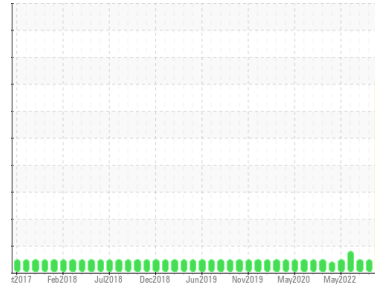
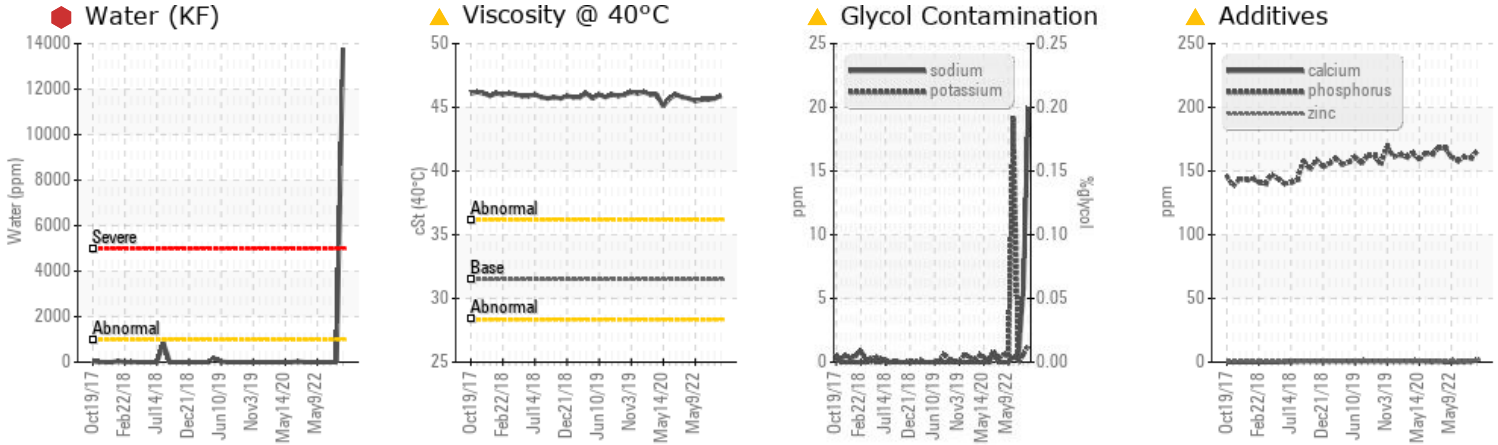




Area
Water Injection [450261613]
Machine Id
Pump Sea Water Injection (C) - Lube System (S/N Sample Tag PA-29002C-S1)
Component
Pump
Fluid
PETRO CANADA HYDREX AW 32 (1264 LTR)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. You have indicated that the oil has been changed to PETRO CANADA HYDREX AW 32, however, it appears that this is a sample of the previous fluid PETRO CANADA TURBOFLO 46.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	---	NORMAL
Water	%	ASTM D6304*	>.1	1.379	---	---
ppm Water	ppm	ASTM D6304*	>1000	13790	---	---
Appearance	scalar	Visual*	NORML	WGOIL	WGOIL	NORML
Emulsified Water	scalar	Visual*	>.1	.5%	.5%	NEG
Visc @ 40°C	cSt	ASTM D7279(m)	31.5	45.9	45.7	45.6
Viscosity Index (VI)	Scale	ASTM D2270*	110	38	98	103

Customer Id: TERHAM
Sample No.: PC0076389
Lab Number: 02615027
Test Package: MAR 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
Bill Quesnel CLS,OMA II,MLA-III,LLA-I +1
(289)291-4641 x4641
Bill.Quesnel@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
Water Drain-off	---	---	?	We advise that you follow the water drain-off procedure for this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Alert	---	---	?	You have indicated that the oil has been changed to PETRO CANADA HYDREX AW 32, however, it appears that this is a sample of the previous fluid PETRO CANADA HYDREX AW 32. Please confirm on your next oil sample that the oil has indeed been changed to PETRO CANADA HYDREX AW 32.
Information Required	---	---	?	You have indicated that the oil has been changed to PETRO CANADA HYDREX AW 32, however, it appears that this is a sample of the previous fluid PETRO CANADA HYDREX AW 32. Please confirm on your next oil sample that the oil has indeed been changed to PETRO CANADA HYDREX AW 32.
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
Check Water Access	---	---	?	We advise that you check for the source of water entry.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

