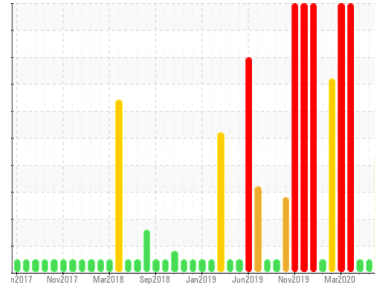
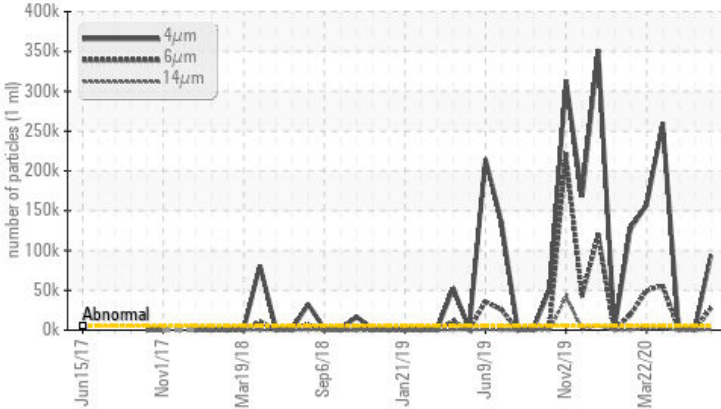


Area  
**Fwd Machinery Space [450188488]**  
Machine Id  
**Thruster Fwd Aft - Seal Oil System (S/N Sample Tag CL-06005-S3)**  
Component  
**Sealing System**  
Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)**



**COMPONENT CONDITION SUMMARY**

**Particle Trend**



**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. Resample in 30-45 days to monitor this situation.

**PROBLEMATIC TEST RESULTS**

Sample Status			SEVERE	NORMAL	NORMAL
Particles >4µm	ASTM D7647	>5000	94068	1341	2963
Particles >6µm	ASTM D7647	>1300	27701	317	773
Particles >14µm	ASTM D7647	>160	934	13	42
Particles >21µm	ASTM D7647	>40	141	5	10
Oil Cleanliness	ISO 4406 (c)	>19/17/14	24/22/17	18/15/11	19/17/13
PrtFilter				no image	no image

Customer Id: TERHAM  
Sample No.: PC0062024  
Lab Number: 02582277  
Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:  
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(289)291-4641 x4641  
[Bill.Quesnel@wearcheck.com](mailto:Bill.Quesnel@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 advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
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.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

## HISTORICAL DIAGNOSIS

### 06 Jul 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



### 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

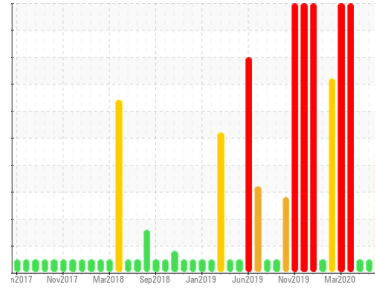


Check seals and/or filters for points of contaminant entry. We advise that you check all areas where contaminants can enter the system. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that 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. 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



Area  
**Fwd Machinery Space [450188488]**  
 Machine Id  
**Thruster Fwd Aft - Seal Oil System (S/N Sample Tag CL-06005-S3)**  
 Component  
**Sealing System**  
 Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (65 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. Resample in 30-45 days to monitor this situation.

**Wear**

All component wear rates are normal.

**Contamination**

There is a high amount of particulates (2 to 100 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>PC0062024</b>	PC	PC
Sample Date	Client Info	<b>14 Aug 2023</b>	06 Jul 2020	08 Jun 2020
Machine Age	hrs	0	0	0
Oil Age	hrs	0	0	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>SEVERE</b>	NORMAL	NORMAL

**WEAR METALS**

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

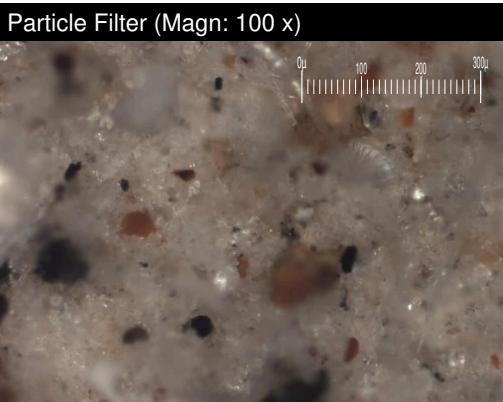
method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)	<b>15</b>	10	11
Barium	ppm	ASTM D5185(m)	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185(m)	<b>0</b>	0	0
Manganese	ppm	ASTM D5185(m)	<b>0</b>	0	0
Magnesium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	0
Calcium	ppm	ASTM D5185(m)	<b>13</b>	<1	<1
Phosphorus	ppm	ASTM D5185(m)	<b>207</b>	328	334
Zinc	ppm	ASTM D5185(m)	<b>6</b>	2	1
Sulfur	ppm	ASTM D5185(m)	<b>15848</b>	7162	7440
Lithium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	<1

**CONTAMINANTS**

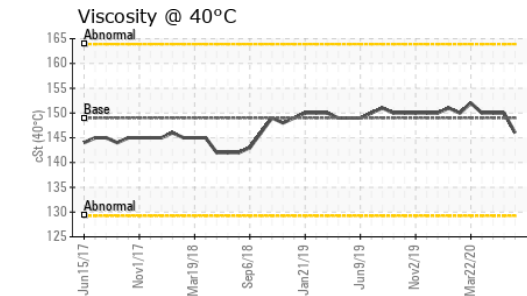
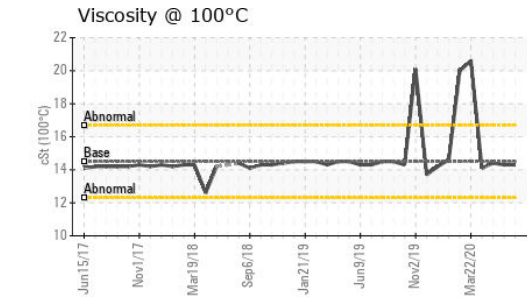
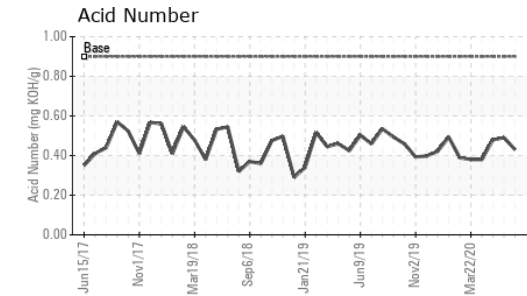
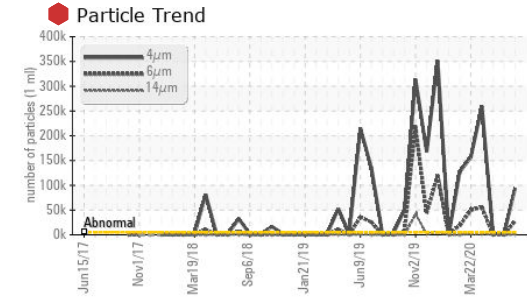
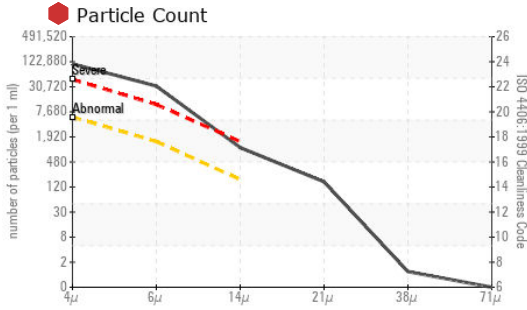
method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m) >25	<b>11</b>	<1	0
Sodium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	0
Potassium	ppm	ASTM D5185(m) >20	<b>&lt;1</b>	<1	<1

**FLUID CLEANLINESS**

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647 >5000	<b>94068</b>	1341	2963
Particles >6µm	ASTM D7647 >1300	<b>27701</b>	317	773
Particles >14µm	ASTM D7647 >160	<b>934</b>	13	42
Particles >21µm	ASTM D7647 >40	<b>141</b>	5	10
Particles >38µm	ASTM D7647 >10	<b>1</b>	0	0
Particles >71µm	ASTM D7647 >3	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c) >19/17/14	<b>24/22/17</b>	18/15/11	19/17/13



# OIL ANALYSIS REPORT



FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	<b>0.43</b>	0.49	0.48

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	<b>VLITE</b>	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	Visual*	NONE	<b>VLITE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>VLITE</b>	NONE	NONE
Sand/Dirt	scalar	Visual*	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	Visual*	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	Visual*		<b>NEG</b>	NEG	NEG
Free Water	scalar	Visual*		<b>NEG</b>	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	149	<b>146</b>	150	150
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	<b>14.3</b>	14.3	14.4
Viscosity Index (VI)	Scale	ASTM D2270*		<b>95</b>	92	93

## SAMPLE IMAGES

	method	limit/base	current	history1	history2
Color					
Bottom					
PrtFilter				no image	no image



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC0062024  
**Lab Number** : **02582277**  
**Unique Number** : 5643342  
**Test Package** : IND 2 ( Additional Tests: BottomAnalysis, FILTERPATCH, KV100, PQ, PrtCount, PrtFilter, 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.