AOM III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINANTS	ABNORMAL
OIL CONDITION	ABNORMAL

Machine Id
SAB1 G2 TURBINE BEARING
Component
Turbine
Fluid
PETRO CANADA TURBOFLO XL46 (--- GAL)

RECOMMENDATION

We recommend that you perform vacuum distillation and/or air drying to attempt to remove any residual water and/or entrained gases from this oil that may be contributing to abnormal foaming and/or poor water separability. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

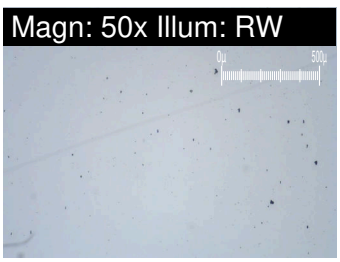
WEAR

All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system.

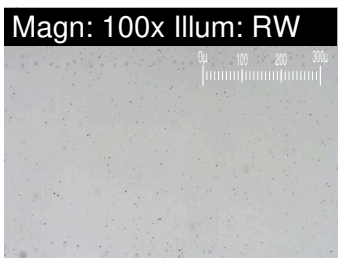
Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0927742	WC0864648	WC
Sample Date		Client Info		15 May 2024	21 Dec 2023	27 Aug 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	SEVERE	SEVERE
PQ		ASTM D8184*		0	---	---
Iron	ppm	ASTM D5185(m)	>15	<1	1	1
Chromium	ppm	ASTM D5185(m)	>4	0	0	0
Nickel	ppm	ASTM D5185(m)	>2	0	0	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>10	0	<1	<1
Lead	ppm	ASTM D5185(m)		0	0	0
Copper	ppm	ASTM D5185(m)	>5	1	1	<1
Tin	ppm	ASTM D5185(m)	>5	0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Large Particles		DR-Ferr*		2.0	---	---
Small Particles		DR-Ferr*		2.6	---	---
Total Particles		DR-Ferr*	>---	4.6	---	---
Large Particles Percentage	%	DR-Ferr*		0	---	---
Severity Index		DR-Ferr*		1	---	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2		
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1		
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*		1		
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				

Magn: 200x Illum: BC

Magn: 50x Illum: RW



Magn: 100x Illum: RW



CONTAMINANTS

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code.

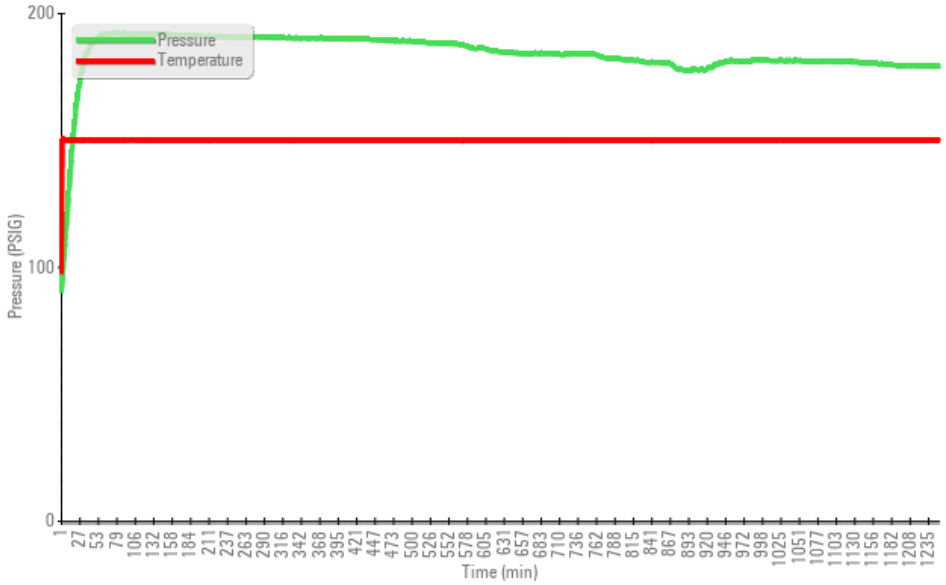
Silicon	ppm	ASTM D5185(m)	>15	**0**	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	**<1**	<1	<1
Water	%	ASTM D6304*	>0.03	**0.000**	0.001	0.001
ppm Water	ppm	ASTM D6304*	>300	**<10**	7	3.2
Soot %	%	ASTM D7844*		**0**	---	---
Nitration	Abs/cm	ASTM D7624*		**1.8**	---	---
Sulfation	Abs/.1mm	ASTM D7415*		**10.9**	---	---
Separability	oil/h2o/em	ASTM D1401*	40/40/0	**41/39/0 (15)**	---	---
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	**12**	---	---
Particles >4µm		ASTM D7647	>2500	▲ **5996**	▲ 38561	▲ 48192
Particles >6µm		ASTM D7647	>640	**264**	▲ 3876	▲ 6609
Particles >14µm		ASTM D7647	>80	**12**	5	15
Particles >21µm		ASTM D7647	>20	**4**	2	2
Particles >38µm		ASTM D7647	>4	**1**	1	0
Particles >71µm		ASTM D7647	>3	**0**	1	0
Oil Cleanliness		ISO 4406 (c)	>18/16/13	▲ **20/15/11**	▲ 22/19/10	▲ 23/20/11
Pentane Insolubles	%	ASTM D893(m)*		**0.029**	---	---
Toluene Insolubles	%	ASTM D893(m)*		**0.007**	---	---
Silt	scalar	Visual*	NONE	**NONE**	NONE	NONE
Debris	scalar	Visual*	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	**NONE**	NONE	NONE
Appearance	scalar	Visual*	NORML	**NORML**	NORML	NORML
Odor	scalar	Visual*	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	Visual*	>0.03	**NEG**	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**3**		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*				