19 Jan 2024 Diag:

UNKNOWN



view report



11 Oct 2023 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. 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. Component wear rates appear to be normal (unconfirmed). The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report



10 Sep 2023 Diag: Bill Quesnel

ISO



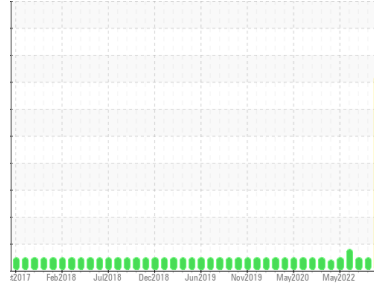
We recommend you service the filters on this component. Resample at the next service interval to monitor. All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report





Area
Water Injection [450261613]
Machine Id
Pump Sea Water Injection (C) - Lube System (S/N Sample Tag PA-29002C-S1)
Component
Pump
Fluid
PETRO CANADA HYDREX AW 32 (1264 LTR)



DIAGNOSIS

Recommendation
We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We advise that you follow the water drain-off procedure for this component. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition. You have indicated that the oil has been changed to PETRO CANADA HYDREX AW 32, however, it appears that this is a sample of the previous fluid PETRO CANADA TURBOFLO 46.

Wear
All component wear rates are normal.

Contamination
There is a high concentration of water present in the oil. Abnormal water content and sodium(Na) level and trace of magnesium and calcium indicate likely sea water contamination.

Fluid Condition
Viscosity of sample indicates oil is within ISO 46 range, advise investigate. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		PC0076389	PC	PC0076262
Sample Date	Client Info		08 Feb 2024	19 Jan 2024	11 Oct 2023
Machine Age	hrs	Client Info	0	0	0
Oil Age	hrs	Client Info	0	0	0
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			SEVERE	---	NORMAL

WEAR METALS

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		0	0	0
Iron	ppm	ASTM D5185(m) >75	4	2	0
Chromium	ppm	ASTM D5185(m) >5	0	0	0
Nickel	ppm	ASTM D5185(m)	0	<1	0
Titanium	ppm	ASTM D5185(m)	0	0	0
Silver	ppm	ASTM D5185(m)	0	0	<1
Aluminum	ppm	ASTM D5185(m) >5	<1	<1	0
Lead	ppm	ASTM D5185(m) >10	0	0	0
Copper	ppm	ASTM D5185(m) >15	<1	<1	<1
Tin	ppm	ASTM D5185(m)	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	<1	0	<1
Barium	ppm	ASTM D5185(m) 0	0	0	<1
Molybdenum	ppm	ASTM D5185(m) 0	0	0	0
Manganese	ppm	ASTM D5185(m) 0	0	0	0
Magnesium	ppm	ASTM D5185(m) 0	3	<1	0
Calcium	ppm	ASTM D5185(m) 50	▲ 1	▲ <1	<1
Phosphorus	ppm	ASTM D5185(m) 330	165	▲ 160	161
Zinc	ppm	ASTM D5185(m) 430	▲ 2	▲ 1	<1
Sulfur	ppm	ASTM D5185(m) 760	▲ 249	▲ 251	248
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

