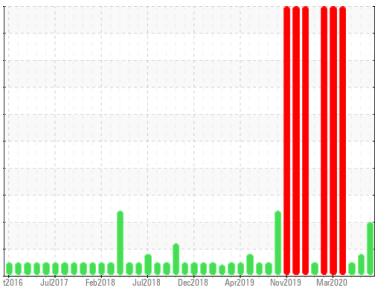
PROBLEM SUMMARY

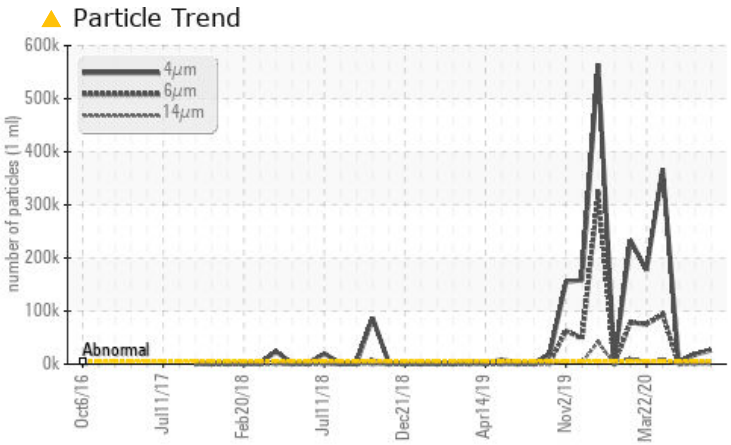
Sample Rating Trend



ISO

Area
Fwd Machinery Space [450222454]
Machine Id
Thruster Fwd Aft - Seal Oil System (S/N Sample Tag CL-06004-S3)
Component
Sealing System
Fluid
PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

Sample Status				ABNORMAL	ABNORMAL	NORMAL
Particles >4µm		ASTM D7647	>5000	▲ **26105**	▲ 18144	3651
Particles >6µm		ASTM D7647	>1300	▲ **4918**	▲ 3453	891
Particles >14µm		ASTM D7647	>160	▲ **286**	84	40
Particles >21µm		ASTM D7647	>40	▲ **76**	23	10
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ **22/19/15**	▲ 21/19/14	19/17/12

Customer Id: TERHAM
Sample No.: PC0076466
Lab Number: 02599116
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	---	---	?	We recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.

HISTORICAL DIAGNOSIS

06 Jul 2020 Diag: Kevin Marson

ISO

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.All component wear rates are normal. Particles >4µm are abnormally high. Particles >6µm are abnormally high. The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.

view report

08 Jun 2020 Diag: Kevin Marson

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. 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 fluid is suitable for further service.

view report

15 Apr 2020 Diag: Kevin Marson

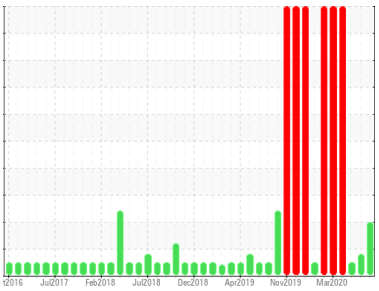
ISO

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 advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this fluid. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Resample in 30-45 days to monitor this situation.All component wear rates are normal. Particles >14µm are severely high. Particles >21µm are severely high. Particles >6µm are severely high. Particles >4µm are severely high. Water contamination levels are abnormally high. Water contamination levels are abnormally high.. ppm Water contamination levels are abnormally high. ppm Water contamination levels are abnormally high.. Particles >38µm are abnormally high. There is a moderate concentration of water present in the fluid. Free water present. 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

OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
Fwd Machinery Space [450222454]
Machine Id
Thruster Fwd Aft - Seal Oil System (S/N Sample Tag CL-06004-S3)
Component
Sealing System
Fluid
PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the fluid.

Fluid Condition

The AN level is acceptable for this fluid. The fluid 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		**PC0076466**	PC	PC
Sample Date		Client Info		**09 Nov 2023**	06 Jul 2020	08 Jun 2020
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				**ABNORMAL**	ABNORMAL	NORMAL

CONTAMINATION	method	limit/base	current	history1	history2
Water	WC Method		**NEG**	NEG	NEG

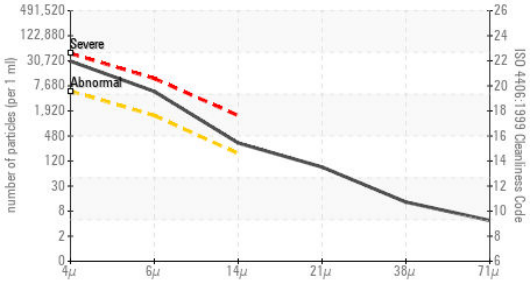
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		**0**	0	0
Iron	ppm	ASTM D5185(m)	>100	**1**	0	0
Chromium	ppm	ASTM D5185(m)	>3	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>8	**0**	<1	0
Titanium	ppm	ASTM D5185(m)		**0**	0	0
Silver	ppm	ASTM D5185(m)		**<1**	<1	<1
Aluminum	ppm	ASTM D5185(m)	>3	**0**	0	0
Lead	ppm	ASTM D5185(m)		**<1**	0	0
Copper	ppm	ASTM D5185(m)	>3	**<1**	<1	<1
Tin	ppm	ASTM D5185(m)		**0**	0	0
Antimony	ppm	ASTM D5185(m)		**0**	0	<1
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)		**13**	11	10
Barium	ppm	ASTM D5185(m)		**<1**	0	<1
Molybdenum	ppm	ASTM D5185(m)		**0**	0	0
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**<1**	<1	0
Calcium	ppm	ASTM D5185(m)		**29**	<1	<1
Phosphorus	ppm	ASTM D5185(m)		**165**	336	335
Zinc	ppm	ASTM D5185(m)		**9**	2	1
Sulfur	ppm	ASTM D5185(m)		**11235**	7429	7378
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

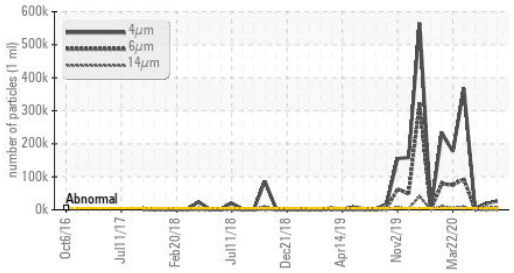
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	**3**	1	0
Sodium	ppm	ASTM D5185(m)		**1**	<1	0
Potassium	ppm	ASTM D5185(m)	>20	**0**	<1	<1

OIL ANALYSIS REPORT

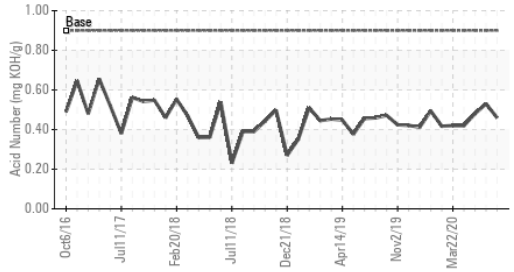
Particle Count



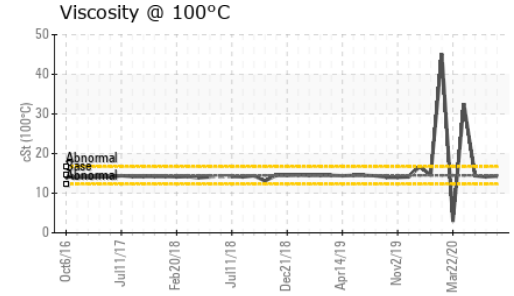
Particle Trend



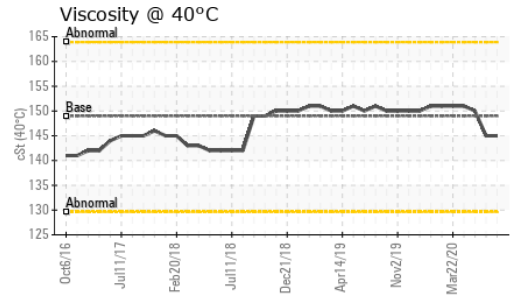
Acid Number



Viscosity @ 100°C



Viscosity @ 40°C

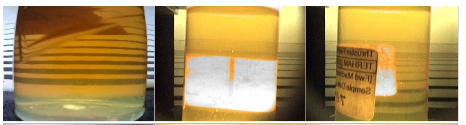


FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	▲ **26105**	▲ 18144	3651
Particles >6µm	ASTM D7647	>1300	▲ **4918**	▲ 3453	891
Particles >14µm	ASTM D7647	>160	▲ **286**	84	40
Particles >21µm	ASTM D7647	>40	▲ **76**	23	10
Particles >38µm	ASTM D7647	>10	**11**	0	0
Particles >71µm	ASTM D7647	>3	**4**	0	0
Oil Cleanliness	ISO 4406 (c)	>19/17/14	▲ **22/19/15**	▲ 21/19/14	19/17/12

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	**0.46**	0.53	0.48

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*		**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)	149	**145**	145	150
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	**14.3**	14.1	14.4
Viscosity Index (VI)	Scale	ASTM D2270*		**95**	93	93

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

CALA Testing Accreditation No. 1005078
ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : PC0076466 **Received** : 27 Nov 2023
Lab Number : 02599116 **Diagnosed** : 28 Nov 2023
Unique Number : 5684196 **Diagnostician** : Kevin Marson
Test Package : MAR 2 (Additional Tests: KV100, PQ, PrtCount, TAN Man, 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.

Suncor - Terra Nova Projects
Scotia Centre, 235 Water Strret
St. John`s, NL
CA A1C 1B6
Contact: Josh Hynes
joshynes@suncor.com
T: (709)778-3575
F: (709)724-2835