

# **OIL ANALYSIS REPORT**

[172522] **TUMBLER #4** 

Hydraulic System

PETRO CANADA PURITY FG AW HYDRAULIC 32 (8 LTR)

# Sample Rating Trend ISO

### DIAGNOSIS

#### Recommendation

We recommend you service the filters on this component. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

All component wear rates are normal.

## Contamination

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

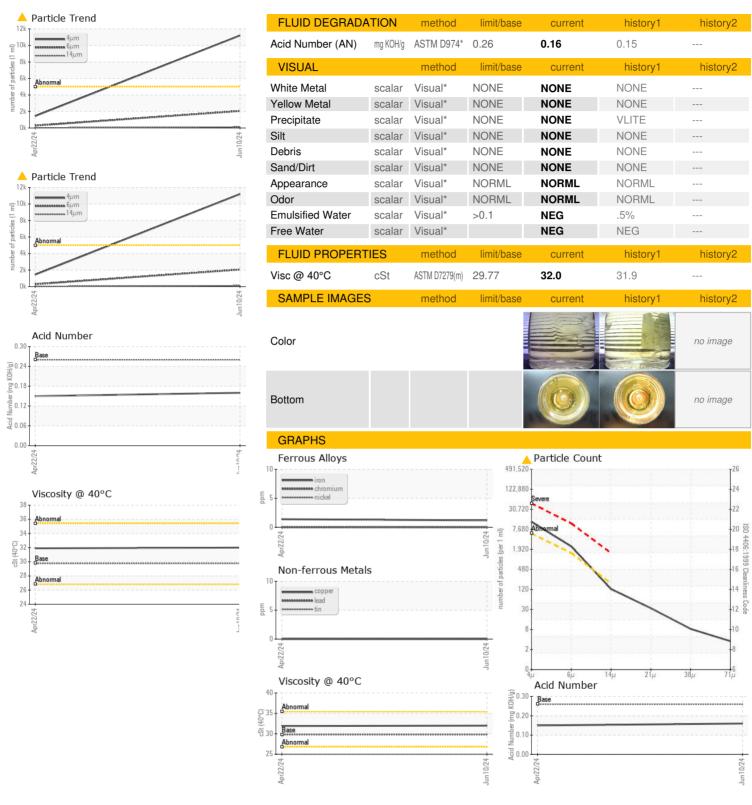
#### **Fluid Condition**

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 Number   Client Info   WC0898877   WC0929917	OAMBLE INCOM	AATION		11 12 11			
Sample Date   Client Info   10 Jun 2024   22 Apr 2024     Machine Age   hrs   Client Info   0   0   0	SAMPLE INFORM	TATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         0         0	Sample Number				WC0898877	WC0929917	
Oil Age         hrs         Client Info         N/A         N/A         N/A            Sample Status         Client Info         N/A         N/A         N/A            CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >0.0         0            Chromium         ppm         ASTM D5185(m)         >10         0         0            Nickel         ppm         ASTM D5185(m)         10         0         0            Silver         ppm         ASTM D5185(m)         10         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0					10 Jun 2024	22 Apr 2024	
Oil Changed Sample Status         Client Info         N/A         N/A		hrs			_		
Sample Status	•	hrs			· ·		
CONTAMINATION   method   limit/base   current   history1   history2			Client Info				
Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM 05188(m)         >20         1         1            Chromium         ppm         ASTM 05188(m)         >10         0         0            Nickel         ppm         ASTM 05188(m)         >10         0         0            Titanium         ppm         ASTM 05188(m)         0         0         0            Aluminum         ppm         ASTM 05188(m)         >10         0         0            Aluminum         ppm         ASTM 05188(m)         >10         0         0            Lead         ppm         ASTM 05188(m)         >10         0         0            Copper         ppm         ASTM 05188(m)         >10         0         0            Antimony         ppm         ASTM 05188(m)         0         0            Vanadium         ppm         ASTM 05188(m)         0         0 <th>Sample Status</th> <th></th> <th></th> <th></th> <th>ABNORMAL</th> <th>NORMAL</th> <th></th>	Sample Status				ABNORMAL	NORMAL	
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >20         1         1            Chromium         ppm         ASTM D5185(m)         >10         0         0            Nickel         ppm         ASTM D5185(m)         >10         0         0            Titanium         ppm         ASTM D5185(m)         0         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0            Lead         ppm         ASTM D5185(m)         >10         0         0            Copper         ppm         ASTM D5185(m)         >0         0            Tin         ppm         ASTM D5185(m)         0         0	CONTAMINATION	١	method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.1	NEG	NEG	
Chromium         ppm         ASTM D5185(m)         >10         0            Nickel         ppm         ASTM D5185(m)         >10         <1         0            Titanium         ppm         ASTM D5185(m)         0         0            Silver         ppm         ASTM D5185(m)         >10         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0            Lead         ppm         ASTM D5185(m)         >10         0         0            Copper         ppm         ASTM D5185(m)         >10         0         0            Antimony         ppm         ASTM D5185(m)         >10         0         0            Antimony         ppm         ASTM D5185(m)         0         0          0           Vanadium         ppm         ASTM D5185(m)         0         0          0            Beryllium         ppm         ASTM D5185(m)         0         0          0            ADDTTVES         method         limit/base         current<	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>20	1	1	
Titanium         ppm         ASTM D5185(m)         0         0            Silver         ppm         ASTM D5185(m)         0         0            Aluminum         ppm         ASTM D5185(m)         >10         0         0            Lead         ppm         ASTM D5185(m)         >10         0         0            Copper         ppm         ASTM D5185(m)         >10         0         0            Tin         ppm         ASTM D5185(m)         0         0             Antimony         ppm         ASTM D5185(m)         0         0             Antimony         ppm         ASTM D5185(m)         0         0             Antimony         ppm         ASTM D5185(m)         0         0              Antimony         ppm         ASTM D5185(m)         0         0	Chromium	ppm	ASTM D5185(m)	>10	0	0	
Silver         ppm         ASTM D5185(m)         0         0	Nickel	ppm	ASTM D5185(m)	>10	<1	0	
Aluminum ppm ASTM D5185(m) >10 0 0  Lead ppm ASTM D5185(m) >10 0 0  Copper ppm ASTM D5185(m) >75 0 0  Tin ppm ASTM D5185(m) >10 0 0  Antimony ppm ASTM D5185(m) >10 0 0  Antimony ppm ASTM D5185(m) >0 0 0  Beryllium ppm ASTM D5185(m) 0 0 0  Beryllium ppm ASTM D5185(m) 0 0 0  ADDITIVES method limit/base current history1 history2  Boron ppm ASTM D5185(m) 0 0 0  ADDITIVES method limit/base current history1 history2  Boron ppm ASTM D5185(m) 0 0 0  Manganese ppm ASTM D5185(m) 0 0 0  Manganesium ppm ASTM D5185(m) 0 0 0  Manganesium ppm ASTM D5185(m) 0 0 0  Sulfur ppm ASTM D5185(m) 0 0  Sulfur ppm ASTM D5185(m) 0 0  Sulfur ppm ASTM D5185(m) 0 0  CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185(m) >20 2 1 1  CONTAMINANTS method limit/base current history1 history2  Particles >4µm ASTM D5185(m) >20 0 0  FLUID CLEANLINESS method limit/base current history1 history2  Particles >4µm ASTM D7647 >5000 11197 1448  Particles >6µm ASTM D7647 >160 109 21  Particles >14µm ASTM D7647 >160 109 21	Titanium	ppm	ASTM D5185(m)		0	0	
Lead         ppm         ASTM D5185(m)         >10         0         0            Copper         ppm         ASTM D5185(m)         >75         0         0            Tin         ppm         ASTM D5185(m)         >10         0         0            Antimony         ppm         ASTM D5185(m)         0         0            Vanadium         ppm         ASTM D5185(m)         0         0            Beryllium         ppm         ASTM D5185(m)         0         0            Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         0            Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         0	Silver	ppm	ASTM D5185(m)		0	0	
Copper         ppm         ASTM D5185(m)         >75         0         0            Tin         ppm         ASTM D5185(m)         >10         0         0            Antimony         ppm         ASTM D5185(m)         0         0            Vanadium         ppm         ASTM D5185(m)         0         0            Beryllium         ppm         ASTM D5185(m)         0         0            Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         0            Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         <1         <1            Calcium         ppm         ASTM D5185(m)	Aluminum	ppm	ASTM D5185(m)	>10	0	0	
Tin ppm ASTM D5185(m) >10 0 0  Antimony ppm ASTM D5185(m) 0 0  Antimony ppm ASTM D5185(m) 0 0  Beryllium ppm ASTM D5185(m) 0 0 0  Beryllium ppm ASTM D5185(m) 0 0 0  Cadmium ppm ASTM D5185(m) 0 0 0  ADDITIVES method limit/base current history1 history2  Boron ppm ASTM D5185(m) 0 0 0  Barium ppm ASTM D5185(m) 0 0 0  Molybdenum ppm ASTM D5185(m) 0 0 0  Magnaese ppm ASTM D5185(m) 0 0 0  Magnesium ppm ASTM D5185(m) 0 0 0  Calcium ppm ASTM D5185(m) 0 0 0  Phosphorus ppm ASTM D5185(m) 0 0 0  Sulfur ppm ASTM D5185(m) 389 386  Zinc ppm ASTM D5185(m) 4 5  Sulfur ppm ASTM D5185(m) 4 5  CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185(m) >20 2 1  CONTAMINANTS method limit/base current history1 history2  FLUID CLEANLINESS method limit/base current history1 history2  Particles >4μm ASTM D7647 >5000 11197 1448  Particles >4μm ASTM D7647 >1300 2055 284  Particles >21μm ASTM D7647 >160 109 21  Particles >21μm ASTM D7647 >40 29 5	Lead	ppm	ASTM D5185(m)	>10	0	0	
Antimony         ppm         ASTM D5185(m)         0         0            Vanadium         ppm         ASTM D5185(m)         0         0            Beryllium         ppm         ASTM D5185(m)         0         0            Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         0            Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         <1	Copper	ppm	ASTM D5185(m)	>75	0	0	
