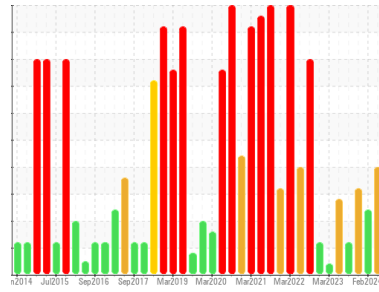




# OIL ANALYSIS REPORT

Sample Rating Trend



**WATER**



Machine Id  
**CHALLENGE SMIMID MASSAGER 2 (S/N S148586)**

Component  
**Gearbox**

Fluid  
**PETRO CANADA PURITY FG EP GEAR OIL 220 (--- GAL)**

## DIAGNOSIS

### ▲ Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### ▲ Contamination

Appearance is hazy. There is a high amount of silt (particulates < 14 microns in size) present in the oil. There is a trace of moisture present in the oil.

### ● Fluid Condition

The oil viscosity is lower than normal. The AN level is acceptable for this fluid.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>USP0011871</b>	USP0007556	USP0003810
Sample Date	Client Info		<b>14 May 2024</b>	28 Feb 2024	26 Nov 2023
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>	ABNORMAL	ABNORMAL

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >200	<b>154</b>	190	92
Chromium	ppm	ASTM D5185m >15	<b>1</b>	2	<1
Nickel	ppm	ASTM D5185m >15	<b>&lt;1</b>	<1	<1
Titanium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	<b>&lt;1</b>	0	0
Aluminum	ppm	ASTM D5185m >25	<b>2</b>	1	0
Lead	ppm	ASTM D5185m >100	<b>&lt;1</b>	0	0
Copper	ppm	ASTM D5185m >200	<b>&lt;1</b>	<1	0
Tin	ppm	ASTM D5185m >25	<b>&lt;1</b>	<1	<1
Vanadium	ppm	ASTM D5185m	<b>&lt;1</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	<b>0</b>	<1	0
Barium	ppm	ASTM D5185m	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m	<b>&lt;1</b>	<1	0
Manganese	ppm	ASTM D5185m	<b>1</b>	1	<1
Magnesium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	<1
Calcium	ppm	ASTM D5185m	<b>4</b>	0	1
Phosphorus	ppm	ASTM D5185m	<b>139</b>	158	66
Zinc	ppm	ASTM D5185m	<b>0</b>	<1	0
Sulfur	ppm	ASTM D5185m	<b>429</b>	904	550

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	<b>6</b>	7	4
Sodium	ppm	ASTM D5185m	<b>1</b>	2	<1
Potassium	ppm	ASTM D5185m >20	<b>&lt;1</b>	<1	1
Water	%	ASTM D6304 >0.2	<b>▲ 0.167</b>	0.007	0.050
ppm Water	ppm	ASTM D6304 >2000	<b>▲ 1670</b>	73	500

## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	<b>▲ 190539</b>	▲ 264498	---
Particles >6µm	ASTM D7647	>5000	<b>▲ 81498</b>	▲ 102942	---
Particles >14µm	ASTM D7647	>640	<b>340</b>	▲ 1300	---
Particles >21µm	ASTM D7647	>160	<b>29</b>	▲ 224	---
Particles >38µm	ASTM D7647	>40	<b>2</b>	6	---
Particles >71µm	ASTM D7647	>10	<b>0</b>	0	---
Oil Cleanliness	ISO 4406 (c)	>21/19/16	<b>▲ 25/24/16</b>	▲ 25/24/17	---

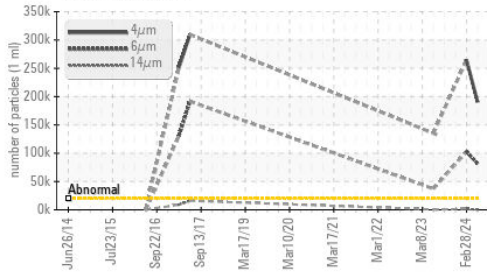
## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.51	<b>0.24</b>	0.36	0.18

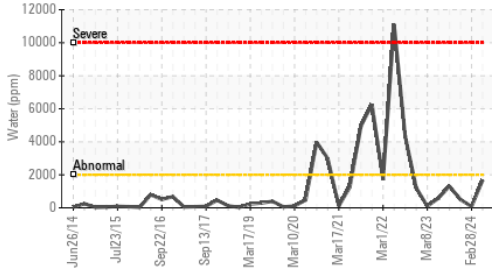


# OIL ANALYSIS REPORT

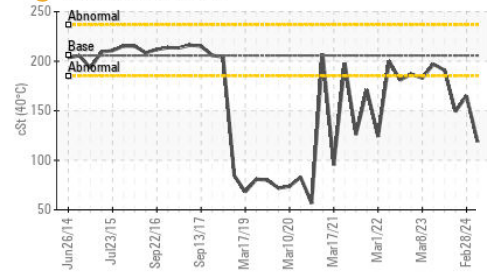
## ▲ Particle Trend



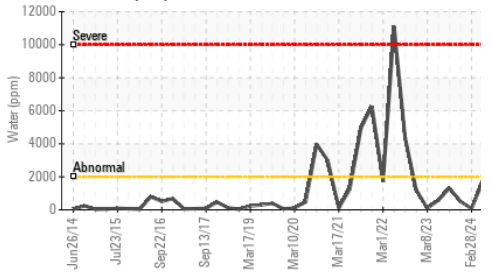
## ▲ Water (KF)



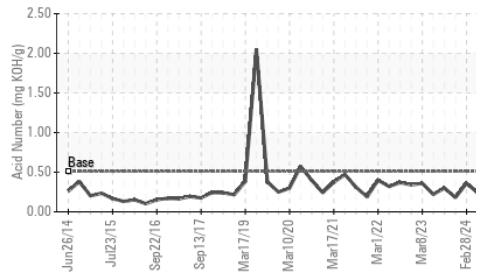
## ● Viscosity @ 40°C



## ▲ Water (KF)



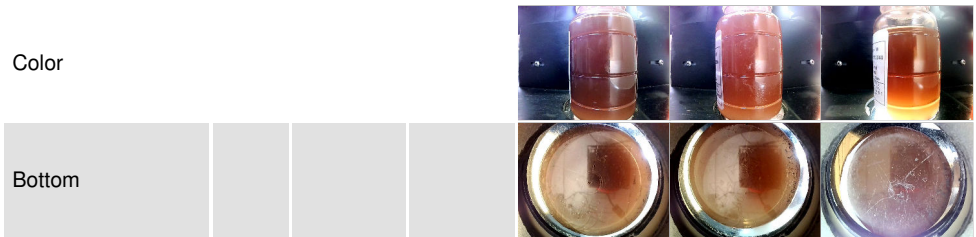
## Acid Number



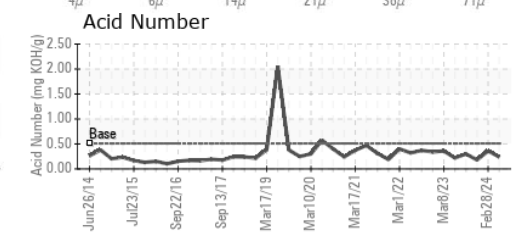
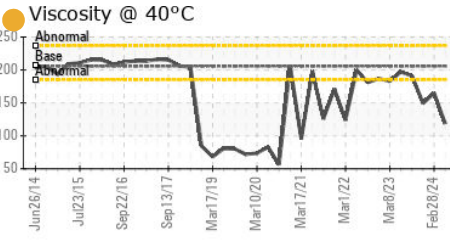
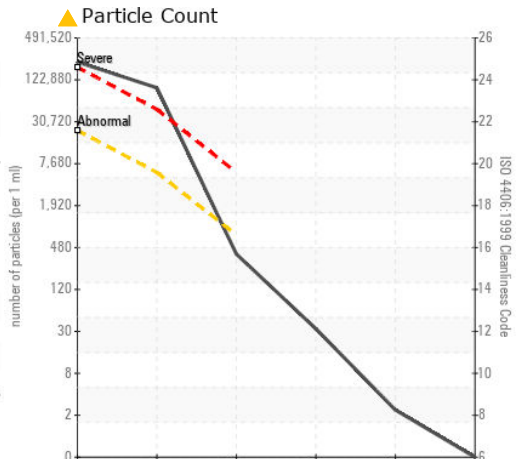
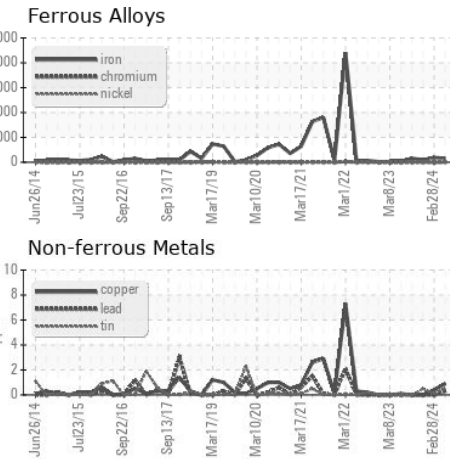
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	MODER
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	▲ MODER
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	● HAZY	● HAZY
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	0.2%	NEG
Free Water	scalar	*Visual		NEG	▲ 1.0

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	205.8	● 118.6	● 165

SAMPLE IMAGES	method	limit/base	current	history1	history2
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## GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : USP0011871  
 Lab Number : 06180183  
 Unique Number : 11031509  
 Test Package : IND 2

SMITHFIELD FOODS-MIDDLESBORO  
 MIDDLESBORO, KY  
 US  
 Contact: SERVICE MANAGER

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)