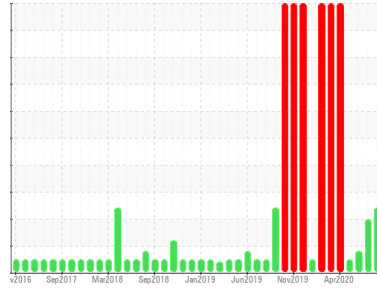


# PROBLEM SUMMARY

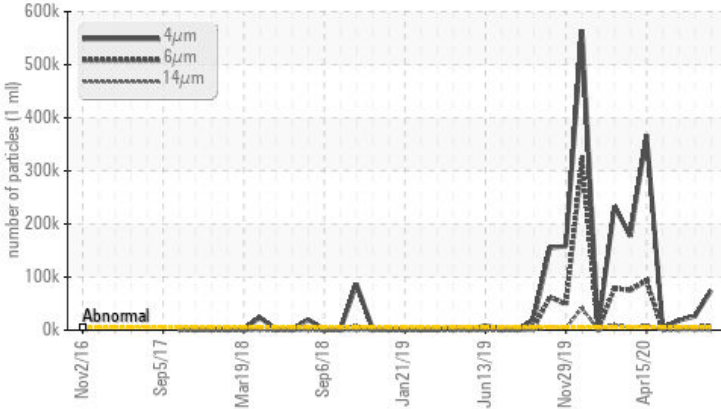
Area  
**Fwd Machinery Space [450231348]**  
 Machine Id  
**Thruster Fwd Aft - Seal Oil System (S/N Sample Tag CL-06004-S3)**  
 Component  
**Sealing System**  
 Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)**

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.

## PROBLEMATIC TEST RESULTS

Sample Status			SEVERE	ABNORMAL	ABNORMAL
Particles >4µm	ASTM D7647	>5000	74465	26105	18144
Particles >6µm	ASTM D7647	>1300	7220	4918	3453
Oil Cleanliness	ISO 4406 (c)	>19/17/14	23/20/15	22/19/15	21/19/14

Customer Id: TERHAM  
 Sample No.: PC  
 Lab Number: 02605588  
 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](mailto:Kevin.Marson@wearcheck.com)

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

**09 Nov 2023 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. 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



**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

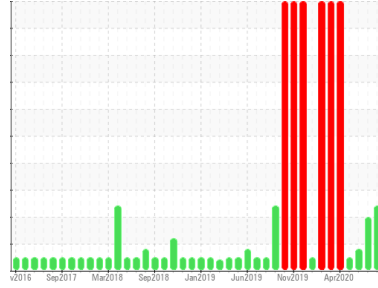


Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.

view report



Area  
**Fwd Machinery Space [450231348]**  
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**

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.

**Wear**

All component wear rates are normal.

**Contamination**

There is a high 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		<b>PC</b>	PC0076466	PC
Sample Date	Client Info		<b>02 Dec 2023</b>	09 Nov 2023	06 Jul 2020
Machine Age	hrs	Client Info	<b>0</b>	0	0
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>SEVERE</b>	ABNORMAL	ABNORMAL

**CONTAMINATION**

	method	limit/base	current	history1	history2
Water	WC Method		<b>NEG</b>	NEG	NEG

**WEAR METALS**

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		<b>0</b>	0	0
Iron	ppm	ASTM D5185(m) >100	<b>13</b>	1	0
Chromium	ppm	ASTM D5185(m) >3	<b>1</b>	0	0
Nickel	ppm	ASTM D5185(m) >8	<b>1</b>	0	<1
Titanium	ppm	ASTM D5185(m)	<b>0</b>	0	0
Silver	ppm	ASTM D5185(m)	<b>0</b>	<1	<1
Aluminum	ppm	ASTM D5185(m) >3	<b>&lt;1</b>	0	0
Lead	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	0
Copper	ppm	ASTM D5185(m) >3	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m)	<b>0</b>	0	0
Antimony	ppm	ASTM D5185(m)	<b>0</b>	0	0
Vanadium	ppm	ASTM D5185(m)	<b>0</b>	0	0
Beryllium	ppm	ASTM D5185(m)	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185(m)	<b>0</b>	0	0

