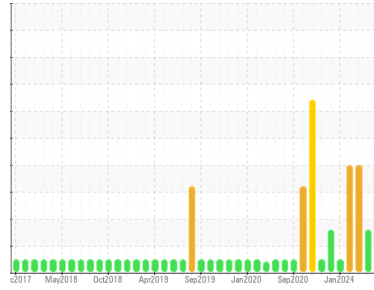
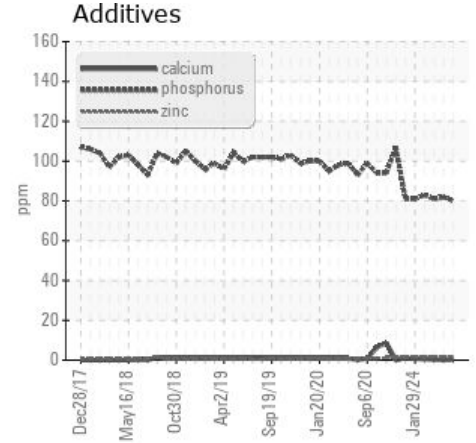
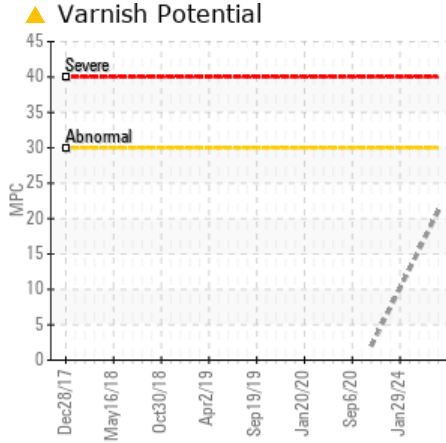
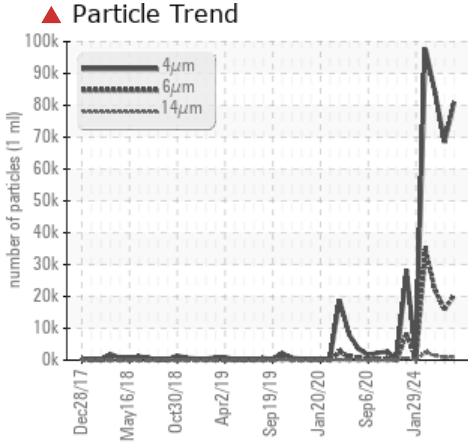




Area
Gas Compression [450312985]
 Machine Id
Compressor (HP1) - Lubrication System (S/N Sample Tag XX-23003-S1)
 Component
Lube System
 Fluid
PETRO CANADA TURBOFLO XL32 (10350 LTR)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. No other corrective action is recommended at this time. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 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	ABNORMAL	SEVERE
Particles >6µm	ASTM D7647	>2500	▲ 20402	▲ 15921	▲ 21924
Particles >14µm	ASTM D7647	>320	▲ 1005	▲ 776	▲ 1402
Particles >21µm	ASTM D7647	>80	▲ 216	▲ 174	▲ 370
Oil Cleanliness	ISO 4406 (c)	>--/18/15	▲ 24/22/17	▲ 23/21/17	▲ 24/22/18
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	---	---

Customer Id: TERHAM
 Sample No.: PC
 Lab Number: 02634605
 Test Package: MAR 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	MISSED	May 21 2024	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	MISSED	May 21 2024	?	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 MAR 3 test kits,
Alert	MISSED	May 21 2024	?	The fluid was specified as PETRO CANADA TURBOFLO XL32, however, a fluid match indicates that this fluid is ISO 32 R&O Hydraulic Oil. Please confirm the oil type and grade on your next sample.
Check Breathers	MISSED	May 21 2024	?	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 Dirt Access	MISSED	May 21 2024	?	We advise that you check all areas where contaminants can enter the system.
Check Fluid Source	MISSED	May 21 2024	?	Confirm the source of the lubricant being utilized for top-up/fill.
Filter Fluid	MISSED	May 21 2024	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

HISTORICAL DIAGNOSIS



08 Apr 2024 Diag: Kevin Marson

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. Additive levels indicate the addition of a different brand, or type of oil. 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](#)



29 Mar 2024 Diag: Kevin Marson

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. All component wear rates are normal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Additive levels indicate the addition of a different brand, or type of oil. 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](#)



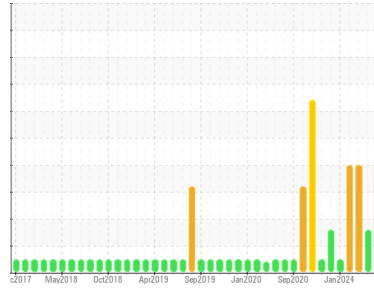
01 Mar 2024 Diag: Kevin Marson

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Confirm the source of the lubricant being utilized for top-up/fill. 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 MAR 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid. Component wear rates appear to be normal (unconfirmed). There is a high amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code. Additive levels indicate the addition of a different brand, or type of oil. 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](#)



Area
Gas Compression [450312985]
 Machine Id
Compressor (HP1) - Lubrication System (S/N Sample Tag XX-23003-S1)
 Component
Lube System
 Fluid
PETRO CANADA TURBOFLO XL32 (10350 LTR)



DIAGNOSIS

▲ Recommendation

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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. Confirm the source of the lubricant being utilized for top-up/fill. Resample in 30-45 days to monitor this situation. No other corrective action is recommended at this time. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 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 particulates (2 to 100 microns in size) present in the oil. MPC (Membrane Patch Colorimetry) test indicates a light concentration of varnish present. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

Fluid Condition

Additive levels indicate the addition of a different brand, or type of oil. 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	PC	PC	PC0081646
Sample Date	Client Info	19 Apr 2024	08 Apr 2024	29 Mar 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		SEVERE	ABNORMAL	SEVERE

CONTAMINATION method limit/base current history1 history2

Water	WC Method	>0.05	NEG	NEG	NEG
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WEAR METALS method limit/base current history1 history2

PQ	ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m)	>20	1	1
Chromium	ppm	ASTM D5185(m)	>10	0	0
Nickel	ppm	ASTM D5185(m)	>10	0	<1
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)	>20	0	0
Copper	ppm	ASTM D5185(m)	>20	<1	<1
Tin	ppm	ASTM D5185(m)	>10	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

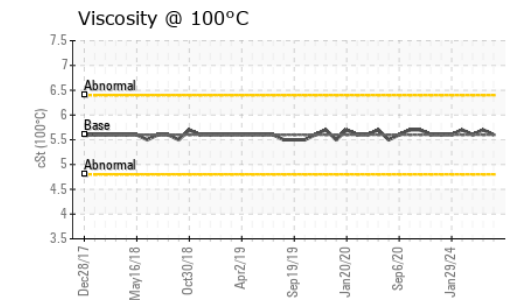
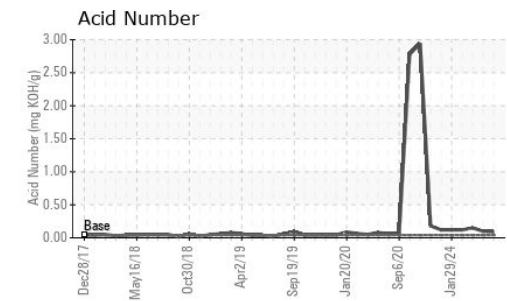
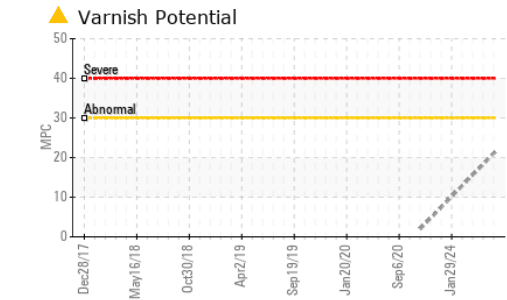
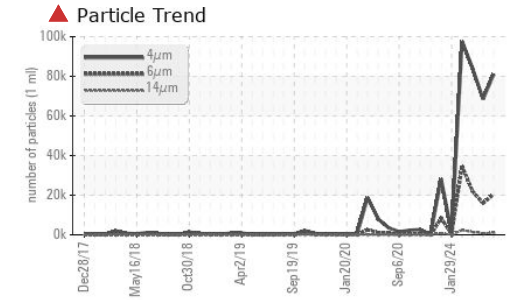
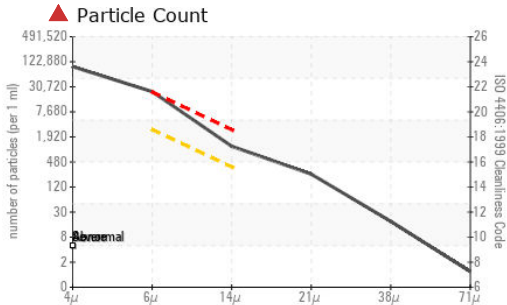
ADDITIVES method limit/base current history1 history2

Boron	ppm	ASTM D5185(m)	0	0	0
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	<1	0
Calcium	ppm	ASTM D5185(m)	0	<1	0
Phosphorus	ppm	ASTM D5185(m)	5	80	82
Zinc	ppm	ASTM D5185(m)	0	2	1
Sulfur	ppm	ASTM D5185(m)	750	261	257
Lithium	ppm	ASTM D5185(m)		<1	<1

CONTAMINANTS method limit/base current history1 history2

Silicon	ppm	ASTM D5185(m)	>15	<1	<1
Sodium	ppm	ASTM D5185(m)		<1	<1
Potassium	ppm	ASTM D5185(m)	>20	0	<1

OIL ANALYSIS REPORT



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		81057	68479	83961
Particles >6µm	ASTM D7647	>2500	▲ 20402	▲ 15921	▲ 21924
Particles >14µm	ASTM D7647	>320	▲ 1005	▲ 776	▲ 1402
Particles >21µm	ASTM D7647	>80	▲ 216	▲ 174	▲ 370
Particles >38µm	ASTM D7647	>20	16	10	● 33
Particles >71µm	ASTM D7647	>4	1	1	4
Oil Cleanliness	ISO 4406 (c)	>--/18/15	▲ 24/22/17	▲ 23/21/17	▲ 24/22/18

FLUID DEGRADATION	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D974*	0.04	0.09	0.10	0.15
MPC Varnish Potential	Scale	ASTM D7843(m)*	>15	▲ 21	---	---

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	VLITE	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*	>0.05	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)	33.86	33.8	33.8	34.1
Visc @ 100°C	cSt	ASTM D7279(m)	5.60	5.6	5.7	5.6
Viscosity Index (VI)	Scale	ASTM D2270*	101	102	108	101

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

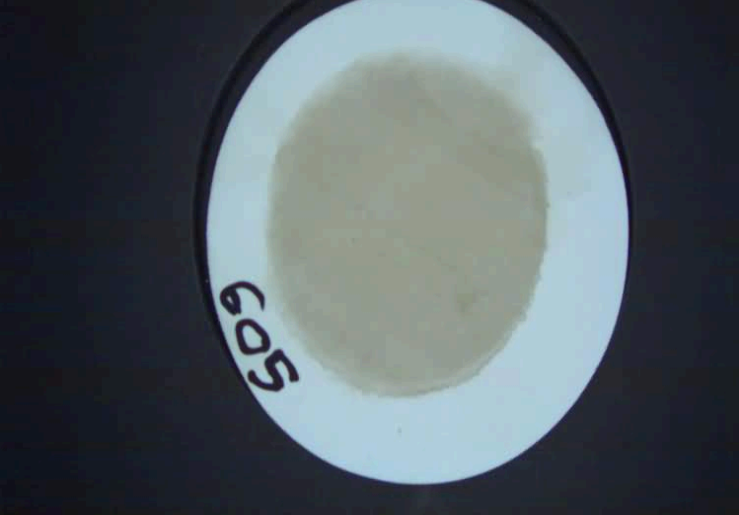


Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC
Lab Number : 02634605
Unique Number : 5775758
Test Package : MAR 2 (Additional Tests: KV100, MPC, PQ, TAN Man, VI)
Received : 10 May 2024
Tested : 24 May 2024
Diagnosed : 24 May 2024 - Kevin Marson

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

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.

MPC (Varnish Test)



Sample Color & Clarity



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