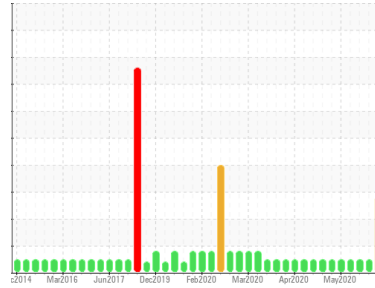
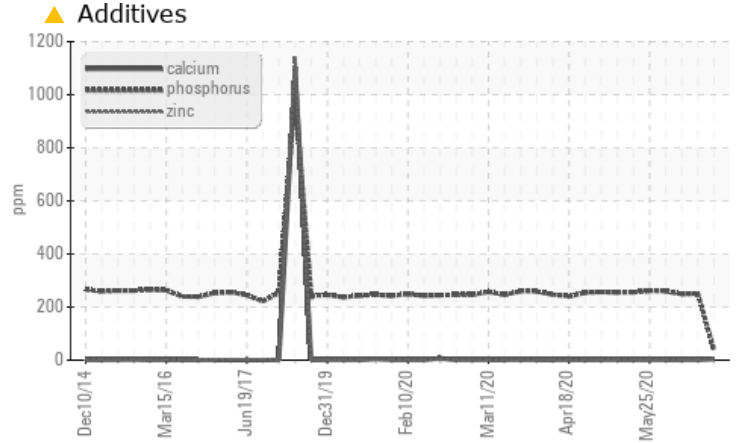
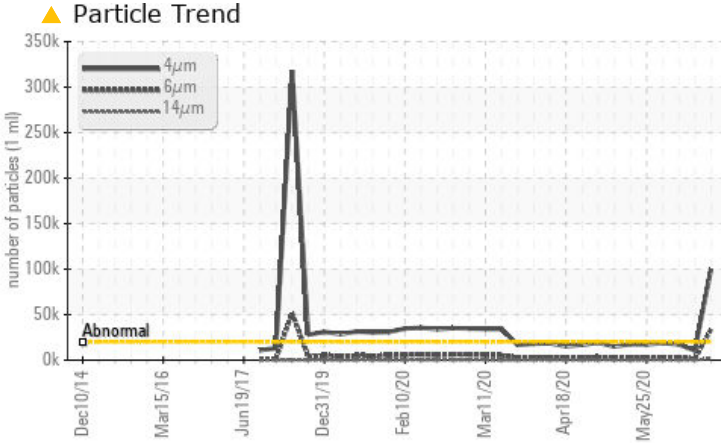


Area  
**Fwd Machinery Space [75001803]**  
 Machine Id  
**Pump - Fire Water (Stbd) - Gearbox (S/N Sample Tag PA-71001B-S2)**  
 Component  
**Starboard Gearbox**  
 Fluid  
**PETRO CANADA ENDURATEX EP 220 (98 LTR)**



**COMPONENT CONDITION SUMMARY**



**RECOMMENDATION**

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

**PROBLEMATIC TEST RESULTS**

Sample Status				<b>ABNORMAL</b>	NORMAL	NORMAL
Phosphorus	ppm	ASTM D5185(m)	270	<b>▲ 38</b>	251	249
Sulfur	ppm	ASTM D5185(m)	11200	<b>▲ 3712</b>	11612	10965
Particles >4µm		ASTM D7647	>20000	<b>▲ 99980</b>	10421	17367
Particles >6µm		ASTM D7647	>5000	<b>▲ 34012</b>	1522	2804
Particles >14µm		ASTM D7647	>640	<b>▲ 1555</b>	62	83
Particles >21µm		ASTM D7647	>160	<b>▲ 324</b>	16	23
Oil Cleanliness		ISO 4406 (c)	>21/19/16	<b>▲ 24/22/18</b>	21/18/13	21/19/14

Customer Id: TERHAM  
 Sample No.: PC  
 Lab Number: 02545221  
 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 advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Check Fluid Source	---	---	?	Confirm the source of the lubricant being utilized for top-up/fill.
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

