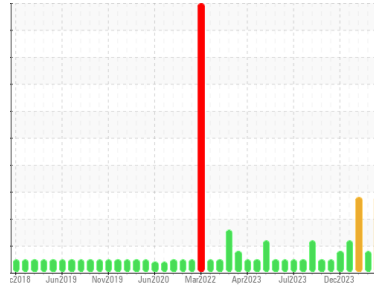


PROBLEM SUMMARY

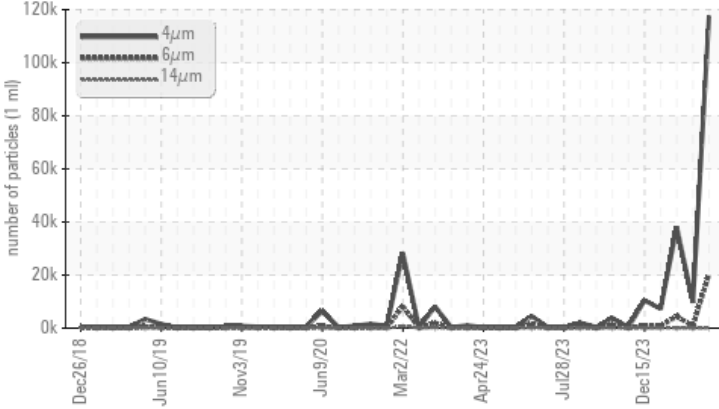
Area
Main Power Generation [450261626]
 Machine Id
Generator - MPG (Port) Lube Oil System (S/N Sample Tag XX-80201-S1)
 Component
Turbine
 Fluid
PETRO CANADA TURBOFLO 32 (8300 LTR)

Sample Rating Trend



COMPONENT CONDITION SUMMARY

Particle Trend



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

PROBLEMATIC TEST RESULTS

Sample Status		SEVERE	ATTENTION	ABNORMAL
Particles >6µm	ASTM D7647 >640	20332	820	4408
Oil Cleanliness	ISO 4406 (c) >--/16/13	24/22/13	20/17/12	22/19/13

Customer Id: TERHAM
 Sample No.: PC0076670
 Lab Number: 02615020
 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

To change component or sample information:
 Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter	---	---	?	We recommend you service the filters on this component.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
Contact Required	---	---	?	Please contact your representative for information regarding the proper sampling kits for your service.
Alert	---	---	?	NOTE: We recommend using IND 3 test kits,
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

28 Jan 2024 Diag: Bill Quesnel

ISO



We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



27 Jan 2024 Diag: Bill Quesnel

DEGRADATION



We recommend you service the filters on this component. We recommend an early resample to monitor this condition. Diagnostician's Note: It appears that your filtration effort has loosened up some varnish in the system. Although the MPC result is slightly lower than before the filtration process, the oil is now hazy and the 4µm and 6µm particle count results are higher indicating a higher concentration of insoluble bodies present in the oil. Recommend using resin, or electrostatic filtration, or coalescence filtration to remove the insolubles in the system. With a reservoir this size, it will take several weeks to clean up the system entirely. NOTE: Only 100 ml of oil was received (not 1L as requested) so AOM 2 testing was conducted instead of AOM 3. All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. There are a light amount of insoluble color bodies present in the oil, and the oil is hazy. The water content is negligible. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

[view report](#)



26 Jan 2024 Diag: Bill Quesnel

INSOLUBLES

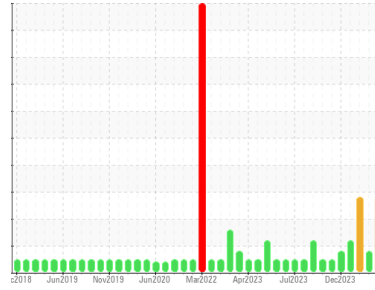


We recommend you service the filters on this component. We recommend an early resample to monitor this condition. No other corrective action is recommended at this time. NOTE: Only 100 ml of oil was received (not 1L as requested) so AOM 2 testing was conducted instead of AOM 3. All component wear rates are normal. The ferrography results are normal indicating no abnormal wear in the system. There is a light amount of silt (particulates < 14 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The water content is negligible. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

[view report](#)



Area
Main Power Generation [450261626]
Machine Id
Generator - MPG (Port) Lube Oil System (S/N Sample Tag XX-80201-S1)
Component
Turbine
Fluid
PETRO CANADA TURBOFLO 32 (8300 LTR)



DIAGNOSIS

Recommendation

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

Wear

Component wear rates appear to be normal (unconfirmed).

