inlet controllers, PSV set above MAWP of vessel at 150psi (GAS)	Valve to be serviced and set at appropriate MAWP.	Change PSV setpoint to MAWP=50psi	
	FUEL GAS SCRUBBER PIPING	IN SERVICE	39579-56	15433F	TAYLOR VALVE	82E2351311	50	225	SCFM	UNKNOWN	48	09/05/2012		Y	4	2	minor consequence	3	72	9/5/2018	protects fuel gas piping, if failed would lose battery inlet building facility would stay running (GAS)	Good pre-pops in 2008 and 2012 after 4 years of service each. Service rating minor with no concerns on cleanliness. Valve good for Grade 3 with a 72 month interval.		
	Scrubber	OUT OF SERVICE	78C5504	PSV8P5678BC	CONSOLIDATED	1970C2KAS	720	2680	SCFM	UNKNOWN		09/01/1995	0	0	0							Vessel is Out of Service	Valve out of service. No interval required.	
RAE479	Test Separator	IN SERVICE	98064	6121G	MERCER VALVE	8143251T25G21	1000	8037	SCFM	UNKNOWN	48	09/05/2012		Y	0	2	major consequence	1	72	9/5/2018	Protects Inlet Separator, tied into flare if failed would lose facility on ESD (GAS)	2012 pre-pop successful with no deviation. First service since 2004 so valve had 8 years of service. New valve in 2004. Based on previous service history valve is good for a 6 year interval.		
A0509839		OUT OF SERVICE	C19483		HYDROSEAL	14E3M0V00U0	1440	5656	SCFM	UNKNOWN		11/10/2010	0	0	0							Vessel is Out of Service, no longer on site	Valve out of service. No interval required.	
CN96069	Test Separator	IN SERVICE	A84376	4720F	MERCER VALVE	8143251T25G21	1000	8037	SCFM	UNKNOWN	48	9/5/2012		Y	0	2	major consequence	1	72	9/5/2018	Protects Inlet Separator, tied into flare if failed would lose facility on ESD (GAS)	2012 pre-pop successful with no deviation. First service since 2004 so valve had 8 years of service. New valve in 2004. Based on previous service history valve is good for a 6 year interval.		