Vanadium         ppm         ASTM D5185(m)         0         0            Beryllium         ppm         ASTM D5185(m)         0         0            Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1	Tin	ppm	ASTM D5185(m)	>10	0	0	
Beryllium         ppm         ASTM D5185(m)         0         0            Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1         <1            Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         <1         <1            Calcium         ppm         ASTM D5185(m)         389         386            Phosphorus         ppm         ASTM D5185(m)         4         5            Sulfur         ppm         ASTM D5185(m)         398         398            Lithium         ppm         ASTM D5185(m)         <1         <1         -1            CONTAMINANTS         method         limit/base         current	Antimony	ppm	ASTM D5185(m)		0	0	
Cadmium         ppm         ASTM D5185(m)         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1	Vanadium	ppm	ASTM D5185(m)		0	0	
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1         <1            Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         <1            Calcium         ppm         ASTM D5185(m)         0         <1            Phosphorus         ppm         ASTM D5185(m)         389         386            Zinc         ppm         ASTM D5185(m)         398         398            Sulfur         ppm         ASTM D5185(m)         <1         <1            Lithium         ppm         ASTM D5185(m)         <20         2         1            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         <1<	Beryllium	ppm	ASTM D5185(m)		0	0	
Boron         ppm         ASTM D5185(m)         <1	Cadmium	ppm	ASTM D5185(m)		0	0	
Barium         ppm         ASTM D5185(m)         0         0            Molybdenum         ppm         ASTM D5185(m)         0         0            Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         0         <1            Calcium         ppm         ASTM D5185(m)         389         386            Phosphorus         ppm         ASTM D5185(m)         4         5            Zinc         ppm         ASTM D5185(m)         398         398            Sulfur         ppm         ASTM D5185(m)         <1         <1            Lithium         ppm         ASTM D5185(m)         <2         1            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINESS         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         0         0            Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         <1	Boron	ppm	ASTM D5185(m)		<1	<1	
Manganese         ppm         ASTM D5185(m)         0         0            Magnesium         ppm         ASTM D5185(m)         <1         <1            Calcium         ppm         ASTM D5185(m)         0         <1            Phosphorus         ppm         ASTM D5185(m)         389         386            Zinc         ppm         ASTM D5185(m)         4         5            Sulfur         ppm         ASTM D5185(m)         398         398            Lithium         ppm         ASTM D5185(m)         <1         <1            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINES         method         limit/base         current         history1         history2           Particles >4μm	Barium	ppm	ASTM D5185(m)		0	0	
Magnesium         ppm         ASTM D5185(m)         <1         <1            Calcium         ppm         ASTM D5185(m)         0         <1	Molybdenum	ppm	ASTM D5185(m)		0	0	
Calcium         ppm         ASTM D5185(m)         0         <1	Manganese	ppm	ASTM D5185(m)		0	0	
Phosphorus         ppm         ASTM D5185(m)         389         386            Zinc         ppm         ASTM D5185(m)         4         5            Sulfur         ppm         ASTM D5185(m)         398         398            Lithium         ppm         ASTM D5185(m)         <1         <1            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         0         0            Potassium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >5000         11197         1448            Particles >6µm         ASTM D7647         >1300         2055         284	Magnesium	ppm	ASTM D5185(m)		<1	<1	
