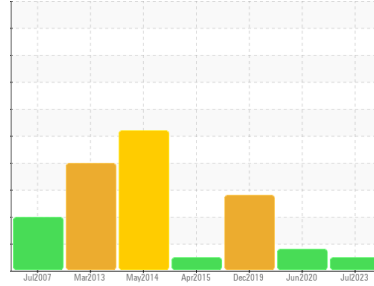




Area  
**Fwd Machinery Space**  
Machine Id  
**Thruster Fwd Aft - Steering Gear Lubrication (S/N Sample Tag CL-06004-S4)**  
Component  
**Gear Unit**  
Fluid  
**PETRO CANADA ENERGOL GR-XP ISO 150 (5000 LTR)**



**DIAGNOSIS**

**Recommendation**  
Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

**Wear**  
Component wear rates appear to be normal (unconfirmed).

**Contamination**  
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

**Fluid Condition**  
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

**SAMPLE INFORMATION**

method	limit/base	current	history1	history2
Sample Number	Client Info	<b>PC</b>	PC	PC0016490
Sample Date	Client Info	<b>24 Jul 2023</b>	05 Jun 2020	18 Dec 2019
Machine Age	hrs	<b>0</b>	0	0
Oil Age	hrs	<b>0</b>	0	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>NORMAL</b>	ABNORMAL	SEVERE

**WEAR METALS**

method	limit/base	current	history1	history2	
PQ	ASTM D8184*	<b>0</b>	0	5	
Iron	ppm	ASTM D5185(m) >125	<b>&lt;1</b>	3	4
Chromium	ppm	ASTM D5185(m) >5	<b>0</b>	<1	<1
Nickel	ppm	ASTM D5185(m) >10	<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	0
Aluminum	ppm	ASTM D5185(m) >30	<b>&lt;1</b>	0	<1
Lead	ppm	ASTM D5185(m) >5	<b>0</b>	0	0
Copper	ppm	ASTM D5185(m) >100	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m) >5	<b>0</b>	0	0
Antimony	ppm	ASTM D5185(m) >5	<b>0</b>	<1	<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>7</b>	3	2
Barium	ppm	ASTM D5185(m)	<b>0</b>	0	<1
Molybdenum	ppm	ASTM D5185(m)	<b>0</b>	<1	2
Manganese	ppm	ASTM D5185(m)	<b>0</b>	<1	<1
Magnesium	ppm	ASTM D5185(m)	<b>&lt;1</b>	0	<1
Calcium	ppm	ASTM D5185(m)	<b>13</b>	1	1
Phosphorus	ppm	ASTM D5185(m)	<b>155</b>	328	309
Zinc	ppm	ASTM D5185(m)	<b>3</b>	4	3
Sulfur	ppm	ASTM D5185(m)	<b>14646</b>	10466	10020
Lithium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	<1

