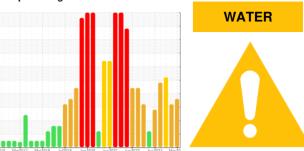


# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

# SMIMID MASSAGER 7 (S/N CK3357U00145)

Gearbox

Cearbo

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

## DIAGNOSIS

### Recommendation

We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

## Contamination

Appearance is hazy. There is a high amount of silt (particulates < 6 microns in size) present in the oil. There is a light concentration of water present in the oil

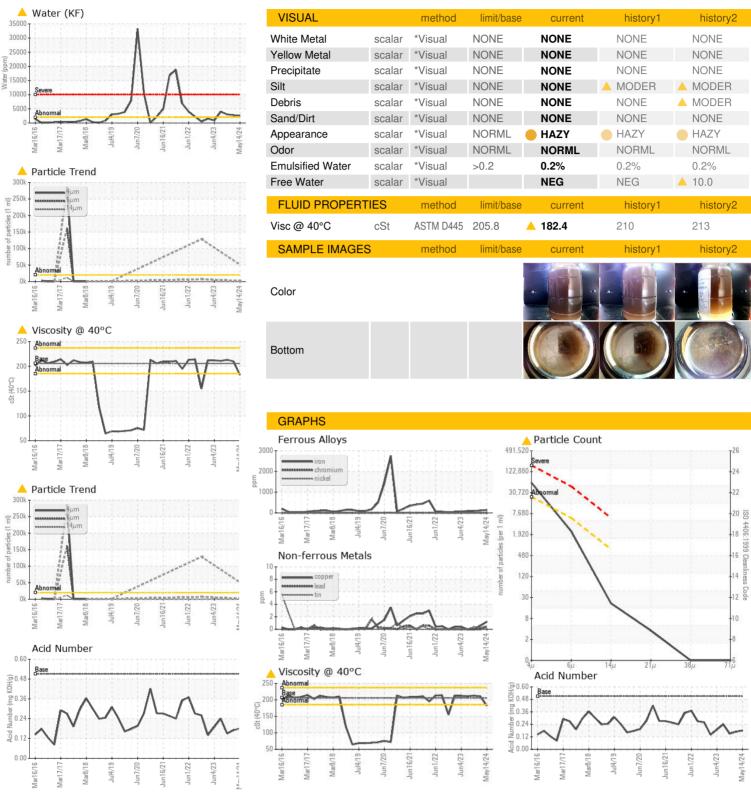
## Fluid Condition

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

Sample Date         Client Info         14 May 2024         28 Feb 2024         26 Nov 2 on 0 on	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date   Client Info   14 May 2024   28 Feb 2024   26 Nov 2 Machine Age   hrs   Client Info   0   0   0   0   0   0   0   0   0	Sample Number		Client Info		USP0011876	USP0007550	USP000381
Machine Age         hrs         Client Info         0         0         0           Dil Age         hrs         Client Info         0         0         0           Dil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Method Ilmil/base current         history1         N/A           WEAR METALS         method Ilmil/base current         history1			Client Info		14 May 2024	28 Feb 2024	26 Nov 2023
Dil Age         hrs         Client Info         N/A         Particles > 21         Particles > 22         Particles > 22         Particles > 22         Particles > 23         Particles > 24	Machine Age	hrs	Client Info		-	0	0
Dil Changed   Client Info   N/A   ABNORMAL   ABNORMA		hrs	Client Info		0		
Manual	-		Client Info				N/A
Chromium					ABNORMAL	ABNORMAL	ABNORMAL
Chromium	WEAR METALS		method	limit/base	current	history1	history2
ASTM D5185m   S15   S1   S1   S1   S1   S1   S1   S	ron	ppm	ASTM D5185m	>200	135	121	84
Distribution   Di	Chromium	ppm	ASTM D5185m	>15	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>15	<1	<1	1
Silver	Titanium	ppm	ASTM D5185m		<1	<1	<1
Aluminum ppm ASTM D5185m >25 2 2 < 1  Lead ppm ASTM D5185m >100 <1 0 0  Copper ppm ASTM D5185m >200 1 <1 0 0  Copper ppm ASTM D5185m >225 <1 <1 <1 0  Cadmium ppm ASTM D5185m >25 <1 <1 <1 0  Cadmium ppm ASTM D5185m >25 <1 <1 0  Cadmium ppm ASTM D5185m >25 <1 <1 0  Cadmium ppm ASTM D5185m >25 <1 0  Cadmium ppm ASTM D5185m >21 <1 0  Cadmium ppm ASTM D5185m	Silver		ASTM D5185m		<1	0	0
Lead         ppm         ASTM D5185m         >100         <1         0         0           Copper         ppm         ASTM D5185m         >200         1         <1         0           Copper         ppm         ASTM D5185m         >25         <1         <1         <1         <1           Vanadium         ppm         ASTM D5185m         <1         <1         <1         0         0           ADDITIVES         method         limit/base         current         history1         history1         history1           Boron         ppm         ASTM D5185m         0         <1         0         0           Boron         ppm         ASTM D5185m         0         <1         0         0           Boron         ppm         ASTM D5185m         0         <1         0         0           Boron         ppm         ASTM D5185m         <1         <1         <1         <1           Wagnesium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Aluminum		ASTM D5185m	>25	2	2	<1
Copper         ppm         ASTM D5185m         >200         1         <1         0           Fin         ppm         ASTM D5185m         >25         <1				>100	<1	0	
Fin	Copper			>200		<1	0
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         <1         0           Boron         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         <1         0           Magnesium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1					<1		<1
Cadmium         ppm         ASTM D5185m         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history3           Boron         ppm         ASTM D5185m         0         <1	/anadium					0	
ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         <1					<1	<1	
Boron ppm ASTM D5185m 0 <1 0  Molybdenum ppm ASTM D5185m 0 0 0  Molybdenum ppm ASTM D5185m <1 <1 0  Manganese ppm ASTM D5185m <1 1 <1 0  Manganese ppm ASTM D5185m <1 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <		le le		limit/hase			history2
### ASTM D5185m   0				IIIIII/ Dasc			
Molybdenum         ppm         ASTM D5185m         <1         <1         0           Manganese         ppm         ASTM D5185m         <1         1         <1         <1           Magnesium         ppm         ASTM D5185m         <1         <1         <1         <1           Calcium         ppm         ASTM D5185m         4         2         6         6           Phosphorus         ppm         ASTM D5185m         0         6         0         6           Cinc         ppm         ASTM D5185m         0         6         0         6           Culfur         ppm         ASTM D5185m         697         700         716           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >50         8         7         6           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >50         8         7         6           Contaction         ppm         ASTM D5185m         >20         2         -1         1							
Manganese         ppm         ASTM D5185m         <1         1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>					-		
Magnesium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 </td <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	-						
Calcium         ppm         ASTM D5185m         4         2         6           Phosphorus         ppm         ASTM D5185m         107         60         68           Zinc         ppm         ASTM D5185m         0         6         0           Sulfur         ppm         ASTM D5185m         697         700         716           CONTAMINANTS         method         limit/base         current         history1         history1           CONTAMINANTS         method         limit/base         current         history1         history1           Solicon         ppm         ASTM D5185m         >50         8         7         6           Solicon         ppm         ASTM D5185m         >20         2         <1         1           Potassium         ppm         ASTM D5185m         >20         2         <1         1           Vater         %         ASTM D5185m         >0         2         <1         1           Vater         %         ASTM D5185m         >20         2         <1         1           Vater         %         ASTM D5185m         >20         2         <1         1           Po	•						
Phosphorus         ppm         ASTM D5185m         107         60         68           Zinc         ppm         ASTM D5185m         0         6         0           Sulfur         ppm         ASTM D5185m         697         700         716           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >50         8         7         6           Sodium         ppm         ASTM D5185m         >50         8         7         6           Sodium         ppm         ASTM D5185m         >20         2         -1         1           Potassium         ppm         ASTM D5185m         >20         2         -1         1           Water         %         ASTM D6304         >0.2         2         -1         1           Vater         %         ASTM D6304         >0.2         2570         2740         3050           FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >5000         2091        <	<u> </u>						
Solifur   So							
CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >50         8         7         6           Sodium         ppm         ASTM D5185m         1         <1							
CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >50         8         7         6           Sodium         ppm         ASTM D5185m         1         <1	-				-		
Silicon ppm ASTM D5185m >50 8 7 6 Sodium ppm ASTM D5185m 1 <1 <1 <1 Potassium ppm ASTM D5185m >20 2 <1 1 Water % ASTM D6304 >0.2 ▲ 0.257 ▲ 0.274 ▲ 0.305 ppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 2740 ▲ 3050  FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 >20000 ▲ 50936 Particles >6µm ASTM D7647 >5000 2091 Particles >14µm ASTM D7647 >640 18 Particles >21µm ASTM D7647 >160 3 Particles >38µm ASTM D7647 >40 0 Particles >71µm ASTM D7647 >10 10 0	Sulfur	ppm	ASTM D5185m		697	700	716
Sodium	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         <1         1           Vater         %         ASTM D6304         >0.2         ▲ 0.257         ▲ 0.274         ▲ 0.305           ppm Water         ppm         ASTM D6304         >2000         ▲ 2570         ▲ 2740         ▲ 3050           FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >20000         ▲ 50936             Particles >6μm         ASTM D7647         >5000         2091             Particles >14μm         ASTM D7647         >640         18             Particles >21μm         ASTM D7647         >160         3             Particles >71μm         ASTM D7647         >10         0             Particles >71μm         ASTM D7647         >10         0             Particles >71μm         ASTM D7647         >10         0             Particles >71μm         ASTM D7647         >10         0         <	Silicon	ppm	ASTM D5185m	>50	8	7	6
