



OIL ANALYSIS REPORT

WEAR	MARGINAL
CONTAMINANTS	ABNORMAL
OIL CONDITION	NORMAL

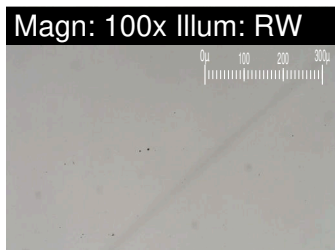
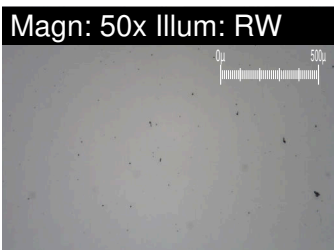
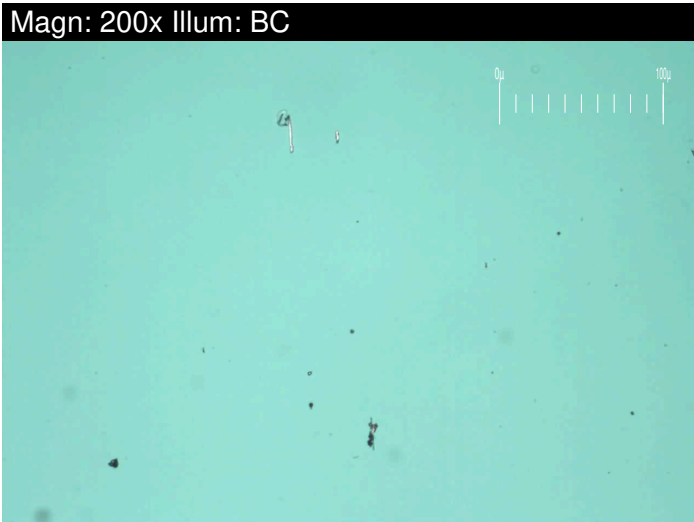
Area
Powerhouse
 Machine Id
SOLAR UNIT 2
 Component
Turbine
 Fluid
PETRO CANADA TURBOFLO XL32 (1800 LTR)

RECOMMENDATION

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition.

WEAR

Trace amounts of sliding wear are present. This condition is rated marginal for monitoring purposes. No maintenance activities are suggested at the current time. However, if the size or the severity increase in future samples a maintenance action will be recommended.



Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0872208	WC0755989	WC0659907
Sample Date		Client Info		21 May 2024	08 Nov 2023	26 Jul 2022
Machine Age	yrs	Client Info		0	0	7
Oil Age	yrs	Client Info		1	6	7
Filter Age	yrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	Changed	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	SEVERE
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	<1	0
Aluminum	ppm	ASTM D5185(m)	>10	0	0	<1
Lead	ppm	ASTM D5185(m)		0	<1	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*		2.5	3.6	4.0
Small Particles		DR-Ferr*		2.4	3.0	0.9
Total Particles		DR-Ferr*	>---	4.9	6.6	4.9
Large Particles Percentage	%	DR-Ferr*		2	9.1	63.3
Severity Index		DR-Ferr*		0	2	12
Ferrous Rubbing	Scale 0-10	ASTM D7684*		1	1	1
Ferrous Sliding	Scale 0-10	ASTM D7684*		1		
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1	1	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*				

CONTAMINANTS

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The water content is negligible.

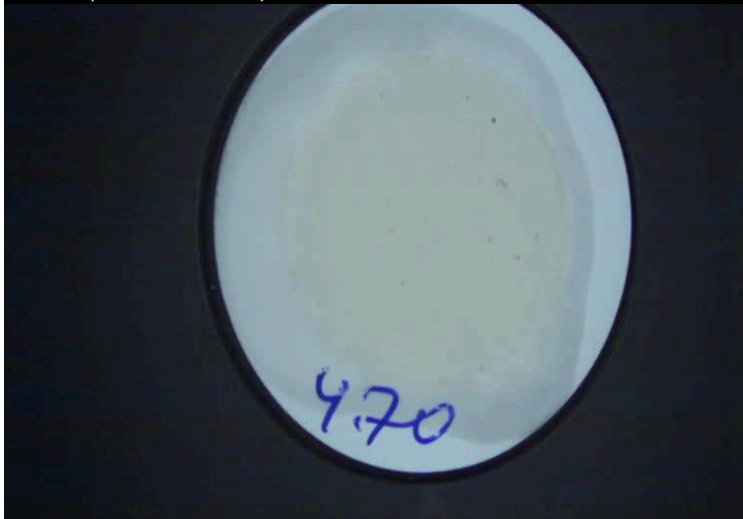
Silicon	ppm	ASTM D5185(m)	>15	4	0	<1
Potassium	ppm	ASTM D5185(m)	>20	0	0	<1
Water	%	ASTM D6304*	>0.03	0.001	0.001	0.002
ppm Water	ppm	ASTM D6304*	>300	4	8.3	17.3
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	9	---	▲ 53
Particles >4µm		ASTM D7647	>2500	▲ 8595	216	542
Particles >6µm		ASTM D7647	>640	▲ 2102	43	173
Particles >14µm		ASTM D7647	>80	▲ 195	4	22
Particles >21µm		ASTM D7647	>20	▲ 61	1	4
Particles >38µm		ASTM D7647	>4	● 8	0	0
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>18/16/13	▲ 20/18/15	15/13/9	16/15/12
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*		█ 1	█ 1	
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		█ 1	█ 1	█ 1

