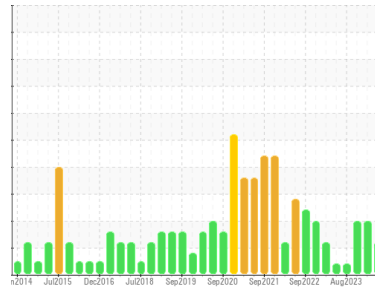




# OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Machine Id  
**CHALLENGE SMIMID MASSAGER 4 (S/N CK3357U00145)**  
 Component  
**Gearbox**  
 Fluid  
**PETRO CANADA PURITY FG EP GEAR OIL 220 (--- GAL)**

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

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

### 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>USP0011879</b>	USP0007553	USP0003807
Sample Date	Client Info		<b>11 May 2024</b>	28 Feb 2024	19 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>45</b>	65	53
Chromium	ppm	ASTM D5185m >15	<b>&lt;1</b>	<1	0
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	<1
Lead	ppm	ASTM D5185m >100	<b>&lt;1</b>	0	<1
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>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	<b>&lt;1</b>	<1	<1
Calcium	ppm	ASTM D5185m	<b>3</b>	0	6
Phosphorus	ppm	ASTM D5185m	<b>122</b>	122	139
Zinc	ppm	ASTM D5185m	<b>0</b>	2	0
Sulfur	ppm	ASTM D5185m	<b>763</b>	690	718

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >50	<b>3</b>	4	3
Sodium	ppm	ASTM D5185m	<b>&lt;1</b>	1	2
Potassium	ppm	ASTM D5185m >20	<b>2</b>	1	2
Water	%	ASTM D6304 >0.2	<b>0.009</b>	0.021	0.004
ppm Water	ppm	ASTM D6304 >2000	<b>93</b>	211	41

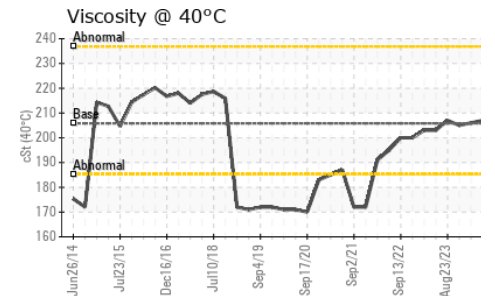
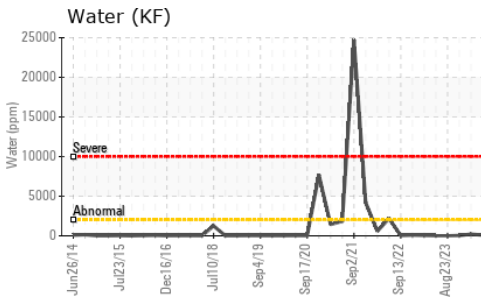
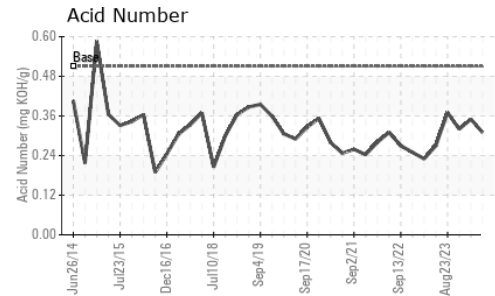
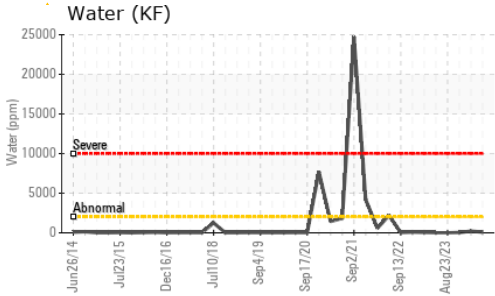
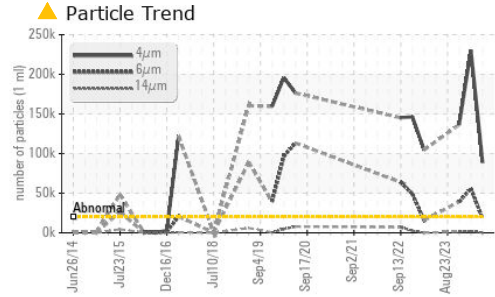
## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	<b>▲ 88436</b>	▲ 230285	▲ 136402
Particles >6µm	ASTM D7647	>5000	<b>▲ 17957</b>	▲ 55869	▲ 39321
Particles >14µm	ASTM D7647	>640	<b>235</b>	▲ 1868	▲ 1310
Particles >21µm	ASTM D7647	>160	<b>43</b>	▲ 368	▲ 220
Particles >38µm	ASTM D7647	>40	<b>2</b>	4	4
Particles >71µm	ASTM D7647	>10	<b>0</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	<b>▲ 24/21/15</b>	▲ 25/23/18	▲ 24/22/18

## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045 0.51	<b>0.31</b>	0.35	0.32

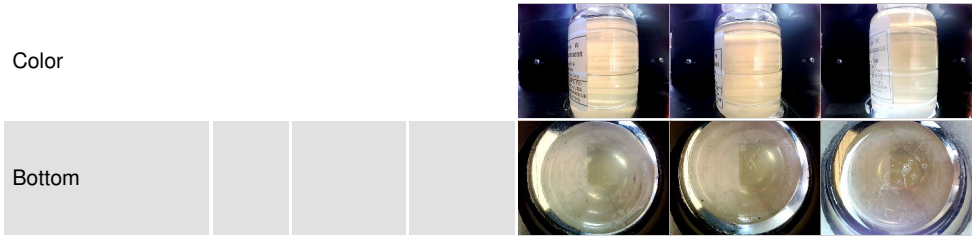
# OIL ANALYSIS REPORT



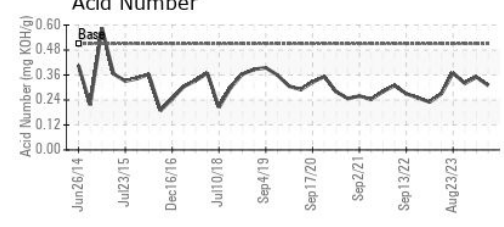
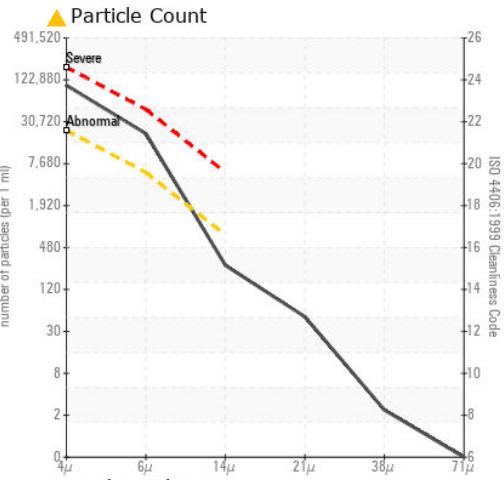
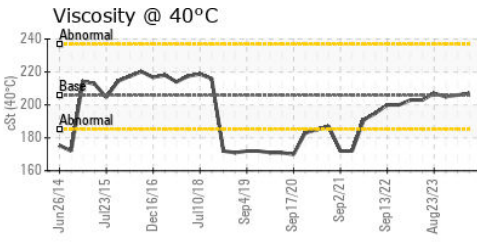
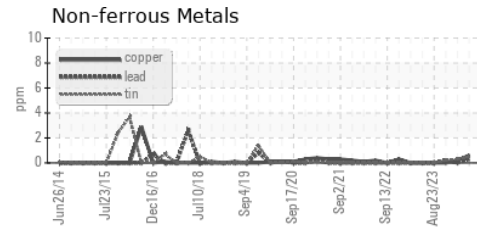
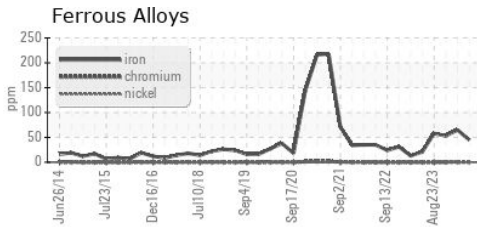
VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	205.8	207	206

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



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : USP0011879      **Received** : 15 May 2024  
**Lab Number** : 06180191      **Tested** : 16 May 2024  
**Unique Number** : 11031517      **Diagnosed** : 18 May 2024 - Jonathan Hester  
**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)