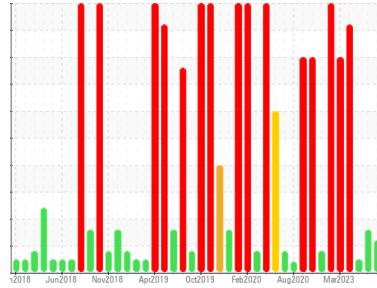


# PROBLEM SUMMARY

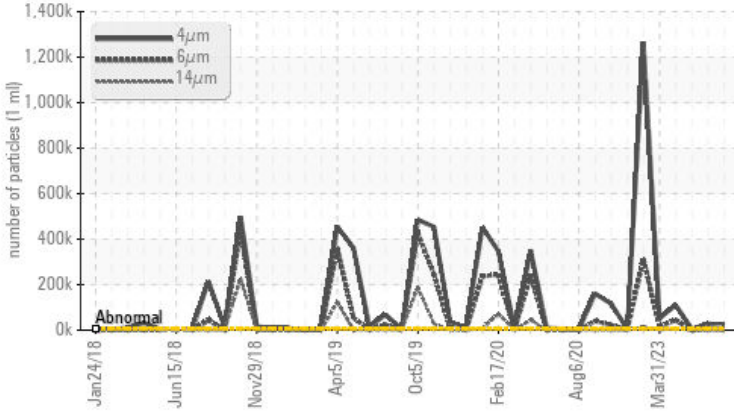
Area  
**Aft Machinery Space [450204421]**  
 Machine Id  
**Thruster Aft Starboard - Seal Oil System (S/N Sample Tag CL-06003-S3)**  
 Component  
**Sealing System**  
 Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (65 LTR)**

Sample Rating Trend



## COMPONENT CONDITION SUMMARY

▲ Particle Trend



## RECOMMENDATION

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

## PROBLEMATIC TEST RESULTS

Sample Status			<b>ABNORMAL</b>	ABNORMAL	NORMAL
Particles >4µm	ASTM D7647	>5000	▲ <b>21592</b>	▲ 28148	4589
Particles >6µm	ASTM D7647	>1300	▲ <b>3089</b>	▲ 6179	756
Oil Cleanliness	ISO 4406 (c)	>19/17/14	▲ <b>22/19/14</b>	▲ 22/20/15	19/17/12

Customer Id: TERHAM  
 Sample No.: PC  
 Lab Number: 02585058  
 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](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 recommend you service the filters on this component.
Resample	---	---	?	We recommend an early resample to monitor this condition.

## HISTORICAL DIAGNOSIS

### 14 Aug 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



### 19 Jul 2023 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



### 11 Jun 2023 Diag: Kevin Marson

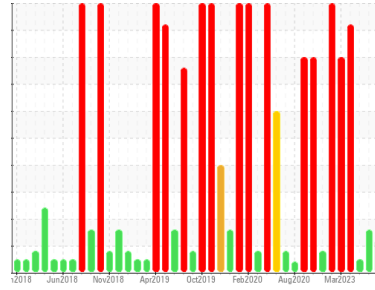
ISO



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. 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. The AN level is acceptable for this fluid.

view report





Area  
**Aft Machinery Space [450204421]**  
Machine Id  
**Thruster Aft Starboard - Seal Oil System (S/N Sample Tag CL-06003-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	<b>PC</b>	PC	PC
Sample Date	Client Info	<b>14 Sep 2023</b>	14 Aug 2023	19 Jul 2023
Machine Age	hrs	Client Info	<b>0</b>	0
Oil Age	hrs	Client Info	<b>0</b>	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>ABNORMAL</b>	ABNORMAL	NORMAL

**WEAR METALS**

method	limit/base	current	history1	history2
PQ	ASTM D8184*	<b>0</b>	0	8
Iron	ppm	ASTM D5185(m) >100	<b>4</b>	9
Chromium	ppm	ASTM D5185(m) >3	<b>0</b>	0
Nickel	ppm	ASTM D5185(m) >8	<b>&lt;1</b>	0
Titanium	ppm	ASTM D5185(m)	<b>0</b>	0
Silver	ppm	ASTM D5185(m)	<b>&lt;1</b>	0
Aluminum	ppm	ASTM D5185(m) >3	<b>0</b>	<1
Lead	ppm	ASTM D5185(m)	<b>0</b>	0
Copper	ppm	ASTM D5185(m) >3	<b>&lt;1</b>	<1
Tin	ppm	ASTM D5185(m)	<b>0</b>	0
Antimony	ppm	ASTM D5185(m)	<b>0</b>	0
Vanadium	ppm	ASTM D5185(m)	<b>0</b>	0
Beryllium	ppm	ASTM D5185(m)	<b>0</b>	0
Cadmium	ppm	ASTM D5185(m)	<b>0</b>	0

**ADDITIVES**

method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	<b>8</b>	11
Barium	ppm	ASTM D5185(m)	<b>&lt;1</b>	0
Molybdenum	ppm	ASTM D5185(m)	<b>0</b>	<1
Manganese	ppm	ASTM D5185(m)	<b>0</b>	<1
Magnesium	ppm	ASTM D5185(m)	<b>2</b>	<1
Calcium	ppm	ASTM D5185(m)	<b>8</b>	4
Phosphorus	ppm	ASTM D5185(m)	<b>176</b>	268
Zinc	ppm	ASTM D5185(m)	<b>8</b>	8
Sulfur	ppm	ASTM D5185(m)	<b>14368</b>	13115
Lithium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1

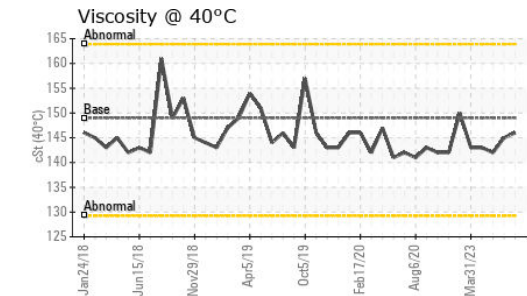
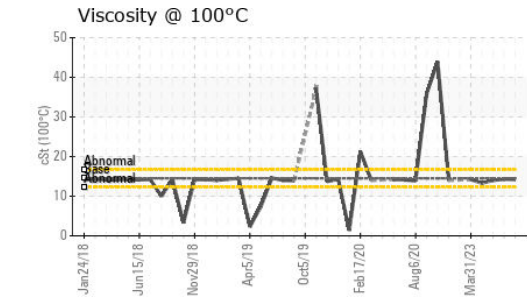
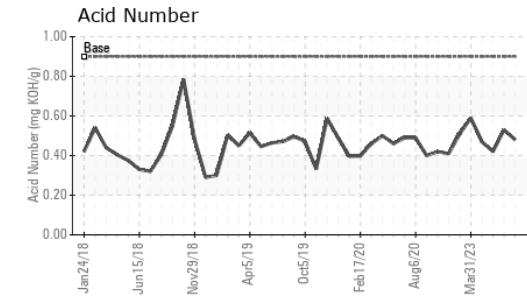
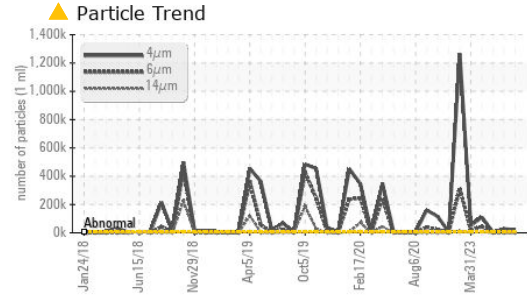
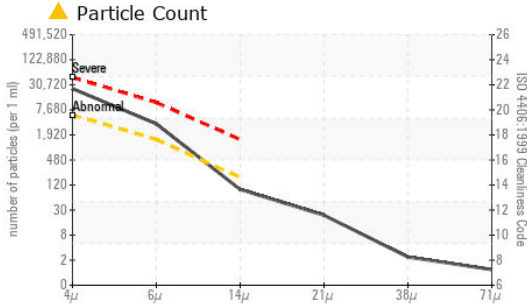
**CONTAMINANTS**

method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >25	<b>8</b>	1
Sodium	ppm	ASTM D5185(m)	<b>2</b>	<1
Potassium	ppm	ASTM D5185(m) >20	<b>0</b>	<1

**FLUID CLEANLINESS**

method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>5000	<b>▲ 21592</b>	▲ 28148
Particles >6µm	ASTM D7647	>1300	<b>▲ 3089</b>	▲ 6179
Particles >14µm	ASTM D7647	>160	<b>83</b>	▲ 184
Particles >21µm	ASTM D7647	>40	<b>20</b>	28
Particles >38µm	ASTM D7647	>10	<b>2</b>	1
Particles >71µm	ASTM D7647	>3	<b>1</b>	1
Oil Cleanliness	ISO 4406 (c)	>19/17/14	<b>▲ 22/19/14</b>	▲ 22/20/15

# OIL ANALYSIS REPORT

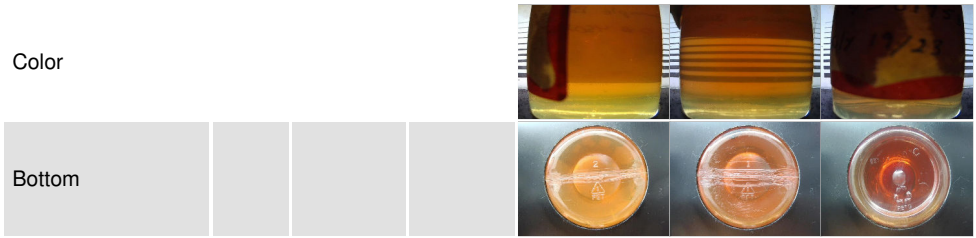


FLUID DEGRADATION						
	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	<b>0.48</b>	0.53	0.42

VISUAL						
	method	limit/base	current	history1	history2	
White Metal	scalar	Visual*	NONE	<b>NONE</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>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</b>	VLITE	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>	145	142
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	<b>14.2</b>	14.3	14.0
Viscosity Index (VI)	Scale	ASTM D2270*		<b>94</b>	95	94

## SAMPLE IMAGES



Color

Bottom



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : **02585058** **Received** : 25 Sep 2023  
**Unique Number** : 5646123 **Diagnosed** : 26 Sep 2023  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, PrtCount, TAN Man, VI ) **Diagnostician** : Bill Quesnel

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.

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