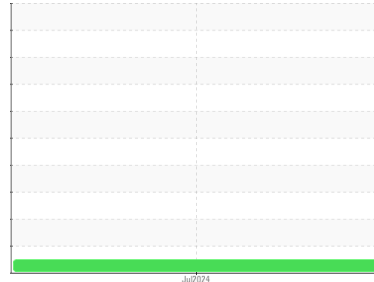




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
[02641955]

Machine Id

U4

Component

Main Turbine

Fluid

PETRO CANADA TURBOFLO XL32 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.
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.

Contaminants

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

Oil Condition

Rust Prevention test (ASTM D665) indicates the oil retains good anti-corrosion properties. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC	---	---
Sample Date	Client Info		03 Jul 2024	---	---
Machine Age	hrs	Client Info	0	---	---
Oil Age	hrs	Client Info	0	---	---
Oil Changed	Client Info		N/A	---	---
Sample Status			NORMAL	---	---

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		0	---	---
Iron	ppm	ASTM D5185(m) >15	<1	---	---
Chromium	ppm	ASTM D5185(m) >4	0	---	---
Nickel	ppm	ASTM D5185(m) >2	0	---	---
Titanium	ppm	ASTM D5185(m)	0	---	---
Silver	ppm	ASTM D5185(m)	0	---	---
Aluminum	ppm	ASTM D5185(m) >10	<1	---	---
Lead	ppm	ASTM D5185(m)	0	---	---
Copper	ppm	ASTM D5185(m) >5	<1	---	---
Tin	ppm	ASTM D5185(m) >5	0	---	---
Antimony	ppm	ASTM D5185(m)	0	---	---
Vanadium	ppm	ASTM D5185(m)	0	---	---
Beryllium	ppm	ASTM D5185(m)	0	---	---
Cadmium	ppm	ASTM D5185(m)	0	---	---

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m) 0.2	<1	---	---
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) 0.8	0	---	---
Calcium	ppm	ASTM D5185(m) 2.1	0	---	---
Phosphorus	ppm	ASTM D5185(m) 1.8	4	---	---
Zinc	ppm	ASTM D5185(m) 1.6	<1	---	---
Sulfur	ppm	ASTM D5185(m) 637	1064	---	---
Lithium	ppm	ASTM D5185(m)	<1	---	---

CONTAMINANTS

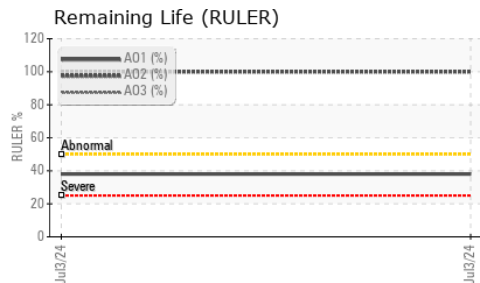
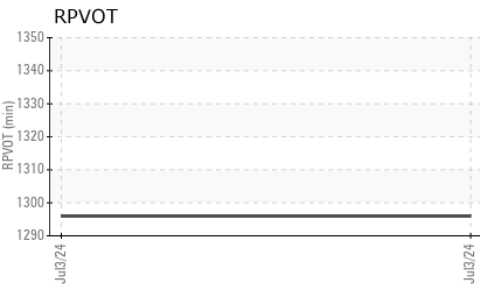
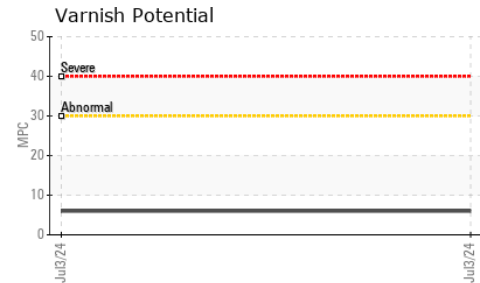
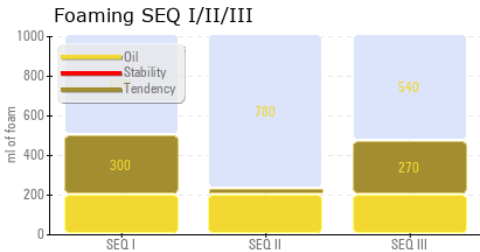
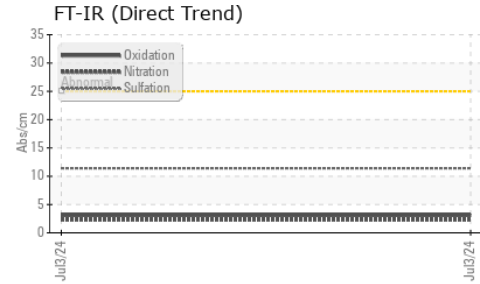
	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >15	0	---	---
Sodium	ppm	ASTM D5185(m)	0	---	---
Potassium	ppm	ASTM D5185(m) >20	<1	---	---
Water	%	ASTM D6304* >0.03	0.003	---	---
ppm Water	ppm	ASTM D6304* >300	32	---	---