OIL CONDITION

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	<1	<1
Barium	ppm	ASTM D5185(m)	0	0	<1	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)	0	0	0	0
Magnesium	ppm	ASTM D5185(m)	0	0	0	0
Calcium	ppm	ASTM D5185(m)	0	0	<1	0
Phosphorus	ppm	ASTM D5185(m)	5	9	6	46
Zinc	ppm	ASTM D5185(m)	0	<1	<1	<1
Sulfur	ppm	ASTM D5185(m)	750	566	623	434
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	0.06	0.07	0.16
Visc @ 40°C	cSt	ASTM D7279(m)	33.86	34.1	34.2	34.5
Lubricant Degradation	Scale 0-10	ASTM D7684*				

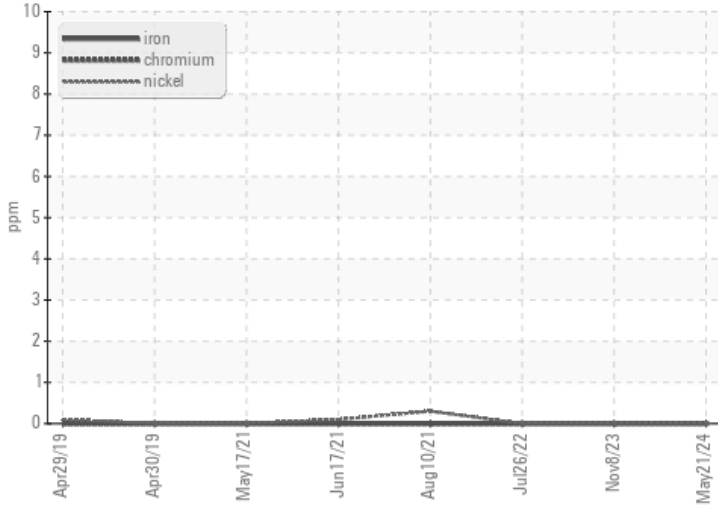
MPC (Varnish Test)