Water         %         ASTM D6304         >0.2         ▲ 0.257         ▲ 0.274         ▲ 0.305           ppm Water         ppm ASTM D6304         >2000         ▲ 2570         ▲ 2740         ▲ 3050           FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >20000         ▲ 50936             Particles >6μm         ASTM D7647         >5000         2091             Particles >14μm         ASTM D7647         >640         18             Particles >21μm         ASTM D7647         >160         3             Particles >38μm         ASTM D7647         >40         0             Particles >71μm         ASTM D7647         >10         0             Partic	Sodium	ppm	ASTM D5185m		1	<1	<1
opm Water         ppm         ASTM D6304         >2000         ▲ 2570         ▲ 2740         ▲ 3050           FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >20000         ▲ 50936             Particles >6μm         ASTM D7647         >5000         2091             Particles >14μm         ASTM D7647         >640         18             Particles >21μm         ASTM D7647         >160         3             Particles >38μm         ASTM D7647         >40         0             Particles >71μm         ASTM D7647         >10         0             Particles >71	Potassium	ppm	ASTM D5185m	>20	2	<1	1
FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >20000         ▲ 50936             Particles >6μm         ASTM D7647         >5000         2091             Particles >14μm         ASTM D7647         >640         18             Particles >21μm         ASTM D7647         >160         3             Particles >38μm         ASTM D7647         >40         0             Particles >71μm         ASTM D7647         >10         0             Particles >71μm         ASTM D76	<i>N</i> ater	%	ASTM D6304	>0.2	<u>0.257</u>	<b>△</b> 0.274	<b>△</b> 0.305
Particles >4μm	pm Water	ppm	ASTM D6304	>2000	<b>2570</b>	<u>▲</u> 2740	▲ 3050
Particles >6μm       ASTM D7647       >5000       2091           Particles >14μm       ASTM D7647       >640       18           Particles >21μm       ASTM D7647       >160       3           Particles >38μm       ASTM D7647       >40       0           Particles >71μm       ASTM D7647       >10       0            Particles >71μm       ASTM D7647       >10       0 <td< td=""><td>FLUID CLEANLIN</td><td>ESS</td><td>method</td><td>limit/base</td><td>current</td><td>history1</td><td>history2</td></td<>	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14μm       ASTM D7647       >640       18           Particles >21μm       ASTM D7647       >160       3           Particles >38μm       ASTM D7647       >40       0           Particles >71μm       ASTM D7647       >10       0           Dil Cleanliness       ISO 4406 (c)       >21/19/16       23/18/11           FLUID DEGRADATION       method       limit/base       current       history1       history1	Particles >4μm		ASTM D7647	>20000	<b>△</b> 50936		
Particles >21μm         ASTM D7647         >160         3             Particles >38μm         ASTM D7647         >40         0             Particles >71μm         ASTM D7647         >10         0             Dil Cleanliness         ISO 4406 (c)         >21/19/16         23/18/11             FLUID DEGRADATION         method         limit/base         current         history1         history1         history1	Particles >6µm		ASTM D7647	>5000	2091		
Particles >38μm         ASTM D7647         >40         0             Particles >71μm         ASTM D7647         >10         0             Dil Cleanliness         ISO 4406 (c)         >21/19/16         ▲ 23/18/11             FLUID DEGRADATION         method         limit/base         current         history1         history1	Particles >14μm		ASTM D7647	>640			
Particles >71μm         ASTM D7647         >10         0             Dil Cleanliness         ISO 4406 (c)         >21/19/16         ▲ 23/18/11             FLUID DEGRADATION         method         limit/base         current         history1         history1	Particles >21µm		ASTM D7647	>160	3		
Dil Cleanliness ISO 4406 (c) >21/19/16 ▲ 23/18/11  FLUID DEGRADATION method limit/base current history1 history	Particles >38µm		ASTM D7647	>40	0		
FLUID DEGRADATION method limit/base current history1 history1	Particles >71μm		ASTM D7647	>10	0		
•	Oil Cleanliness		ISO 4406 (c)	>21/19/16	<b>23/18/11</b>		
Acid Number (AN) mg KOH/g ASTM D8045 0.51 0.18 0.17 0.15	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
(,,,	Acid Number (AN)	mg KOH/g	ASTM D8045	0.51	0.18	0.17	0.15



# **OIL ANALYSIS REPORT**







Certificate 12367

Laboratory Sample No.

: USP0011876 Lab Number : 06180188 Unique Number : 11031514 Test Package : IND 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 15 May 2024

**Tested** : 23 May 2024 Diagnosed

: 23 May 2024 - Jonathan Hester

MIDDLESBORO, KY

Contact: SERVICE MANAGER

SMITHFIELD FOODS-MIDDLESBORO

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

 $^st$  - 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)

Report Id: SMIMID [WUSCAR] 06180188 (Generated: 05/23/2024 11:16:14) Rev: 1

Contact/Location: SERVICE MANAGER ? - SMIMID

LIS

T:

F: