

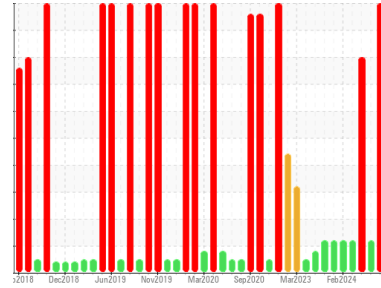
PROBLEM SUMMARY

Sample Rating Trend

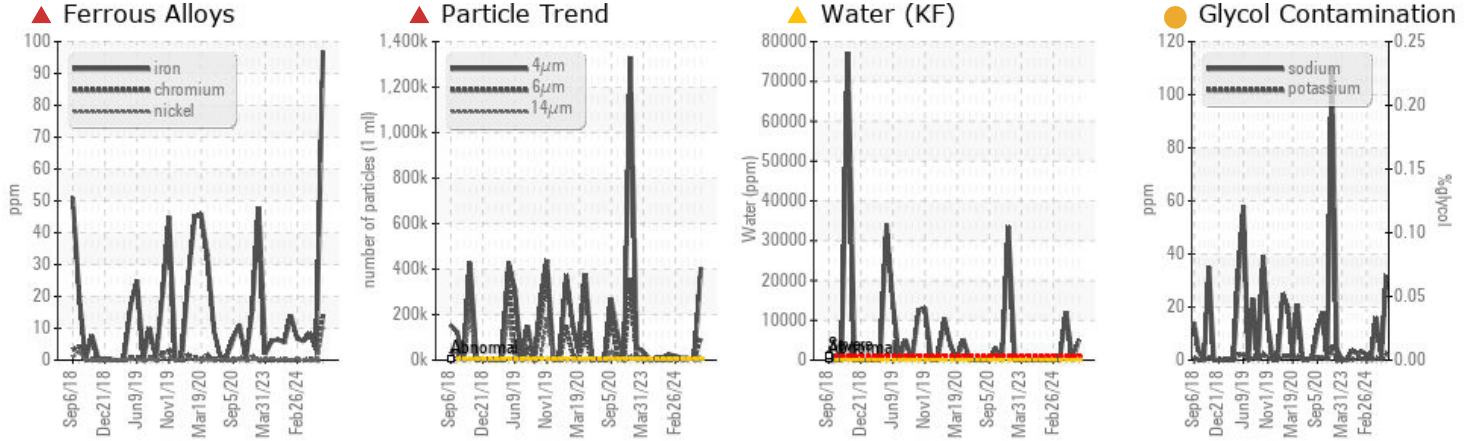
WEAR



Area
Aft Machinery Space [450323116]
Machine Id
Thruster Aft Port - Seal Oil System (S/N Sample Tag CL-06002-S3)
Component
Sealing System
Fluid
PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. 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 that you drain the fluid from the component if this has not already been done. Resample in 30-45 days to monitor this situation.

PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	ABNORMAL	SEVERE
Iron	ppm	ASTM D5185(m)	>100	▲ 97	3	8
Chromium	ppm	ASTM D5185(m)	>3	▲ 14	0	<1
Nickel	ppm	ASTM D5185(m)	>8	▲ 10	0	<1
Water	%	ASTM D6304*		▲ 0.507	---	▲ 1.209
ppm Water	ppm	ASTM D6304*		▲ 5072	---	▲ 12096
Particles >4µm		ASTM D7647	>5000	▲ 403992	▲ 11241	---
Particles >6µm		ASTM D7647	>1300	▲ 102076	▲ 2713	---
Particles >14µm		ASTM D7647	>160	▲ 3801	72	---
Particles >21µm		ASTM D7647	>40	▲ 1053	10	---
Particles >38µm		ASTM D7647	>10	▲ 33	1	---
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ 26/24/19	▲ 21/19/13	---
Emulsified Water	scalar	Visual*		▲ .2%	NEG	▲ .5%

Customer Id: TERHAM
Sample No.: PC
Lab Number: 02636025
Test Package: MAR 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
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To change component or sample information:
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RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Fluid	---	---	?	We recommend that you drain the fluid from the component if this has not already been done.
Resample	---	---	?	Resample in 30-45 days to monitor this situation.
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 Dirt Access	---	---	?	We advise that you check all areas where contaminants can enter the system.
Check Seals	---	---	?	Check seals and/or filters for points of contaminant entry.

HISTORICAL DIAGNOSIS

ISO



21 Apr 2024 Diag: Kevin Marson

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the fluid. The AN level is acceptable for this fluid. The fluid is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report



WATER



31 Mar 2024 Diag: Kevin Marson

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. We recommend that you change the oil. We recommend an early resample to monitor this condition. NOTE: Test values may be askew due high concentration of free water present in sample. All component wear rates are normal. There is a high concentration of water present in the fluid. Excessive free water present. Abnormal water content and sodium (Na) level indicate possible sea water contamination. The white residue present in the sample is fluid additive precipitate. The AN level is acceptable for this fluid. The fluid is no longer serviceable due to the presence of contaminants.

view report



ISO

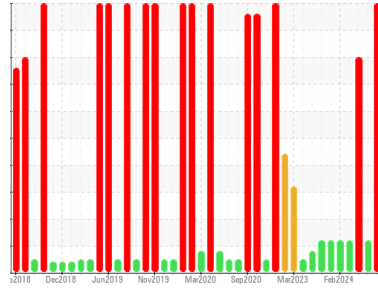


30 Mar 2024 Diag: Kevin Marson

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 fluid. The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.

view report





WEAR



Area
Aft Machinery Space [450323116]
Machine Id
Thruster Aft Port - Seal Oil System (S/N Sample Tag CL-06002-S3)
Component
Sealing System
Fluid
PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)

DIAGNOSIS

▲ Recommendation

Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. 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 that you drain the fluid from the component if this has not already been done. Resample in 30-45 days to monitor this situation.

▲ Wear

Chromium ppm levels are severe. Nickel and iron ppm levels are abnormal.

▲ Contamination

There is a high amount of particulates (2 to 100 microns in size) present in the fluid. There is a moderate concentration of water present in the fluid. Abnormal water content and sodium(Na) level indicate possible sea water contamination.

● Fluid Condition

The AN level is acceptable for this fluid. The fluid is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PC	PC	PC0081643
Sample Date	Client Info	26 Apr 2024	21 Apr 2024	31 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		SEVERE	ABNORMAL	SEVERE

WEAR METALS

method	limit/base	current	history1	history2	
PQ	ASTM D8184*	0	0	0	
Iron	ppm	ASTM D5185(m) >100	▲ 97	3	8
Chromium	ppm	ASTM D5185(m) >3	▲ 14	0	<1
Nickel	ppm	ASTM D5185(m) >8	▲ 10	0	<1
Titanium	ppm	ASTM D5185(m)	0	0	0
Silver	ppm	ASTM D5185(m)	0	0	0
Aluminum	ppm	ASTM D5185(m) >3	<1	0	0
Lead	ppm	ASTM D5185(m)	0	0	0
Copper	ppm	ASTM D5185(m) >3	<1	0	<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)	2	13	1
Barium	ppm	ASTM D5185(m)	0	0	0
Molybdenum	ppm	ASTM D5185(m)	2	0	0
Manganese	ppm	ASTM D5185(m)	2	0	0
Magnesium	ppm	ASTM D5185(m)	5	<1	3
Calcium	ppm	ASTM D5185(m)	4	<1	2
Phosphorus	ppm	ASTM D5185(m)	157	161	128
Zinc	ppm	ASTM D5185(m)	13	4	6
Sulfur	ppm	ASTM D5185(m)	8577	7683	7787
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

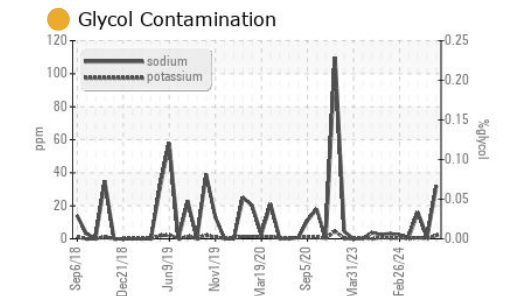
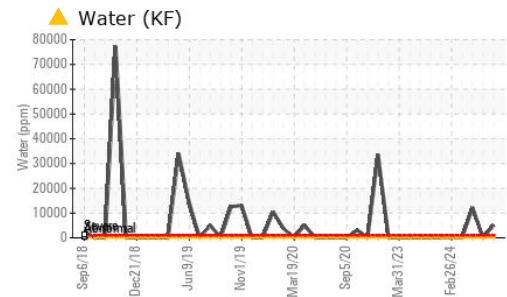
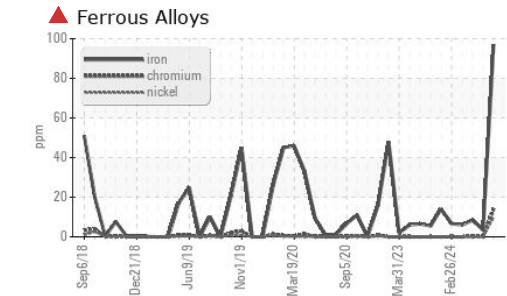
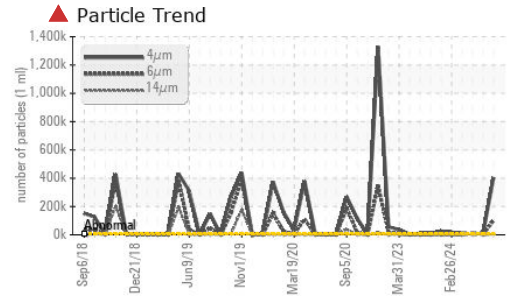
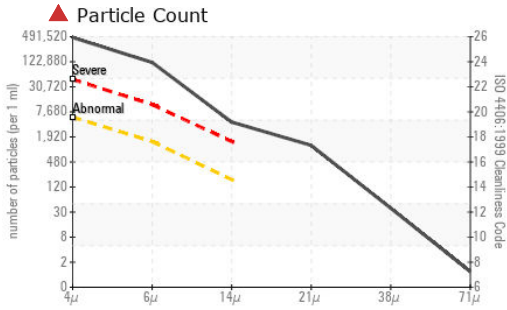
CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m) >25	2	2	2
Sodium	ppm	ASTM D5185(m)	● 32	<1	● 16
Potassium	ppm	ASTM D5185(m) >20	2	<1	<1
Water	%	ASTM D6304*	▲ 0.507	---	▲ 1.209
ppm Water	ppm	ASTM D6304*	▲ 5072	---	▲ 12096

FLUID CLEANLINESS

method	limit/base	current	history1	history2	
Particles >4µm	ASTM D7647	>5000	▲ 403992	▲ 11241	---
Particles >6µm	ASTM D7647	>1300	▲ 102076	▲ 2713	---
Particles >14µm	ASTM D7647	>160	▲ 3801	72	---
Particles >21µm	ASTM D7647	>40	▲ 1053	10	---
Particles >38µm	ASTM D7647	>10	▲ 33	1	---
Particles >71µm	ASTM D7647	>3	1	1	---
Oil Cleanliness	ISO 4406 (c)	>19/17/14	▲ 26/24/19	▲ 21/19/13	---

OIL ANALYSIS REPORT



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC
Lab Number : 02636025
Unique Number : 5785187
Test Package : MAR 2 (Additional Tests: KF, KV100, PQ, PrcCount, VI)
Received : 16 May 2024
Tested : 17 May 2024
Diagnosed : 17 May 2024 - Kevin Marson

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 CA A1C 1B6
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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.

FLUID DEGRADATION						
	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	0.35	0.45	0.35
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	▲ HEAVY
Silt	scalar	Visual*	NONE	LIGHT	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*		▲ .2%	NEG	▲ .5%
Free Water	scalar	Visual*		NEG	NEG	▲ 5%

FLUID PROPERTIES						
	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D7279(m)	149	148	144	143
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	14.3	14.1	13.2
Viscosity Index (VI)	Scale	ASTM D2270*		93	94	83

SAMPLE IMAGES						
	method	limit/base	current	history1	history2	
Color						
Bottom						