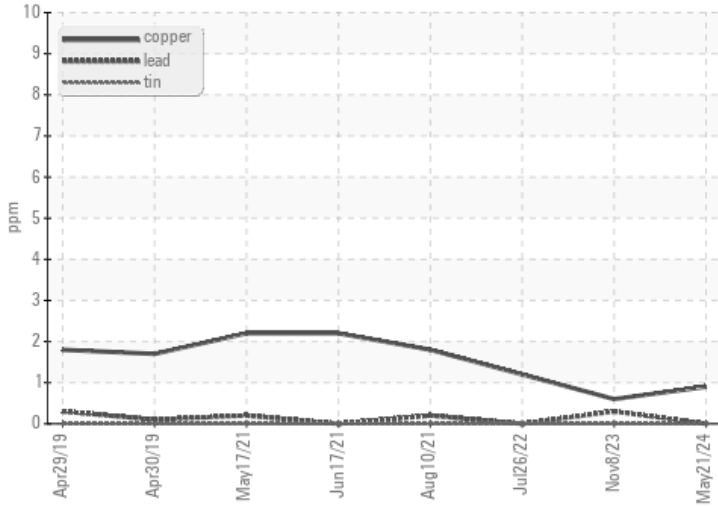
Sample Color & Clarity



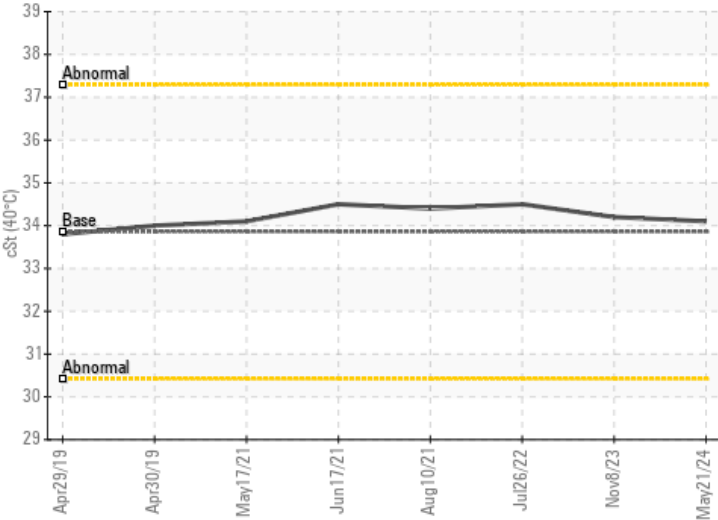
Ferrous Alloys



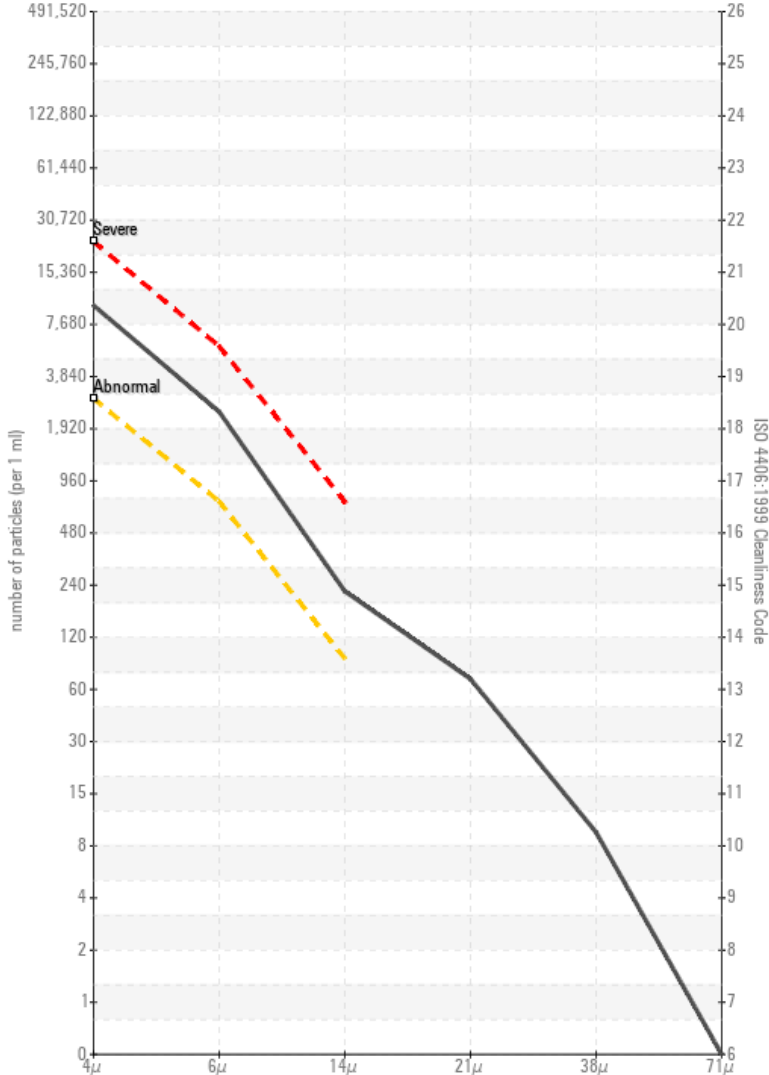
Non-ferrous Metals



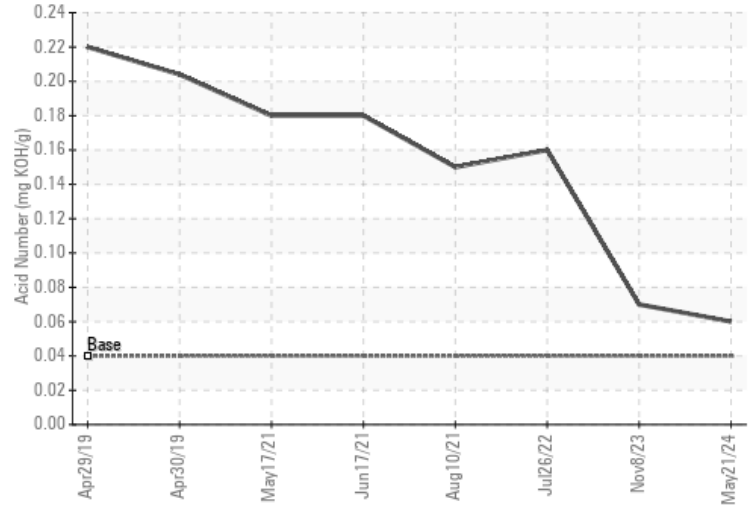
Viscosity @ 40°C



Particle Count



Acid Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0872208
Lab Number : 02637470
Unique Number : 5786632
Test Package : IND 3 (Additional Tests: MPC)
Received : 24 May 2024
Tested : 29 May 2024
Diagnosed : 29 May 2024 - Kevin Marson

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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.