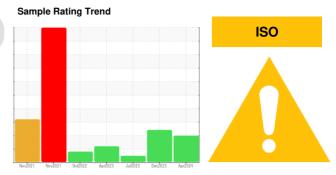


# **OIL ANALYSIS REPORT**

# BAGLINE **KETTLE 8 - 11531790**

Refrigeration Compressor

PETRO CANADA PURITY FG EP GEAR OIL 220 (1 GAL)



### **DIAGNOSIS**

#### Recommendation

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

#### Wear

All component wear rates are normal.

## Contamination

There is a high amount of particulates 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 Number   Client Info   USP0006682   USP0004469   USP250220   OS Jul 2023   O	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date   Client Info   25 Apr 2024   17 Dec 2023   05 Jul 2023		<i>,,,</i> (1101 <b>t</b>		III III Dasc			_
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A           Sample Status         Moran         ABNORMAL         ATTENTION         NORMAL           WEAR METALS         method         Imitibase         current         history1         history2           fron         ppm         ASTM D5185m         2         0         0         0           Chromium         ppm         ASTM D5185m         >2         0         0         0           Nickel         ppm         ASTM D5185m         0         <1	•						
Dil Age	•	hro			-		
Dil Changed   Client Info   N/A   ABNORMAL   ATTENTION   NORMAL							
Bample Status         method         fimit/base         current         history1         history2           fron         ppm         ASTM D5185m         >8         6         1         <1	-	1115					
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >8         6         1         <1			Client inio				
Chromium	·		and the sale	1111-/1			
Chromium         ppm         ASTM D5185m         >2         0         0         0           Nickel         ppm         ASTM D5185m         0         0         0         0           Silver         ppm         ASTM D5185m         0         0         0         0           Aluminium         ppm         ASTM D5185m         >2         0         0         0           Aluminium         ppm         ASTM D5185m         >2         0         0         0           Lead         ppm         ASTM D5185m         >2         0         0         0           Copper         ppm         ASTM D5185m         >8         0         <1         <1           Tin         ppm         ASTM D5185m         0         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         0         <1         <1           Caddmium         ppm         ASTM D5185m         0         0         0         <1             Boron         ppm         ASTM D5185m         0         0         0         <1             Boron         ppm         ASTM D5185m <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Nickel ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							
Description		ppm		>2	-		
Silver	Nickel	ppm				0	
Alluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead         ppm         ASTM D5185m         >2         0         0         0           Copper         ppm         ASTM D5185m         >8         0         <1         <1           Tin         ppm         ASTM D5185m         >8         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         0         <1            Cadmium         ppm         ASTM D5185m         0         0         <1            Boron         ppm         ASTM D5185m         0         0         <1            Molybdenum         ppm         ASTM D5185m         0         0         0         <1           Manganese         ppm         ASTM D5185m         0         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         0<	Silver	ppm	ASTM D5185m	>2			0
Copper         ppm         ASTM D5185m         >8         0         <1         <1           Tin         ppm         ASTM D5185m         >4         0         0         <1	Aluminum	ppm	ASTM D5185m	>3	0	2	<1
Tin	Lead	ppm				0	0
Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         1           Phosphorus         ppm         ASTM D5185m         0         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0           Silicon	Copper	ppm	ASTM D5185m	>8	0	<1	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         1           Phosphorus         ppm         ASTM D5185m         0         0         0         0           Zinc         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         22         4	Tin	ppm	ASTM D5185m	>4	0	0	<1
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         -1           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         1           Phosphorus         ppm         ASTM D5185m         0         0         0         0           Zinc         ppm         ASTM D5185m         0         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0           Sillicon         ppm         ASTM D5185m         >15         5         △         22         4           Potassium         ppm         ASTM D5185m         >1         1         1 </td <td>Vanadium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>&lt;1</td>	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         <1           Molybdenum         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         0         0         0           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         >15         5         22         4           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D6304         >0.01         0.0	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         <1           Molybdenum         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         22         4           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20	Boron	ppm	ASTM D5185m		0	0	0