13 Nov 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 oil is suitable for further service.

view report



22 Aug 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 oil is suitable for further service.

view report



30 May 2020 Diag: Kevin Marson

NORMAL

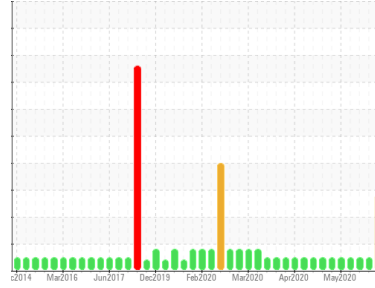


Resample at the next service interval to monitor. All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further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

view report



Area  
**Fwd Machinery Space [75001803]**  
Machine Id  
**Pump - Fire Water (Stbd) - Gearbox (S/N Sample Tag PA-71001B-S2)**  
Component  
**Starboard Gearbox**  
Fluid  
**PETRO CANADA ENDURATEX EP 220 (98 LTR)**



**DIAGNOSIS**

**Recommendation**  
We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

**Wear**  
All component wear rates are normal.

**Contamination**  
Oil Cleanliness are abnormally high. Particles >14µm are abnormally high. Particles >21µm are abnormally high. Particles >4µm are abnormally high. Particles >6µm are abnormally high.

**Fluid Condition**  
Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid. The oil 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>	PC0035709	PC
Sample Date	Client Info		<b>30 Jan 2023</b>	13 Nov 2020	22 Aug 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>ABNORMAL</b>	NORMAL	NORMAL

**WEAR METALS**

	method	limit/base	current	history1	history2
PQ	ASTM D8184*		<b>0</b>	0	0
Iron	ppm	ASTM D5185(m) >150	<b>4</b>	1	<1
Chromium	ppm	ASTM D5185(m) >10	<b>0</b>	0	0
Nickel	ppm	ASTM D5185(m) >10	<b>&lt;1</b>	0	0
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) >5	<b>&lt;1</b>	0	0
Lead	ppm	ASTM D5185(m) >65	<b>0</b>	<1	<1
Copper	ppm	ASTM D5185(m) >80	<b>&lt;1</b>	<1	<1
Tin	ppm	ASTM D5185(m) >8	<b>0</b>	0	0
Antimony	ppm	ASTM D5185(m) >5	<b>&lt;1</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) 60	<b>6</b>	68	66
Barium	ppm	ASTM D5185(m) 0	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185(m) 0	<b>0</b>	0	0
Manganese	ppm	ASTM D5185(m) 0	<b>0</b>	0	0
Magnesium	ppm	ASTM D5185(m) 0	<b>&lt;1</b>	<1	<1
Calcium	ppm	ASTM D5185(m) 0	<b>3</b>	<1	1
Phosphorus	ppm	ASTM D5185(m) 270	<b>▲ 38</b>	251	249
Zinc	ppm	ASTM D5185(m) 0	<b>3</b>	1	2
Sulfur	ppm	ASTM D5185(m) 11200	<b>▲ 3712</b>	11612	10965
Lithium	ppm	ASTM D5185(m)	<b>&lt;1</b>	<1	<1

