

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

We recommend an early resample to monitor this condition. Please note that this is a corrected copy for laboratory data updates.

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 system and fluid cleanliness is acceptable.

Oil Condition

Rust Prevention test (ASTM D665) indicates poor anti-corrosion properties of the oil and a potential for corrosion in the system. The AN level is acceptable for this fluid.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PC	PC	PC
Sample Date	Client Info	12 Apr 2024	03 Apr 2024	26 Mar 2024
Machine Age	hrs	0	0	0
Oil Age	hrs	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		ABNORMAL	NORMAL	NORMAL

WEAR METALS

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

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185(m) 0	0	<1	<1
Barium	ppm ASTM D5185(m) 0	0	0	0
Molybdenum	ppm ASTM D5185(m) 0	0	0	0
Manganese	ppm ASTM D5185(m)	0	0	0
Magnesium	ppm ASTM D5185(m) 0	0	0	0
Calcium	ppm ASTM D5185(m) 0	0	0	0
Phosphorus	ppm ASTM D5185(m) 120	261	268	267
Zinc	ppm ASTM D5185(m) 0.0	1	1	<1
Sulfur	ppm ASTM D5185(m) 0	666	694	694
Lithium	ppm ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

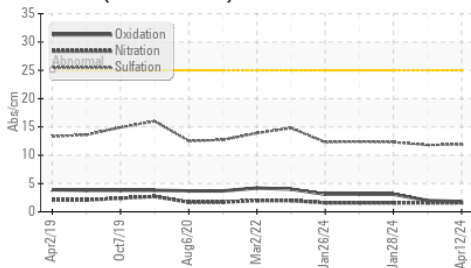
method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185(m) >15	0	0	0
Sodium	ppm ASTM D5185(m)	0	0	0
Potassium	ppm ASTM D5185(m) >20	<1	<1	0
Water	% ASTM D6304* >0.03	0.001	---	0.001
ppm Water	ppm ASTM D6304* >300	5	---	13

INFRA-RED

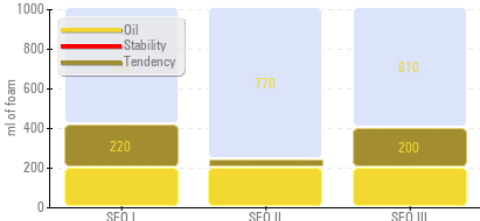
method	limit/base	current	history1	history2
Soot %	% ASTM D7844*	0	---	0
Nitration	Abs/cm ASTM D7624*	1.6	---	1.6
Sulfation	Abs/.1mm ASTM D7415*	11.9	---	11.8

OIL ANALYSIS REPORT

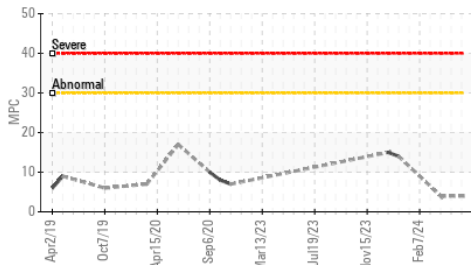
FT-IR (Direct Trend)



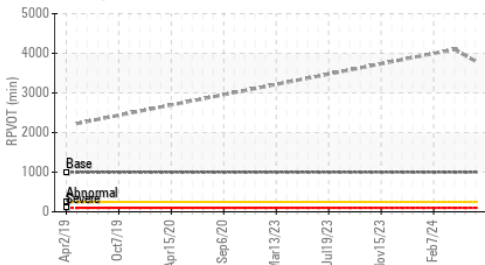
Foaming SEQ I/II/III



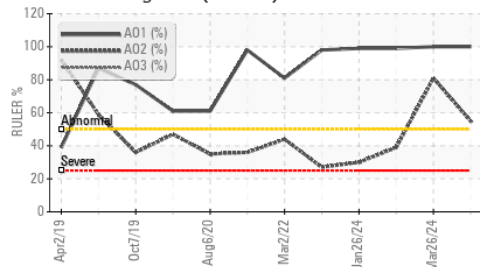
Varnish Potential



RPVOT



Remaining Life (RULER)



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		394	2210	485
Particles >6µm	ASTM D7647	>640	160	472	160
Particles >14µm	ASTM D7647	>80	19	26	13
Particles >21µm	ASTM D7647	>20	6	6	4
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	18/16/12	16/14/11

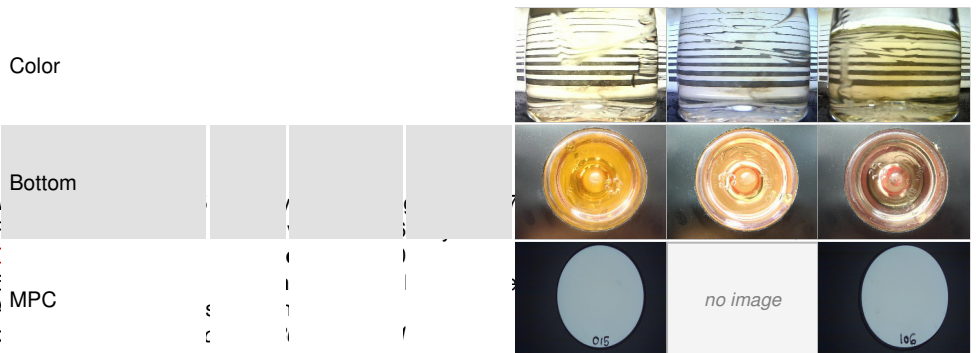
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	1.8	---	2.0
Acid Number (AN)	mg KOH/g	ASTM D974*	0.01	0.04	0.04
Anti-Oxidant 1	%	ASTM D6971*	100	---	100
Anti-Oxidant 2	%	ASTM D6971*	55	---	81
MPC Varnish Potential	Scale	ASTM D7843(m)*	4	---	4

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	NONE
Silt	scalar	Visual*	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	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)	33.9	33.8	33.8
Visc @ 100°C	cSt	ASTM D7279(m)	5.6	5.6	5.7
Viscosity Index (VI)	Scale	ASTM D2270*	102	102	108
Separability	oil/h ₂ o/em	ASTM D1401*	43/37/0 (15)	---	41/39/0 (10)
Air Release Time	min	ASTM D3427*	3.40	---	2.90
Foam Tendency	I/II/III	ASTM D892*	220/40/200	---	220/40/180
Foam Stability	I/II/III	ASTM D892*	0/0/0	---	0/0/0
ASTM Color	scalar	ASTM D1500*	<1.0	---	<1.0
Rust Prevention	PASS/FAIL	ASTM D665*	▲ FAIL	---	PASS
Oxidation Test (RPVOT)	minutes	ASTM D2272*	3800	---	4101

SEDIMENT	method	limit/base	current	history1	history2
Pentane Insolubles	%	ASTM D893(m)*	0.051	---	0.057
Toluene Insolubles	%	ASTM D893(m)*	0.010	---	0.054

SAMPLE IMAGES	method	limit/base	current	history1	history2
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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: (709)778-3575

F: (709)724-2835

FERROGRAPHY REPORT

Area
Main Power Generation
 Machine Id
Generator - MPG (Port) Lube Oil System (S/N Sample Tag XX-80201-S1)
 Component
Turbine
 Fluid
PETRO CANADA TURBOFLO 32 (8300 LTR)

Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW

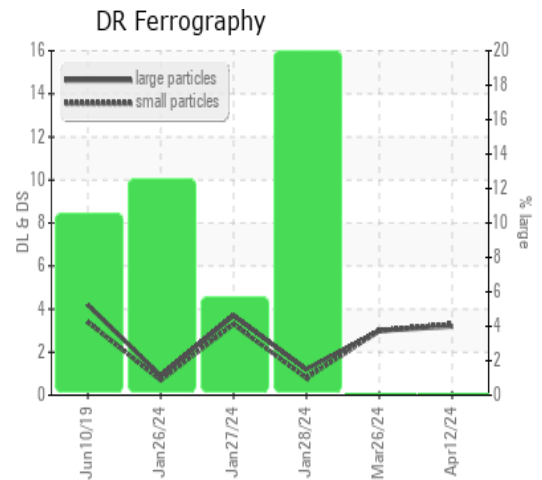


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		3.2	---	3.0
Small Particles		DR-Ferr*		3.3	---	3.0
Total Particles		DR-Ferr*	>---	6.5	---	6
Large Particles Percentage	%	DR-Ferr*		0	---	0
Severity Index		DR-Ferr*		0	---	0

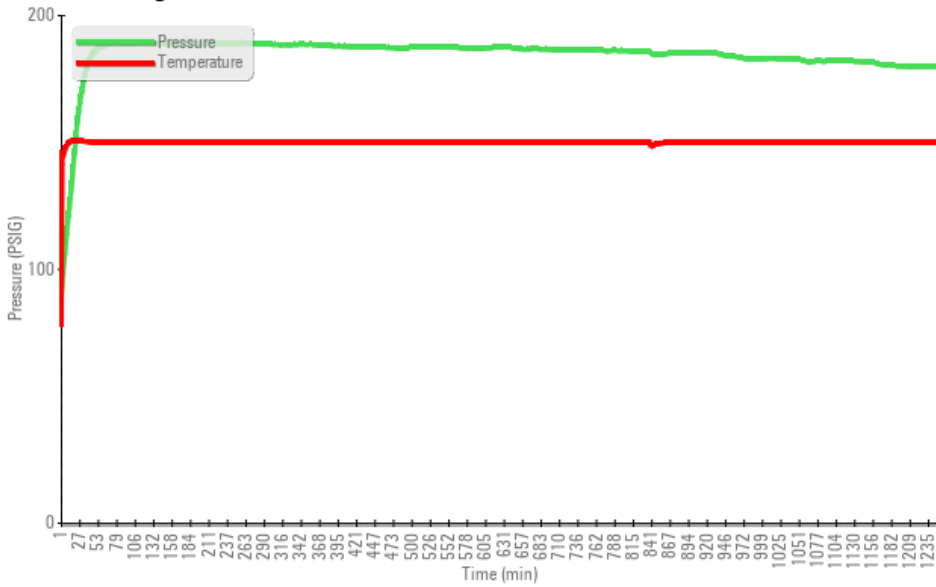
FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		1		1
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*				1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10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

WEAR

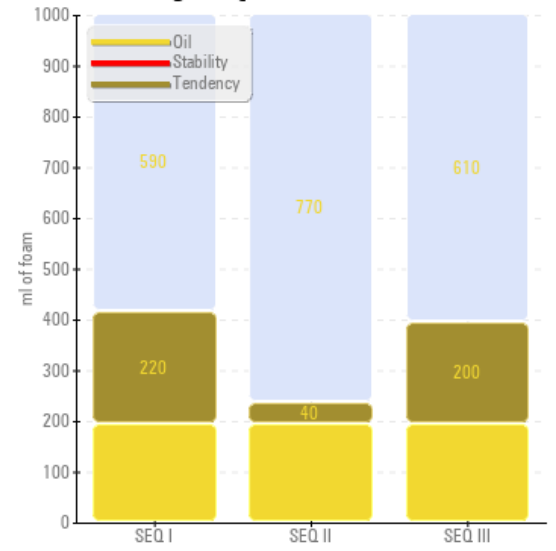
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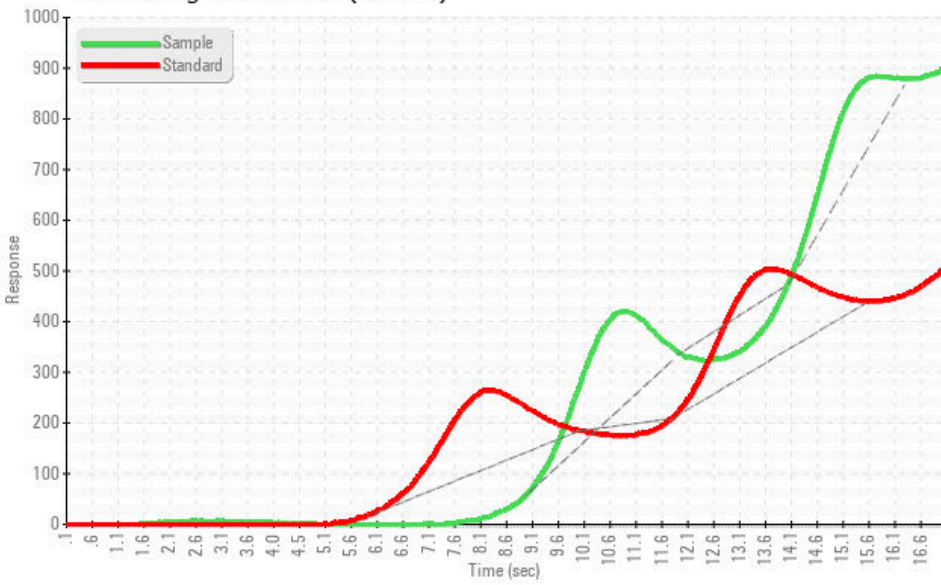
Rotating Pressure Vessel Oxidation Test



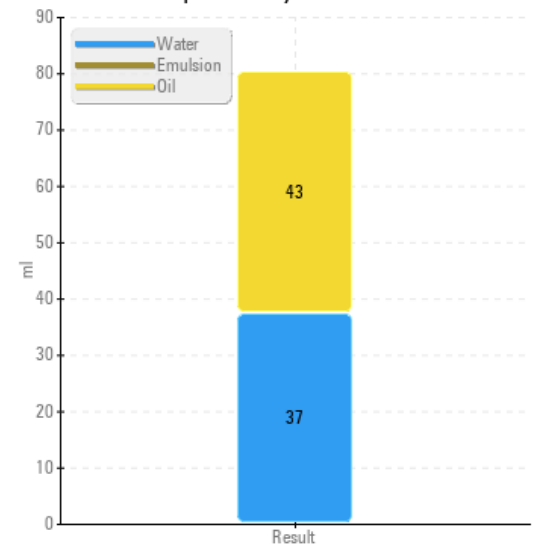
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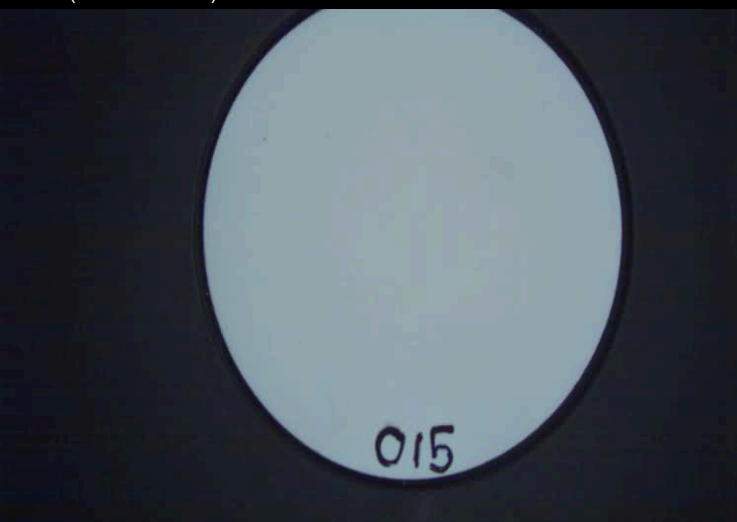
Remaining Useful Life (RULER)



Water Separability



MPC (Varnish Test)



Sample Color & Clarity