Molybdenum         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >15         5         22         4           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         AS	Barium		ASTM D5185m			0	<1
Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0           Calcium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >15         5         22         4           Potassium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         0         0           Particles >4µm	Molvbdenum		ASTM D5185m			0	0
Magnesium         ppm         ASTM D5185m         0         0         0           Calcium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >15         5         22         4           Sodium         ppm         ASTM D5185m         >15         5         22         4           Potassium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D6185m         >20         0         0         0         0         0           Particles >4µm			ASTM D5185m				
Calcium         ppm         ASTM D5185m         0         0         1           Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history3           Silicon         ppm         ASTM D5185m         >15         5         Δ         22         4           Sodium         ppm         ASTM D5185m         >15         5         Δ         22         4           Potassium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         0         2           Water         %         ASTM D5185m         >20         0         0         0         2           FLUID CLEANLINESS         method         limit/base         current         histo	•				-		
Phosphorus         ppm         ASTM D5185m         491         515         595           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         ▲ 22         4           Sodium         ppm         ASTM D5185m         >15         5         ▲ 22         4           Potassium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         0         2           Water         %         ASTM D6304         >0.01         11         52         37.2	<u> </u>						
Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         Δ         22         4           Sodium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D5185m         >20         0         0         2           Water         %         ASTM D6304         >0.01         0.001         0.005         0.003           ppm Water         ppm         ASTM D6304         >100         11         52         37.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >10000         113054         12775         5963           Particles >6μm         ASTM D7647         >640         970         39         32           Particles >21μm         ASTM D7647         >160         256         6					-		
Sulfur         ppm         ASTM D5185m         409         348         604           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         Δ         22         4           Sodium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D6304         >0.01         0.001         0.005         0.003           opm Water         ppm         ASTM D6304         >100         11         52         37.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >10000         113054         12775         5963           Particles >6μm         ASTM D7647         >2500         22126         1377         767           Particles >14μm         ASTM D7647         >640         970         39         32           Particles >21μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         0 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         5         Δ 22         4           Sodium         ppm         ASTM D5185m         <1	-				-		
Silicon       ppm       ASTM D5185m       >15       5       ▲ 22       4         Sodium       ppm       ASTM D5185m       <1       1       <1         Potassium       ppm       ASTM D5185m       >20       0       0       2         Water       %       ASTM D6304       >0.01       0.001       0.005       0.003         opm Water       ppm       ASTM D6304       >100       11       52       37.2         FLUID CLEANLINESS       method       limit/base       current       history1       history1         Particles >4μm       ASTM D7647       >10000       113054       12775       5963         Particles >6μm       ASTM D7647       >2500       22126       1377       767         Particles >14μm       ASTM D7647       >640       970       39       32         Particles >21μm       ASTM D7647       >160       256       6       9         Particles >71μm       ASTM D7647       >40       10       0       2         Particles >71μm       ASTM D7647       >10       0       1         Oil Cleanliness       ISO 4406 (c)       >20/18/16       24/22/17       21/18/12       20/17/12				11 11 11			
Sodium   ppm   ASTM D5185m   <1   1   <1							
Potassium         ppm         ASTM D5185m         >20         0         0         2           Water         %         ASTM D6304         >0.01         0.001         0.005         0.003           opm Water         ppm         ASTM D6304         >100         11         52         37.2           FLUID CLEANLINESS         method         limit/base         current         history1         history1           Particles >4μm         ASTM D7647         >10000         ▲ 113054         12775         5963           Particles >6μm         ASTM D7647         >2500         ▲ 22126         1377         767           Particles >14μm         ASTM D7647         >640         ♠ 970         39         32           Particles >21μm         ASTM D7647         >160         ♠ 256         6         9           Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16         24/22/17         21/18/12         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         <				>15			