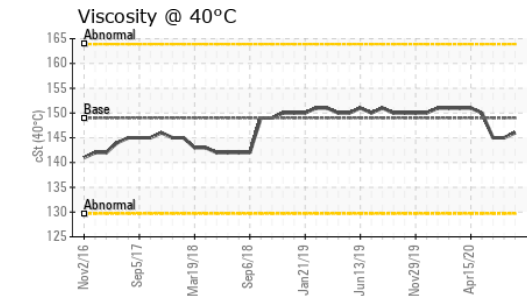
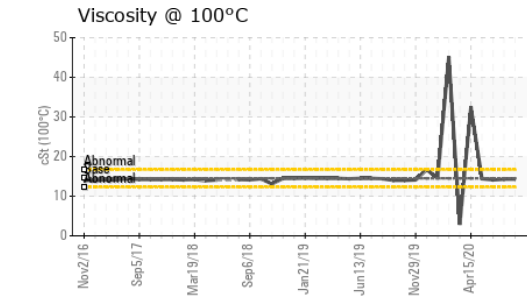
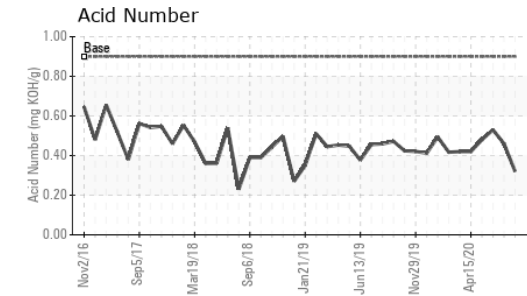
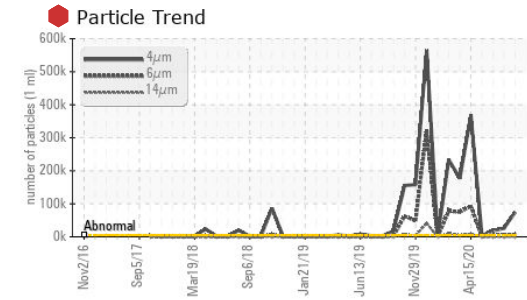
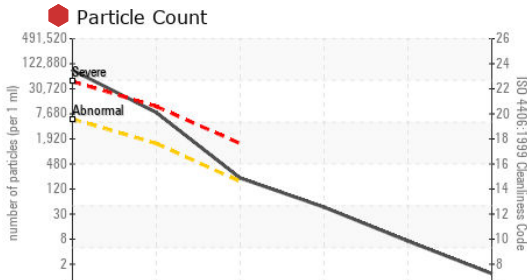
**ADDITIVES**

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	<b>5</b>	13	11
Barium	ppm	ASTM D5185(m)	<b>0</b>	<1	0
Molybdenum	ppm	ASTM D5185(m)	<b>0</b>	0	0
Manganese	ppm	ASTM D5185(m)	<b>0</b>	0	0
Magnesium	ppm	ASTM D5185(m)	<b>1</b>	<1	<1
Calcium	ppm	ASTM D5185(m)	<b>31</b>	29	<1
Phosphorus	ppm	ASTM D5185(m)	<b>157</b>	165	336
Zinc	ppm	ASTM D5185(m)	<b>10</b>	9	2
Sulfur	ppm	ASTM D5185(m)	<b>12325</b>	11235	7429
Lithium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	<1

**CONTAMINANTS**

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

# OIL ANALYSIS REPORT



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : 02605588  
**Unique Number** : 5698673  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, PrtCount, VI )  
**Received** : 28 Dec 2023  
**Diagnosed** : 02 Jan 2024  
**Diagnostician** : Kevin Marson

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 Street  
 St. John's, NL  
 CA A1C 1B6  
 Contact: Josh Hynes  
 joshhynes@suncor.com  
 T: (709)778-3575  
 F: (709)724-2835

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	74465	26105	18144	
Particles >6µm	ASTM D7647	>1300	7220	4918	3453	
Particles >14µm	ASTM D7647	>160	194	286	84	
Particles >21µm	ASTM D7647	>40	39	76	23	
Particles >38µm	ASTM D7647	>10	6	11	0	
Particles >71µm	ASTM D7647	>3	1	4	0	
Oil Cleanliness	ISO 4406 (c)	>19/17/14	23/20/15	22/19/15	21/19/14	

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	0.32	0.46	0.53

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	VLITE	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	146	145	145
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	14.3	14.3	14.1
Viscosity Index (VI)	Scale	ASTM D2270*		95	95	93

SAMPLE IMAGES		method	limit/base	current	history1	history2
Color						
Bottom						