Contamination

There is a high amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

Fluid 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.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PC0076670	PC	PP0080544
Sample Date	Client Info	07 Feb 2024	28 Jan 2024	27 Jan 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		SEVERE	ATTENTION	ABNORMAL

WEAR METALS

method	limit/base	current	history1	history2
PQ	ASTM D8184*	0	0	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	<1
Aluminum	ppm ASTM D5185(m) >10	0	<1	<1
Lead	ppm ASTM D5185(m)	0	0	0
Copper	ppm ASTM D5185(m) >5	1	2	2
Tin	ppm ASTM D5185(m) >5	<1	<1	<1
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	1	<1	2
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	<1	0	<1
Calcium	ppm ASTM D5185(m) 0	<1	0	<1
Phosphorus	ppm ASTM D5185(m) 120	263	258	253
Zinc	ppm ASTM D5185(m) 0.0	<1	<1	<1
Sulfur	ppm ASTM D5185(m) 0	568	557	568
Lithium	ppm ASTM D5185(m)	<1	<1	<1

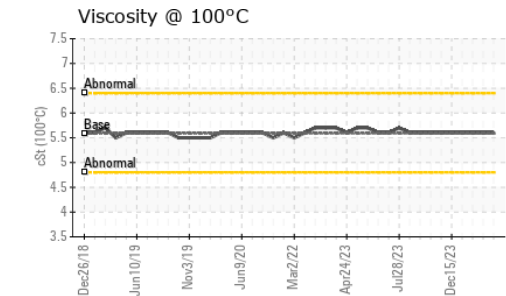
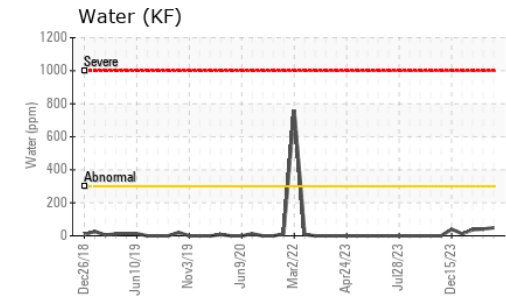
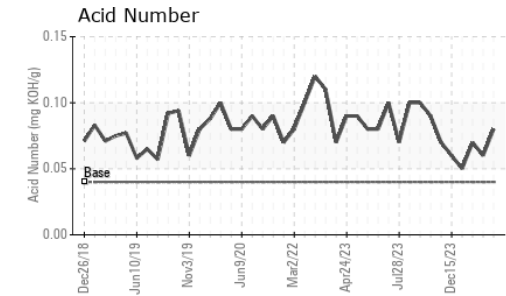
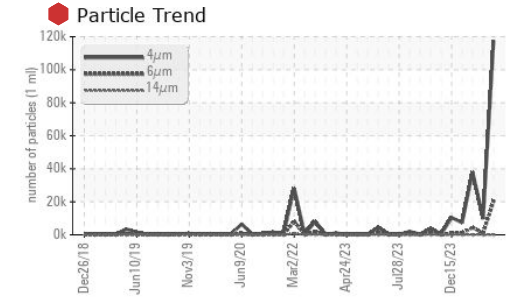
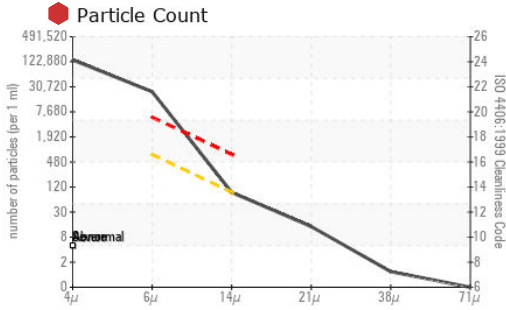
CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185(m) >15	<1	0	0
Sodium	ppm ASTM D5185(m)	<1	0	<1
Potassium	ppm ASTM D5185(m) >20	<1	<1	<1
Water	% ASTM D6304* >0.03	0.004	0.004	0.003
ppm Water	ppm ASTM D6304* >300	49	41	37

FLUID CLEANLINESS

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	117466	9788	38073
Particles >6µm	ASTM D7647 >640	20332	820	4408
Particles >14µm	ASTM D7647 >80	79	32	73
Particles >21µm	ASTM D7647 >20	12	10	16
Particles >38µm	ASTM D7647 >4	1	1	1
Particles >71µm	ASTM D7647 >3	0	0	0
Oil Cleanliness	ISO 4406 (c) >--/16/13	24/22/13	20/17/12	22/19/13

OIL ANALYSIS REPORT



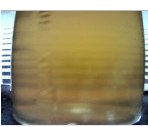
Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076670 **Received** : 12 Feb 2024
Lab Number : 02615020 **Tested** : 13 Feb 2024
Unique Number : 5724115 **Diagnosed** : 14 Feb 2024 - Kevin Marson
Test Package : IND 2 (Additional Tests: KV100, PQ, VI)

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.

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	0.08	0.06	0.07

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	HAZY
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	33.6	33.6	33.7
Visc @ 100°C	cSt	ASTM D7279(m)	5.59	5.6	5.6	5.6
Viscosity Index (VI)	Scale	ASTM D2270*	110	103	103	103

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

Suncor - Terra Nova Projects
 Scotia Centre, 235 Water Street
 St. John's, NL
 CA A1C 1B6
 Contact: Josh Hynes
 joshynes@suncor.com
 T: (709)778-3575
 F: (709)724-2835