Water         %         ASTM D6304         >0.01         0.001         0.005         0.003           opm Water         ppm         ASTM D6304         >100         11         52         37.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >10000         ▲ 113054         12775         5963           Particles >6μm         ASTM D7647         >2500         ▲ 22126         1377         767           Particles >14μm         ASTM D7647         >640         ♠ 970         39         32           Particles >21μm         ASTM D7647         >160         ♠ 256         6         9           Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         1         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history2		ppm					
ppm Water         ppm ASTM D6304         >100         11         52         37.2           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >10000         ▲ 113054         12775         5963           Particles >6μm         ASTM D7647         >2500         ▲ 22126         1377         767           Particles >14μm         ASTM D7647         >640         ▲ 970         39         32           Particles >21μm         ASTM D7647         >160         ▲ 256         6         9           Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16         ▲ 24/22/17         21/18/12         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history2							
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >10000         Δ 113054         12775         5963           Particles >6μm         ASTM D7647         >2500         Δ 22126         1377         767           Particles >14μm         ASTM D7647         >640         Δ 970         39         32           Particles >21μm         ASTM D7647         >160         Δ 256         6         9           Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16         Δ 24/22/17         21/18/12         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history2		%			0.001		
Particles >4μm       ASTM D7647       >10000       ▲ 113054       12775       5963         Particles >6μm       ASTM D7647       >2500       ▲ 22126       1377       767         Particles >14μm       ASTM D7647       >640       ♠ 970       39       32         Particles >21μm       ASTM D7647       >160       ♠ 256       6       9         Particles >38μm       ASTM D7647       >40       10       0       2         Particles >71μm       ASTM D7647       >10       0       0       1         Oil Cleanliness       ISO 4406 (c)       >20/18/16       ▲ 24/22/17       21/18/12       20/17/12         FLUID DEGRADATION       method       limit/base       current       history1       history1			ASTM D6304	>100	11	52	37.2
Particles >6μm       ASTM D7647       >2500       Δ 22126       1377       767         Particles >14μm       ASTM D7647       >640       Δ 970       39       32         Particles >21μm       ASTM D7647       >160       Δ 256       6       9         Particles >38μm       ASTM D7647       >40       10       0       2         Particles >71μm       ASTM D7647       >10       0       0       1         Oil Cleanliness       ISO 4406 (c)       >20/18/16       Δ 24/22/17       21/18/12       20/17/12         FLUID DEGRADATION       method       limit/base       current       history1       history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history
Particles >14μm       ASTM D7647       >640       ♠ 970       39       32         Particles >21μm       ASTM D7647       >160       ♠ 256       6       9         Particles >38μm       ASTM D7647       >40       10       0       2         Particles >71μm       ASTM D7647       >10       0       0       1         Oil Cleanliness       ISO 4406 (c)       >20/18/16       ▲ 24/22/17       ≥1/18/12       ≥0/17/12         FLUID DEGRADATION       method       limit/base       current       history1       history1	Particles >4µm						
Particles >21μm         ASTM D7647         >160         ▲ 256         6         9           Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16         ▲ 24/22/17         ≥21/18/12         ≥0/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history1	•						
Particles >38μm         ASTM D7647         >40         10         0         2           Particles >71μm         ASTM D7647         >10         0         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16         Δ 24/22/17         21/18/12         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history1	Particles >14μm						
Particles >71µm         ASTM D7647         >10         0         0         1           Oil Cleanliness         ISO 4406 (c)         >20/18/16 ▲ 24/22/17         ≥21/18/12         ≥20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history1	Particles >21µm			>160			
Oil Cleanliness         ISO 4406 (c)         >20/18/16 ▲ 24/22/17         21/18/12         20/17/12           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >38µm						
FLUID DEGRADATION method limit/base current history1 history2	Particles >71μm		ASTM D7647	>10	0	0	1
·	Oil Cleanliness		ISO 4406 (c)	>20/18/16	<u>4</u> 24/22/17	21/18/12	20/17/12
Acid Number (AN) mg KOH/g ASTM D974 0.51 0.74 0.59 0.72	FLUID DEGRADA	ATION	method	limit/base	current	historv1	history
	. 20.2 220					,	



## OIL ANALYSIS REPORT





Certificate 12367

Laboratory Sample No.

Lab Number : 06161480 Unique Number : 10996903

Test Package : IND 2

: USP0006682

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 26 Apr 2024 **Tested** 

: 30 Apr 2024 Diagnosed : 30 Apr 2024 - Jonathan Hester

KraftHeinz - Cedar Rapids - Plant 8370

4601 C ST SW CEDAR RAPIDS, IA US 52404

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)

T:

F: