

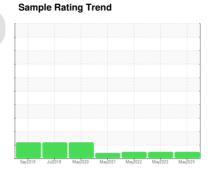
# **OIL ANALYSIS REPORT**



(EQ4283) E Kreag Road BPS (S/N FTE00895)

Diesel Engine

PETRO CANADA DURON UHP 5W40 (20 GAL)





### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the

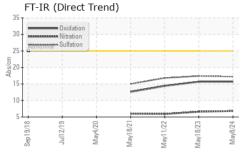
## **Fluid Condition**

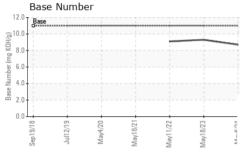
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

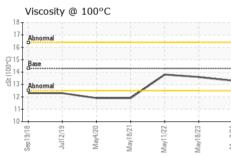
Sample Date   Client Info   18 May 2024   18 May 2023   11 May 2024   18 May 2024   18 May 2023   11 May 2024   18 May 2023   11 May 2024   18 May 2024   18 May 2023   11 May 2024   18 May 2023   11 May 2024   18 May 2024   18 May 2023   11 May 2023   12 May 2023   11 May 2023   12 May 2023   12 May 2023   11 May 2023   12 May 2023	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         187         167         149           Oil Age         hrs         Client Info         38         33         149           Oil Changed         Client Info         Not Changd         Not Changed         Changed Changed           Sample Status         WC Method         Sourrent         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5186m         6         <1         0         0           Chromium         ppm         ASTM D5186m         >6         <1         0         0           Nickel         ppm         ASTM D5186m         >2         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Sample Number		Client Info		WC0934064	WC0810882	WC0696103
Oil Age         hrs         Client Info         38         33         149           Oil Changed Sample Status         Client Info         Not Changd NORMAL         Not Changed Changed Changed Changed NORMAL           CONTAMINATION         method         limit/bass         current         history1         history2           Fuel         WC Method         S         <1.0         <1.0         <1.0         <1.0           Water         WC Method         SD-2         NEG         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG         NEG           Iron         ppm         ASTM D5185m         >100         1         1         2         2           Iron         ppm         ASTM D5185m         >6         <1         0         0         0           Iron         ppm         ASTM D5185m         >2         <1         1         1         2           Chromium         ppm         ASTM D5185m         >2         <1         <1         1         2           Iron         ppm         ASTM D5185m         >2         <1         <1         <1         <1         <1         <1         <1	Sample Date		Client Info		08 May 2024	18 May 2023	11 May 2022
Oil Changed Sample Status         Client Info NoRMAL         Not Changd NORMAL         Not Changed NORMAL         Changes NEG	Machine Age	hrs	Client Info		187	167	149
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   fimit/base   current   history1   history2   history2	Oil Age	hrs	Client Info		38	33	149
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   fimit/base   current   history1   history2   history2	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Fuel						Ŭ	_
Fuel	CONTAMINATION	J	method	limit/base	current	history1	history2
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         1         1         2           Chromium         ppm         ASTM D5185m         >6         -1         0         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >10         -1         <1	Fuel		WC Method	>5	<1.0		
WEAR METALS			WC Method	>0.2		NFG	NFG
WEAR METALS				7 0.2	_		
Iron				limit/base			
Chromium         ppm         ASTM D5185m         >6         <1         0         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Titanium         ppm         ASTM D5185m         >2         <1							
Nickel         ppm         ASTM D5185m         -4         0         0         0           Titanium         ppm         ASTM D5185m         >2         <1	-						
Titanium							
Silver					-		
Aluminum         ppm         ASTM D5185m         >30         <1         <1         <1           Lead         ppm         ASTM D5185m         >10         <1							
Lead         ppm         ASTM D5185m         >10         <1         <1         <1         <1         Copper         ppm         ASTM D5185m         >150         9         2         2         2         2         2         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         <					-		
Copper         ppm         ASTM D5185m         >150         9         2         2         2           Tin         ppm         ASTM D5185m         >4         0         <1							
Tin         ppm         ASTM D5185m         >4         0         <1         <1           Antimony         ppm         ASTM D5185m               Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         65         67         70         73           Boron         ppm         ASTM D5185m         65         67         70         73           Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         0         0           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1160         1139         1100         1161           Calcium         ppm         ASTM D5185m         820         910         882         942           Phosphorus         ppm         ASTM D5185m         1260         1344							
Antimony         ppm         ASTM D5185m		ppm					
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         65         67         70         73           Barium         ppm         ASTM D5185m         0         <1         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         0         0           Magnese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         820         910         882         942           Phosphorus         ppm         ASTM D5185m         1160         1120         1049         1141           Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         20         7         6         5		ppm		>4		<1	
Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         65         67         70         73           Barium         ppm         ASTM D5185m         0         <1	,	ppm					
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         65         67         70         73           Barium         ppm         ASTM D5185m         0         <1		ppm			-		
Boron		ppm	ASTM D5185m		<1	0	0
Barium         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         65         59         57         57           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1160         1139         1100         1161           Calcium         ppm         ASTM D5185m         120         910         882         942           Phosphorus         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         >20         <1         <1         0           INFRA-RED         method         limit/base	Boron	ppm	ASTM D5185m	65	67	70	73
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1160         1139         1100         1161           Calcium         ppm         ASTM D5185m         1160         1139         1100         1161           Phosphorus         ppm         ASTM D5185m         1160         1120         1049         1141           Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         20         7         6         5           Sodium         ppm         ASTM D5185m         20         <1         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3 <t< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>&lt;1</th><td>0</td><td>0</td></t<>	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium         ppm         ASTM D5185m         1160         1139         1100         1161           Calcium         ppm         ASTM D5185m         820         910         882         942           Phosphorus         ppm         ASTM D5185m         1160         1120         1049         1141           Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         >20         <1         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0         0.1           Nitration         Abs/:1mm         *ASTM D7415	Molybdenum	ppm	ASTM D5185m	65	59	57	57
Calcium         ppm         ASTM D5185m         820         910         882         942           Phosphorus         ppm         ASTM D5185m         1160         1120         1049         1141           Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus         ppm         ASTM D5185m         1160         1120         1049         1141           Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1160	1139	1100	1161
Zinc         ppm         ASTM D5185m         1260         1344         1328         1280           Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         2         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	820	910	882	942
Sulfur         ppm         ASTM D5185m         3000         4194         3882         3201           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1160	1120	1049	1141
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m	1260	1344	1328	1280
Silicon         ppm         ASTM D5185m         >20         7         6         5           Sodium         ppm         ASTM D5185m         2         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	Sulfur	ppm	ASTM D5185m	3000	4194	3882	3201
Sodium         ppm         ASTM D5185m         2         2         1           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	Silicon	ppm	ASTM D5185m	>20	7	6	5
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	Sodium	ppm	ASTM D5185m		2	2	1
Soot %         %         *ASTM D7844         >3         0         0         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	Potassium	ppm	ASTM D5185m	>20	<1	<1	0
Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         6.8         6.6         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4	Soot %	%	*ASTM D7844	>3	0	0	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.2         17.4         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         15.7         14.4				>20		6.6	
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.7</b> 15.7 14.4							
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.7	15.7	14.4



# **OIL ANALYSIS REPORT**



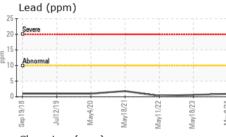


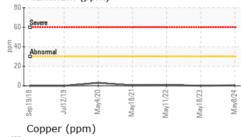


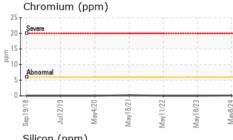
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

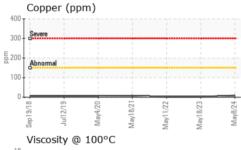
I LOID I NOI LI	THES	memou			HISTOLYT	HISTOLYZ
Visc @ 100°C	cSt	ASTM D445	14.3	13.3	13.6	13.8

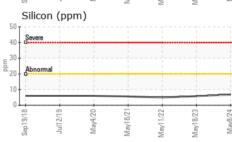
200	Iron (	ppm)						
150	Severe							
튑100	Abnorma	al			 			
50								
0					- 1			
	Sep19/18	Jul12/19	May4/20	May18/21-	May11/22 .	May18/23 .	May8/24 ·	
9.0	Aluminum (ppm)							

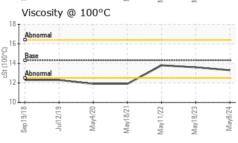


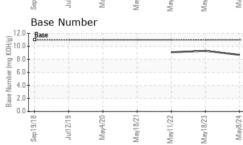
















Certificate 12367

Laboratory Sample No.

Lab Number : 06176874

: WC0934064 Unique Number : 11022927

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received **Tested** Diagnosed

: 13 May 2024 : 14 May 2024 : 14 May 2024 - Sean Felton

MONROE COUNTY WATER AUTHORITY 4799 DEWEY AVE ROCHESTER, NY US 14612

Contact: SCOTT TRAIL scott.trail@mcwa.com T: (585)775-5257

Submitted By: SCOTT TRAIL

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)

Test Package : MOB 1 ( Additional Tests: TBN )