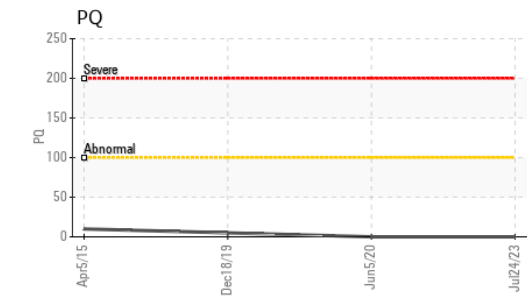
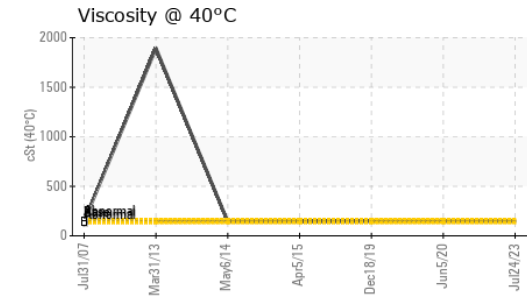
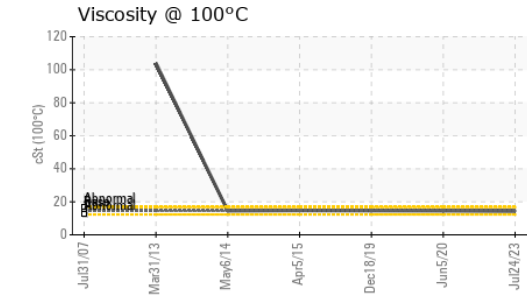
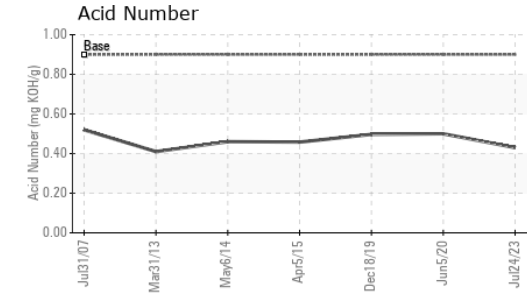
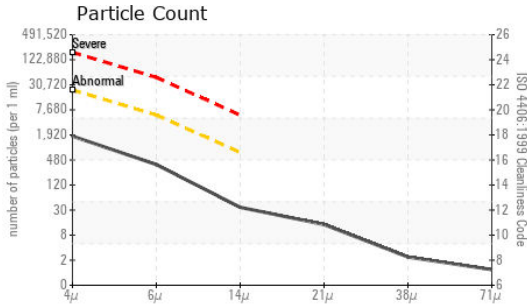
**CONTAMINANTS**

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m) >50	<b>&lt;1</b>	1	4
Sodium	ppm	ASTM D5185(m)	<b>&lt;1</b>	0	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 >20000	<b>1569</b>	▲ 98875	▲ 157418
Particles >6µm	ASTM D7647 >5000	<b>328</b>	▲ 20151	■ 48405
Particles >14µm	ASTM D7647 >640	<b>31</b>	503	▲ 1442
Particles >21µm	ASTM D7647 >160	<b>12</b>	69	206
Particles >38µm	ASTM D7647 >40	<b>2</b>	2	4
Particles >71µm	ASTM D7647 >10	<b>1</b>	0	0
Oil Cleanliness	ISO 4406 (c) >21/19/16	<b>18/16/12</b>	▲ 24/22/16	■ 24/23/18

# OIL ANALYSIS REPORT

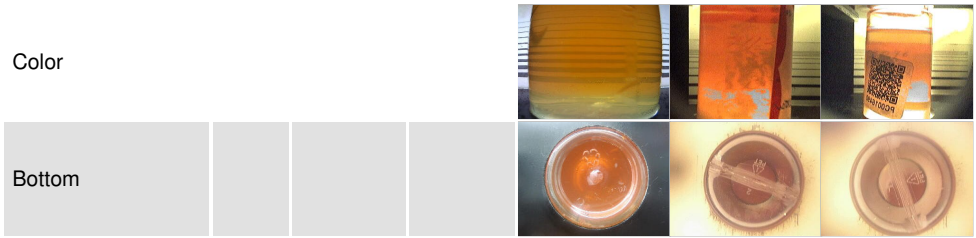


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.9	<b>0.43</b>	0.50	0.497

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	VLITE
Debris	scalar	Visual*	NONE	<b>NONE</b>	NONE	VLITE
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*	>0.2	<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>147</b>	147	147
Visc @ 100°C	cSt	ASTM D7279(m)	14.5	<b>14.2</b>	14.5	14.6
Viscosity Index (VI)	Scale	ASTM D2270*		<b>93</b>	96	97

## SAMPLE IMAGES



Color

Bottom



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : **02576281**  
**Unique Number** : 5629341  
**Test Package** : MAR 2 ( Additional Tests: KV100, PQ, TAN Man, VI )

**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

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.