Zinc         ppm         ASTM D5185(m)         4         5            Sulfur         ppm         ASTM D5185(m)         398         398            Lithium         ppm         ASTM D5185(m)         <1         <1            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         >20         0         0            Potassium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         11197         1448            Particles >6μm         ASTM D7647         >1300         2055         284            Particles >21μm         ASTM D7647         >160         109         21            Particles >21μm         ASTM D7647         >40         29         5	Calcium	ppm	ASTM D5185(m)		0	<1	
Sulfur         ppm         ASTM D5185(m)         398         398            Lithium         ppm         ASTM D5185(m)         <1	Phosphorus	ppm			389		
Lithium ppm ASTM D5185(m) <1 <1  CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185(m) >20 2 1  Sodium ppm ASTM D5185(m) <1 <1 <-1  Potassium ppm ASTM D5185(m) >20 0 0  FLUID CLEANLINESS method limit/base current history1 history2  Particles >4µm ASTM D7647 >5000 ▲ 11197 1448  Particles >6µm ASTM D7647 >1300 2055 284  Particles >14µm ASTM D7647 >160 109 21  Particles >21µm ASTM D7647 >40 29 5	Zinc	ppm	ASTM D5185(m)		4	5	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         2         1            Sodium         ppm         ASTM D5185(m)         <1         <1            Potassium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         11197         1448            Particles >6μm         ASTM D7647         >1300         2055         284            Particles >14μm         ASTM D7647         >160         109         21            Particles >21μm         ASTM D7647         >40         29         5	Sulfur	ppm	ASTM D5185(m)		398	398	
Silicon       ppm       ASTM D5185(m)       >20       2       1          Sodium       ppm       ASTM D5185(m)       <1	Lithium	ppm	ASTM D5185(m)		<1	<1	
Sodium         ppm         ASTM D5185(m)         <1	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185(m)         <1	Silicon	ppm	ASTM D5185(m)	>20	2	1	
Potassium         ppm         ASTM D5185(m)         >20         0         0            FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         ▲ 11197         1448            Particles >6μm         ASTM D7647         >1300         ②2055         284            Particles >14μm         ASTM D7647         >160         109         21            Particles >21μm         ASTM D7647         >40         29         5	Sodium		. ,			<1	
Particles >4μm       ASTM D7647       >5000       ▲ 11197       1448          Particles >6μm       ASTM D7647       >1300       ② 2055       284          Particles >14μm       ASTM D7647       >160       109       21          Particles >21μm       ASTM D7647       >40       29       5	Potassium	ppm	ASTM D5185(m)	>20	0	0	
Particles >6μm       ASTM D7647       >1300       2055       284          Particles >14μm       ASTM D7647       >160       109       21          Particles >21μm       ASTM D7647       >40       29       5	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14μm       ASTM D7647       >160       109       21          Particles >21μm       ASTM D7647       >40       29       5	Particles >4µm		ASTM D7647	>5000	<u> </u>	1448	
Particles >14μm       ASTM D7647       >160       109       21          Particles >21μm       ASTM D7647       >40       29       5	Particles >6µm		ASTM D7647	>1300	<b>2055</b>	284	
	Particles >14µm		ASTM D7647	>160	_	21	
	Particles >21µm		ASTM D7647	>40	29	5	
· analog · copin	Particles >38µm		ASTM D7647	>10	7	1	
Particles >71μm ASTM D7647 >3 3 1	·		ASTM D7647	>3	3	1	
Oil Cleanliness ISO 4406 (c) >19/17/14 <b>21/18/14</b> 18/15/12			ISO 4406 (c)	>19/17/14			



## **OIL ANALYSIS REPORT**







Laboratory Sample No.

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : WC0898877 Lab Number : 02641416 Unique Number : 5798955

Test Package : IND 2

**Tested** Diagnosed

Received

: 12 Jun 2024

: 13 Jun 2024

: 13 Jun 2024 - Wes Davis

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.

**GRAND RIVER FOODS** 

190 VONDRAU DRIVE CAMBRIDGE, ON **CA N3E 1B8** Contact: Ryan Shea rshea@grandriverfoods.com T: (519)653-3577