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	0	---	---
Nitration	Abs/cm	ASTM D7624*	2.3	---	---
Sulfation	Abs/.1mm	ASTM D7415*	11.4	---	---



OIL ANALYSIS REPORT



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	1535	---	---
Particles >6µm	ASTM D7647	>640	525	---	---
Particles >14µm	ASTM D7647	>80	64	---	---
Particles >21µm	ASTM D7647	>20	20	---	---
Particles >38µm	ASTM D7647	>4	3	---	---
Particles >71µm	ASTM D7647	>3	1	---	---
Oil Cleanliness	ISO 4406 (c)	>18/16/13	18/16/13	---	---

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm ASTM D7414*		3.1	---	---
Acid Number (AN)	mg KOH/g ASTM D974*	0.03	0.07	---	---
Anti-Oxidant 1	% ASTM D6971*	<25	38	---	---
Anti-Oxidant 2	% ASTM D6971*	<25	100	---	---
MPC Varnish Potential	Scale ASTM D7843(m)*	>15	6	---	---

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar Visual*	NONE	NONE	---	---
Yellow Metal	scalar Visual*	NONE	NONE	---	---
Precipitate	scalar Visual*	NONE	NONE	---	---
Silt	scalar Visual*	NONE	NONE	---	---
Debris	scalar Visual*	NONE	NONE	---	---
Sand/Dirt	scalar Visual*	NONE	NONE	---	---
Appearance	scalar Visual*	NORML	NORML	---	---
Odor	scalar Visual*	NORML	NORML	---	---
Emulsified Water	scalar Visual*	>0.03	NEG	---	---
Free Water	scalar Visual*		NEG	---	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D7279(m)	33.8	32.9	---	---
Visc @ 100°C	cSt ASTM D7279(m)	5.6	5.5	---	---
Viscosity Index (VI)	Scale ASTM D2270*	102	102	---	---
Separability	oil/h2o/em ASTM D1401*		41/38/1 (25)	---	---
Air Release Time	min ASTM D3427*		2.30	---	---
Foam Tendency	I/II/III ASTM D892*		300/30/270	---	---
Foam Stability	I/II/III ASTM D892*		0/0/0	---	---
ASTM Color	scalar ASTM D1500*		2.5	---	---
Rust Prevention	PASS/FAIL ASTM D665*		PASS	---	---
Oxidation Test (RPVOT)	minutes ASTM D2272*		1296	---	---

SEDIMENT	method	limit/base	current	history1	history2
Pentane Insolubles	% ASTM D893(m)*		0.006	---	---
Toluene Insolubles	% ASTM D893(m)*		0.005	---	---

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				no image	no image
Bottom				no image	no image
				no image	no image



Laboratory : \
Sample No. : \
Lab Number : (\
Unique Number : (\
Test Package : / MPC

To discuss this sample report, cc

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.

T: (613)352-3525

F:



FERROGRAPHY REPORT

Area
[02641955]

Machine Id

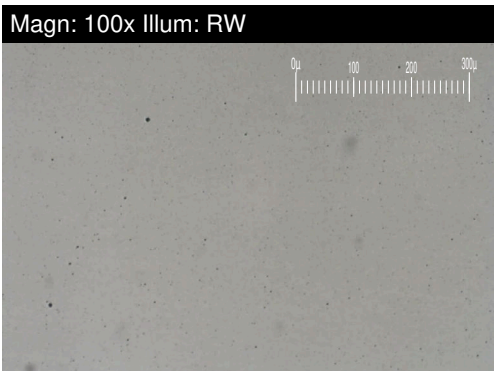
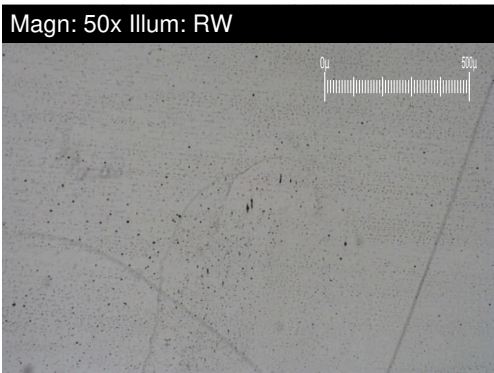
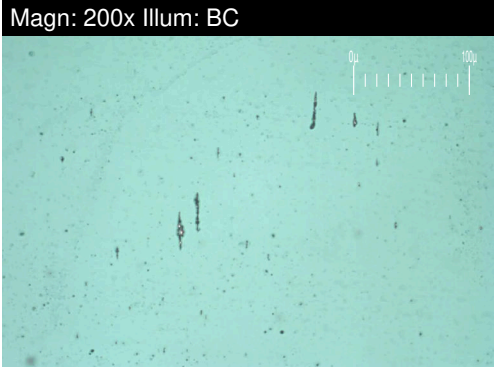
U4

Component

Main Turbine

Fluid

PETRO CANADA TURBOFLO XL32 (--- GAL)

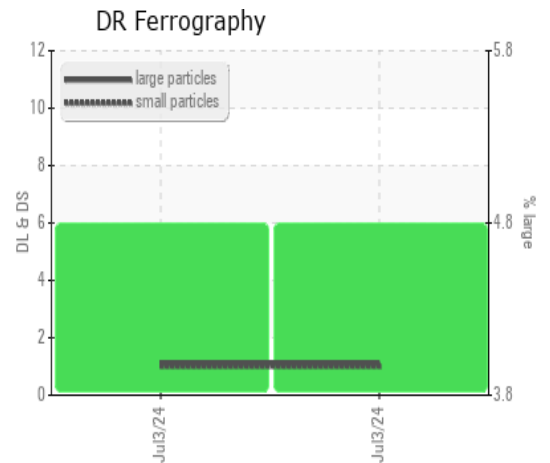


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		1.1	---	---
Small Particles		DR-Ferr*		1.0	---	---
Total Particles		DR-Ferr*	>---	2.1	---	---
Large Particles Percentage	%	DR-Ferr*		4.8	---	---
Severity Index		DR-Ferr*		0	---	---

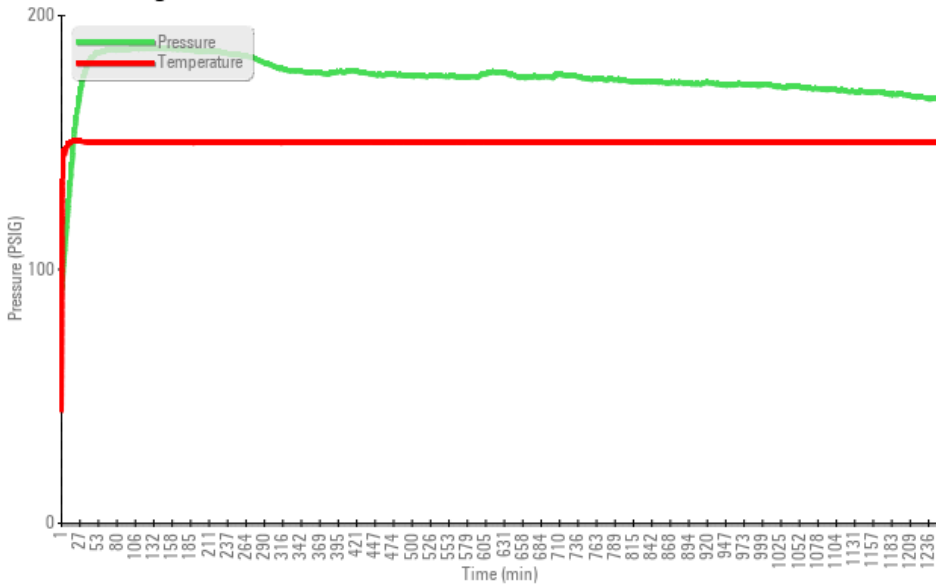
FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2		
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*				
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	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*				
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		2		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*				

WEAR

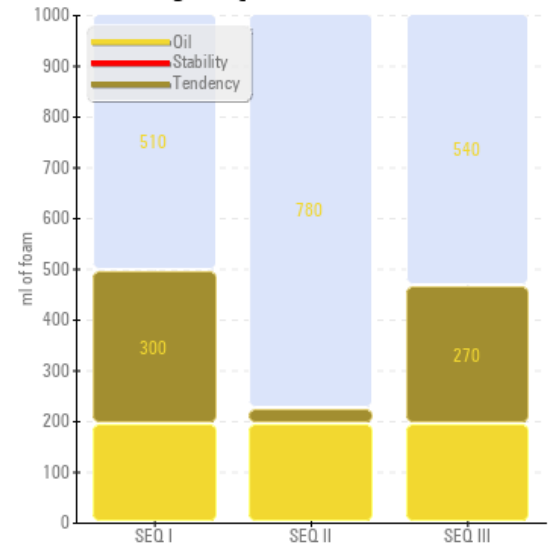
All component wear rates are normal. The ferroggraphy results are normal indicating no abnormal wear in the system.