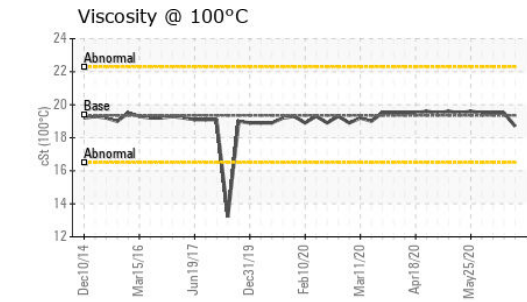
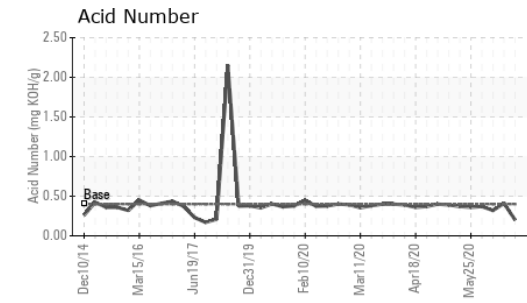
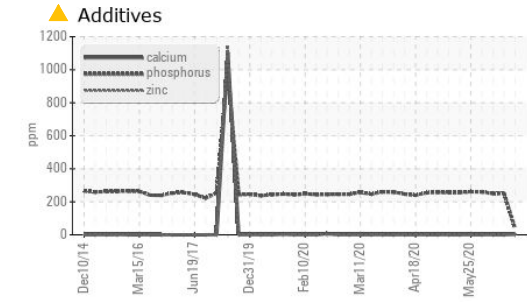
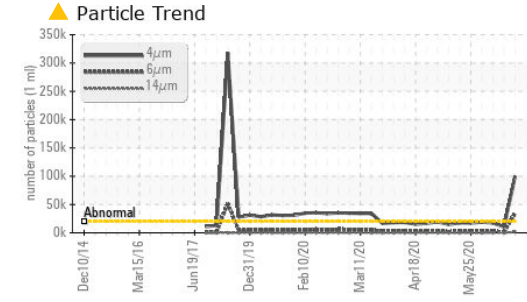
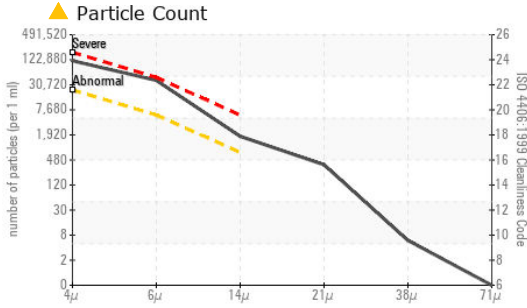
**CONTAMINANTS**

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m) >20	<b>2</b>	4	2
Sodium	ppm	ASTM D5185(m)	<b>0</b>	<1	0
Potassium	ppm	ASTM D5185(m) >20	<b>0</b>	<1	0

**FLUID CLEANLINESS**

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	<b>▲ 99980</b>	10421	17367
Particles >6µm	ASTM D7647	>5000	<b>▲ 34012</b>	1522	2804
Particles >14µm	ASTM D7647	>640	<b>▲ 1555</b>	62	83
Particles >21µm	ASTM D7647	>160	<b>▲ 324</b>	16	23
Particles >38µm	ASTM D7647	>40	<b>5</b>	0	0
Particles >71µm	ASTM D7647	>10	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	<b>▲ 24/22/18</b>	21/18/13	21/19/14

# OIL ANALYSIS REPORT



ISO 17025:2017  
Accredited  
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : PC  
**Lab Number** : 02545221  
**Unique Number** : 5542226  
**Test Package** : MAR 2 ( Additional Tests: KV100, PrtCount, TAN Man, VI )

**Received** : 14 Mar 2023  
**Diagnosed** : 16 Mar 2023  
**Diagnostician** : Kevin Marson

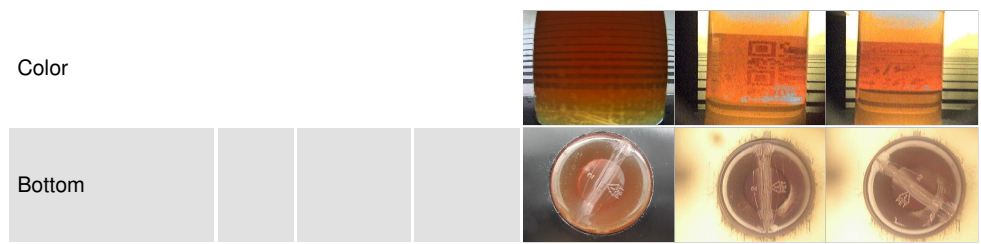
To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	0.40	<b>0.20</b>	0.41	0.32

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>NONE</b>	NONE	NONE
Debris	scalar	Visual*	NONE	<b>NONE</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*	>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)	220	<b>212</b>	218	218
Visc @ 100°C	cSt	ASTM D7279(m)	19.35	<b>18.7</b>	19.5	19.5
Viscosity Index (VI)	Scale	ASTM D2270*	99	<b>98</b>	101	101

## SAMPLE IMAGES



**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