OIL CONDITION

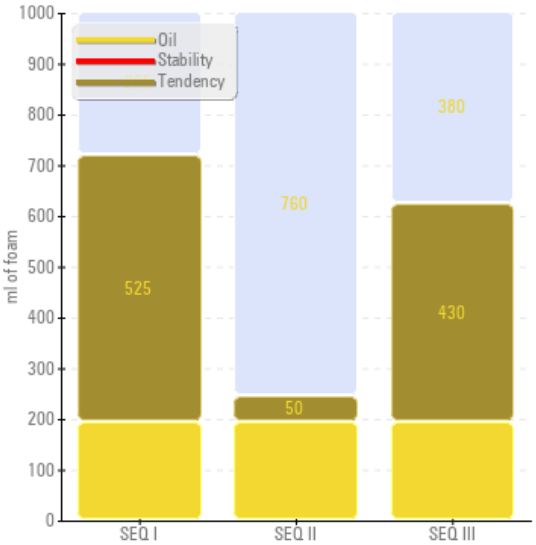
Foaming Tendency stage I (ASTM D892) result is abnormal indicating a tendency for oil foaming. Rust Prevention test (ASTM D665) indicates the oil retains good anti-corrosion properties. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sodium	ppm	ASTM D5185(m)		**0**	0	0
Boron	ppm	ASTM D5185(m)		**0**	0	0
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**<1**	0	0
Calcium	ppm	ASTM D5185(m)		**0**	<1	<1
Phosphorus	ppm	ASTM D5185(m)		**2**	1	1
Zinc	ppm	ASTM D5185(m)	0	**2**	2	3
Sulfur	ppm	ASTM D5185(m)		**586**	647	608
Oxidation	Abs/.1mm	ASTM D7414*		**1.9**	---	---
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	**0.04**	0.09	0.12
Visc @ 40°C	cSt	ASTM D7279(m)	46.39	**45.0**	45.1	45.0
Visc @ 100°C	cSt	ASTM D7279(m)	6.79	**6.7**	---	---
Viscosity Index (VI)	Scale	ASTM D2270*	100	**101**	---	---
Air Release Time	min	ASTM D3427*	4	**5.20**	---	---
Foam Tendency	I/II/III	ASTM D892*	0	▲ **525/50/430**	---	---
Foam Stability	I/II/III	ASTM D892*	0	**0/0/0**	---	---
ASTM Color	scalar	ASTM D1500*	0.5	**<3.0**	---	---
Rust Prevention	PASS/FAIL	ASTM D665*		**PASS**	---	---
Oxidation Test (RPVOT)	minutes	ASTM D2272*	2700	**3218**	---	---
Anti-Oxidant 1	%	ASTM D6971*	<25	**81**	---	---
Anti-Oxidant 2	%	ASTM D6971*	<25	**90**	---	---
Lubricant Degradation	Scale 0-10	ASTM D7684*		**2**		

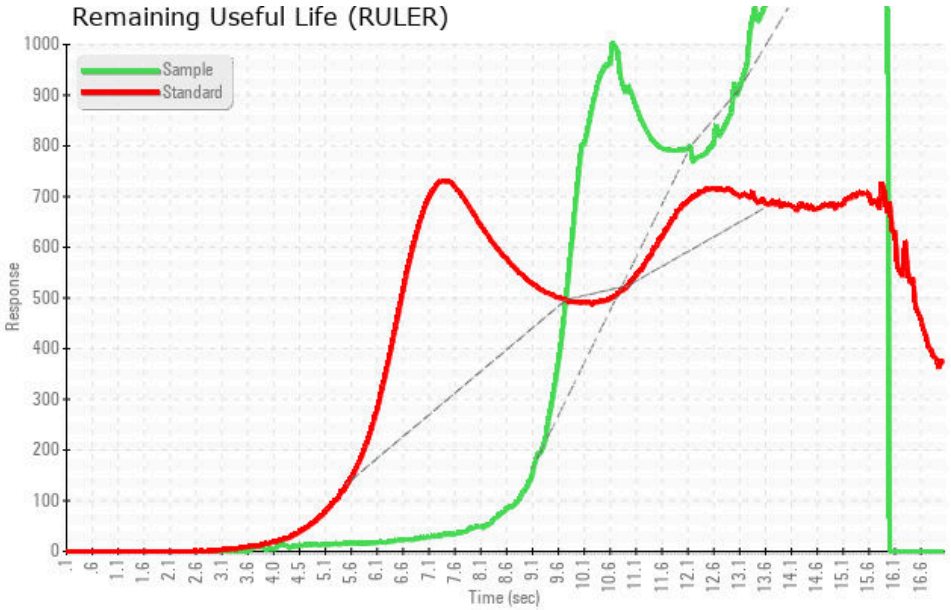
Rotating Pressure Vessel Oxidation Test



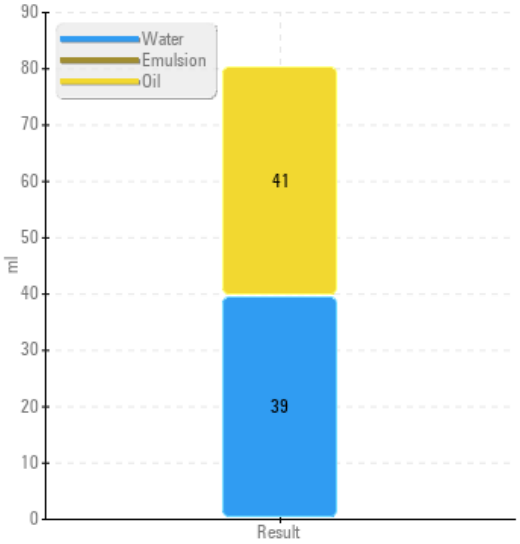
Foaming SEQ I/II/III



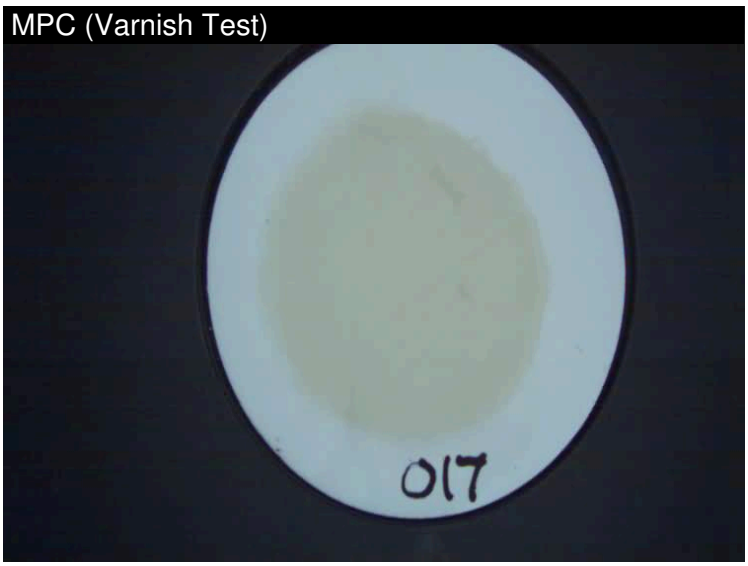
Remaining Useful Life (RULER)



Water Separability

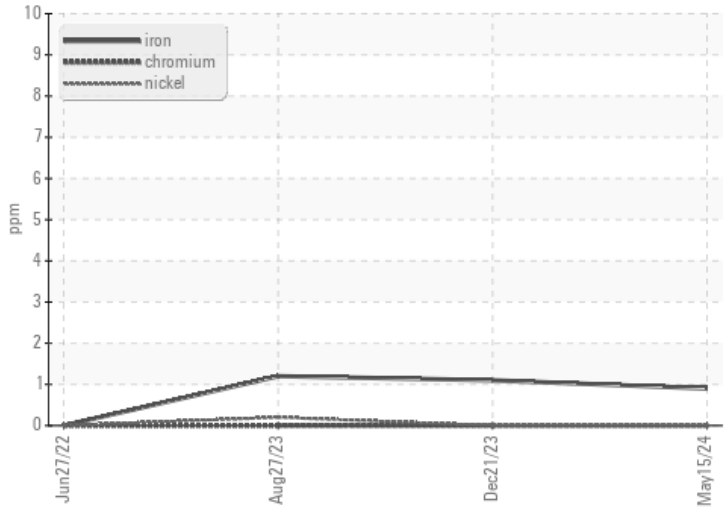


MPC (Varnish Test)

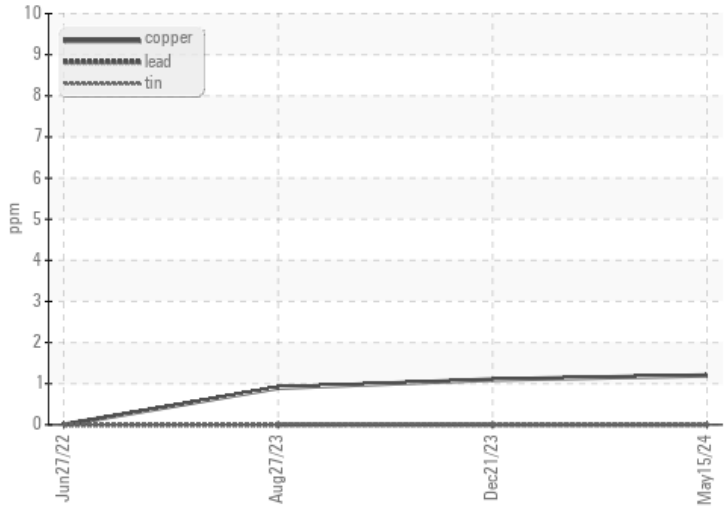


Sample Color & Clarity

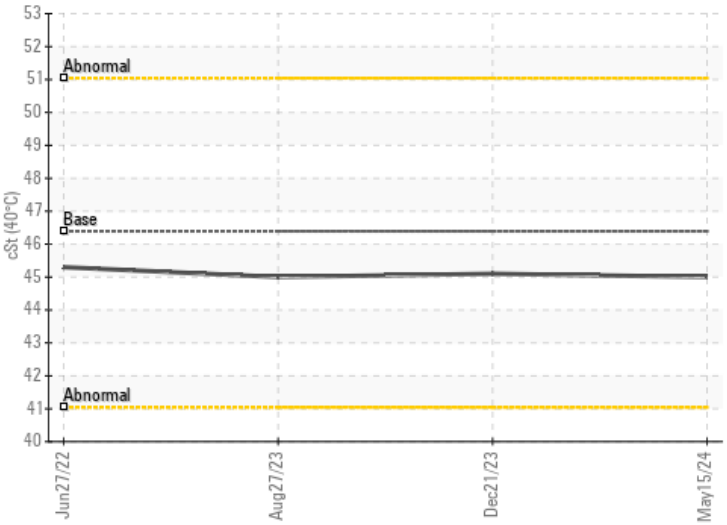
Ferrous Alloys



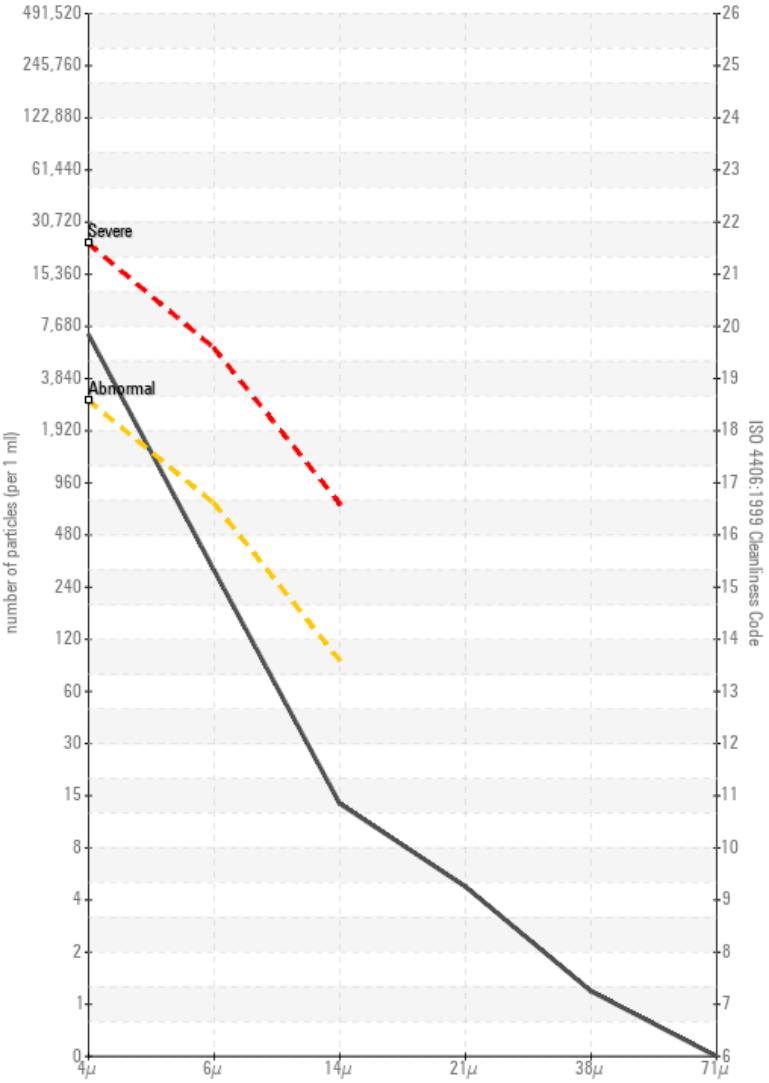
Non-ferrous Metals



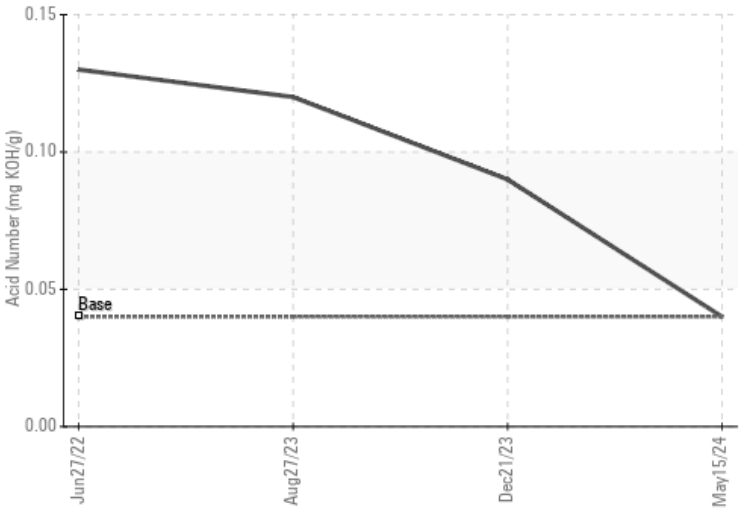
Viscosity @ 40°C



Particle Count



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0927742
Lab Number : 02636017
Unique Number : 5785179
Test Package : AOM 3 (Additional Tests: TolInsol)

Received : 16 May 2024
Tested : 29 May 2024
Diagnosed : 29 May 2024 - Bill Quesnel

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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