

NORMAL



Area

Main Power Generation

Generator - MPG (Port) Lube Oil System (S/N Sample Tag XX-80201-S1)

Machine Id

Component

Turbine

Fluid

PETRO CANADA TURBOFLO 32 (8300 LTR)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

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	PC	PC0080748	PC0076670
Sample Date	Client Info	26 Mar 2024	13 Mar 2024	07 Feb 2024
Machine Age	hrs	Client Info	0	0
Oil Age	hrs	Client Info	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		NORMAL	NORMAL	SEVERE

WEAR METALS

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

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m) 0	<1	0
Barium	ppm	ASTM D5185(m) 0	0	0
Molybdenum	ppm	ASTM D5185(m) 0	0	0
Manganese	ppm	ASTM D5185(m)	0	0
Magnesium	ppm	ASTM D5185(m) 0	0	<1
Calcium	ppm	ASTM D5185(m) 0	0	<1
Phosphorus	ppm	ASTM D5185(m) 120	267	268
Zinc	ppm	ASTM D5185(m) 0.0	<1	<1
Sulfur	ppm	ASTM D5185(m) 0	694	683
Lithium	ppm	ASTM D5185(m)	<1	<1

CONTAMINANTS

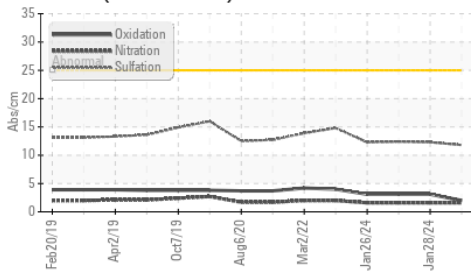
method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >15	0	0
Sodium	ppm	ASTM D5185(m)	0	0
Potassium	ppm	ASTM D5185(m) >20	0	0
Water	%	ASTM D6304* >0.03	0.001	0.001
ppm Water	ppm	ASTM D6304* >300	13	5

INFRA-RED

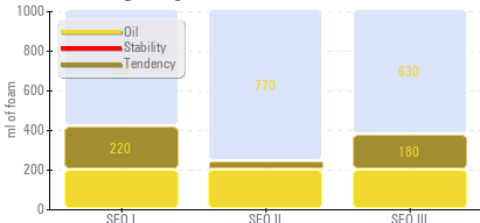
method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	0	---
Nitration	Abs/cm	ASTM D7624*	1.6	---
Sulfation	Abs/.1mm	ASTM D7415*	11.8	---

OIL ANALYSIS REPORT

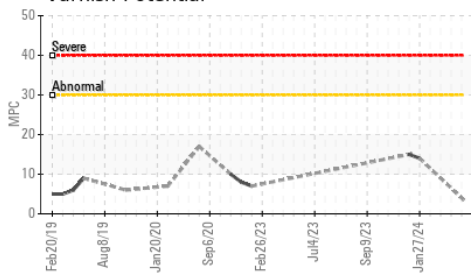
FT-IR (Direct Trend)



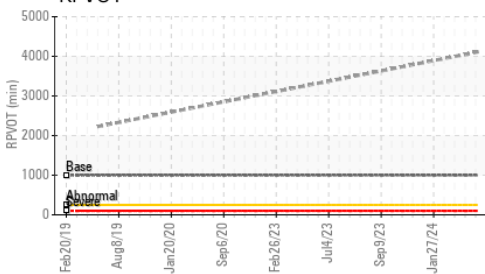
Foaming SEQ I/II/III



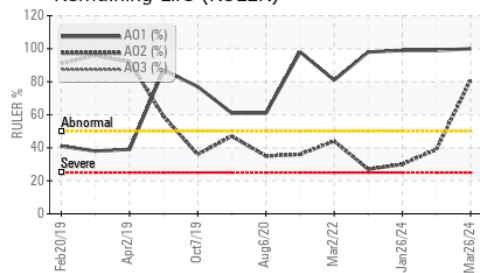
Varnish Potential



RPVOT



Remaining Life (RULER)



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		485	2250	117466
Particles >6µm	ASTM D7647	>640	160	609	▲ 20332
Particles >14µm	ASTM D7647	>80	13	45	79
Particles >21µm	ASTM D7647	>20	4	10	12
Particles >38µm	ASTM D7647	>4	1	1	1
Particles >71µm	ASTM D7647	>3	0	0	0
Oil Cleanliness	ISO 4406 (c)	>--/16/13	16/14/11	18/16/13	▲ 24/22/13

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm ASTM D7414*		2.0	---	---
Acid Number (AN)	mg KOH/g ASTM D974*	0.04	0.04	0.03	0.08
Anti-Oxidant 1	% ASTM D6971*	<25	100	---	---
Anti-Oxidant 2	% ASTM D6971*	<25	81	---	---
MPC Varnish Potential	Scale ASTM D7843(m)*	>15	4	---	---

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar Visual*	NONE	NONE	NONE	NONE
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
Free Water	scalar Visual*		NEG	NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt ASTM D7279(m)	34.0	33.8	33.8	33.6
Visc @ 100°C	cSt ASTM D7279(m)	5.59	5.7	5.6	5.6
Viscosity Index (VI)	Scale ASTM D2270*	110	108	102	103
Separability	oil/h2o/em ASTM D1401*	40/40/0	41/39/0 (10)	---	---
Air Release Time	min ASTM D3427*	2	2.90	---	---
Foam Tendency	I/II/III ASTM D892*	5	220/40/180	---	---
Foam Stability	I/II/III ASTM D892*	0	0/0/0	---	---
ASTM Color	scalar ASTM D1500*	0.5	<1.0	---	---
Rust Prevention	PASS/FAIL ASTM D665*		PASS	---	---
Oxidation Test (RPVOT)	minutes ASTM D2272*	1000	4101	---	---

SEDIMENT	method	limit/base	current	history1	history2
Pentane Insolubles	% ASTM D893(m)*		0.057	---	---
Toluene Insolubles	% ASTM D893(m)*		0.054	---	---

SAMPLE IMAGES

method	limit/base	current	history1	history2
Color				
Bottom				
MPC			no image	no image



Laboratory Sample No. :
Lab Number : (C)
Unique Number : 5
Test Package : /

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: (709)778-3575
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FERROGRAPHY REPORT

Area

Main Power Generation

Machine Id

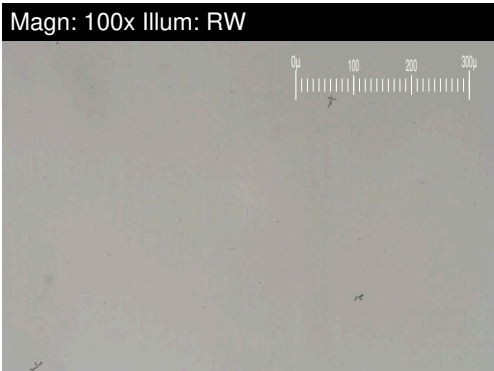
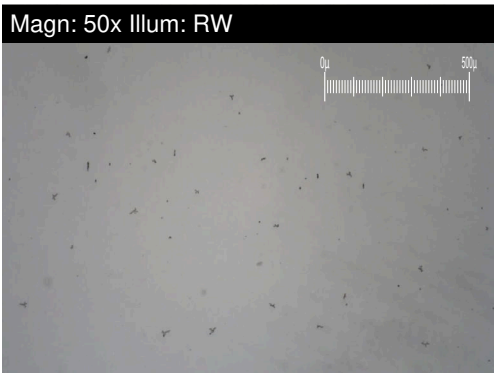
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Component

Turbine

Fluid

PETRO CANADA TURBOFLO 32 (8300 LTR)



DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		3.0	---	---
Small Particles		DR-Ferr*		3.0	---	---
Total Particles		DR-Ferr*	>---	6	---	---
Large Particles Percentage	%	DR-Ferr*		0	---	---
Severity Index		DR-Ferr*		0	---	---

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		1		
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*				
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*		1		
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		1		

WEAR

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