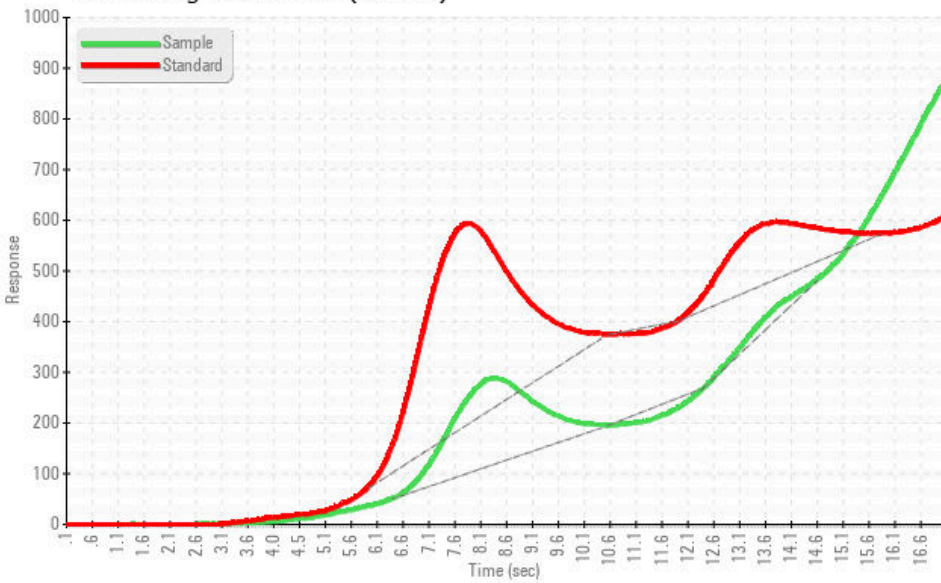
Rotating Pressure Vessel Oxidation Test



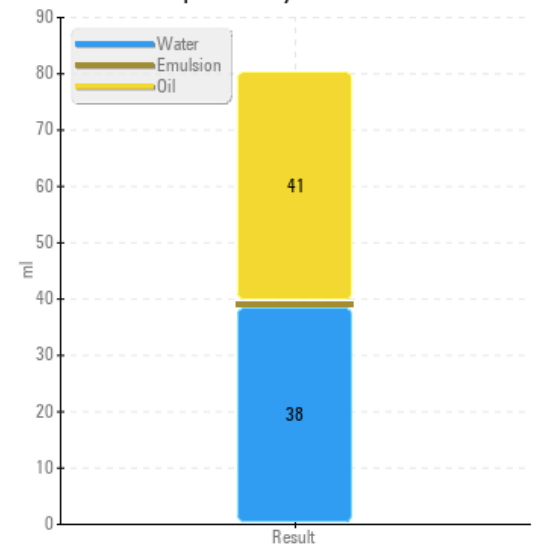
Foaming SEQ I/II/III



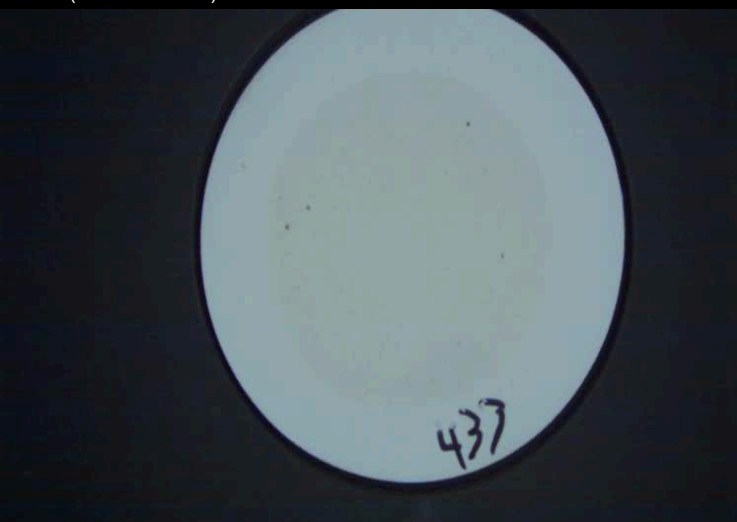
Remaining Useful Life (RULER)



Water Separability



MPC (Varnish Test)



Sample Color & Clarity