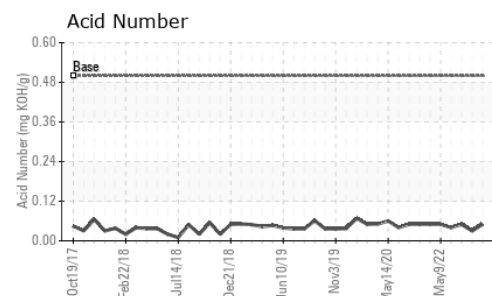
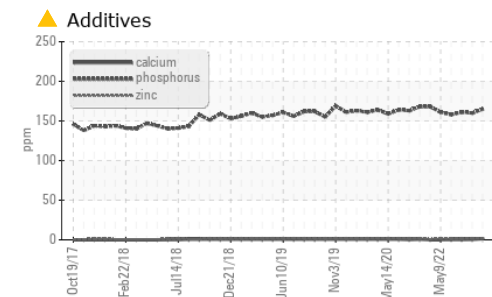
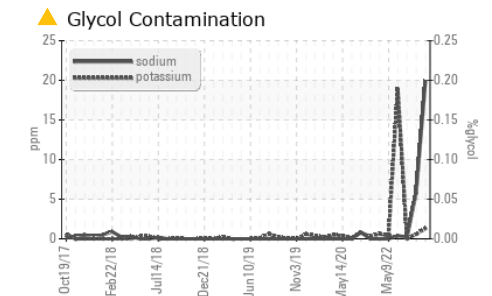
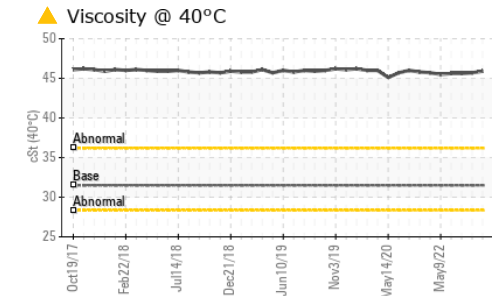
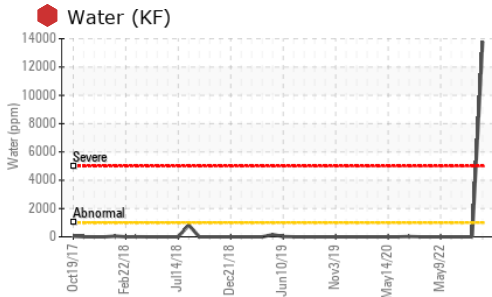
CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >20	<1	<1	<1
Sodium	ppm	ASTM D5185(m)	▲ 20	6	<1
Potassium	ppm	ASTM D5185(m) >20	1	<1	0
Water	%	ASTM D6304* >.1	● 1.379	---	---
ppm Water	ppm	ASTM D6304* >1000	● 13790	---	---

FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		---	57919	350
Particles >6µm	ASTM D7647	>1300	---	● 13289	139
Particles >14µm	ASTM D7647	>160	---	▲ 1010	17
Particles >21µm	ASTM D7647	>40	---	▲ 167	4
Particles >38µm	ASTM D7647	>10	---	4	1
Particles >71µm	ASTM D7647	>3	---	0	0
Oil Cleanliness	ISO 4406 (c)	>--/17/14	---	● 23/21/17	16/14/11

OIL ANALYSIS REPORT

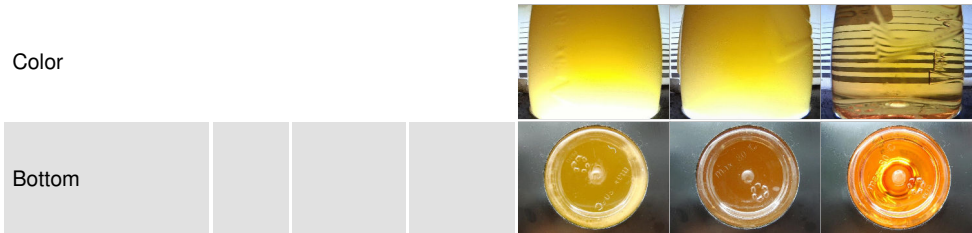


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.50	0.05	0.03	0.05

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	WGOIL	WGOIL	NORML
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>.1	.5%	.5%	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	31.5	45.9	45.7	45.6
Visc @ 100°C	cSt	ASTM D7279(m)	5.48	5.7	6.7	6.8
Viscosity Index (VI)	Scale	ASTM D2270*	110	38	98	103

SAMPLE IMAGES



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076389 **Received** : 12 Feb 2024
Lab Number : **02615027** **Tested** : 12 Feb 2024
Unique Number : 5724122 **Diagnosed** : 12 Feb 2024 - Bill Quesnel
Test Package : MAR 2 (Additional Tests: KF, KV100, PQ, TAN Man, VI)

Suncor - Terra Nova Projects
 Scotia Centre, 235 Water Strret
 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.