

## **OIL ANALYSIS REPORT**

Sample Rating Trend





4688M Component **Diesel Engine** Fluid PETRO CANADA DURON SH

FLUID DEGRADATION method

Base Number (BN) mg KOH/g ASTM D2896 9.8

Abs/.1mm \*ASTM D7414 >25

Oxidation

N SHP 15W40 ( GAL)           SAMPLE INFORMATION         method         imitbase         current         historyl         historyl         fildoryl           Sample Number         Client Info         GFL010165         GFL0101577         GFL0068650           Sample Date         Client Info         GFL0101465         GFL0101465         GFL0101465         GFL0101677         GFL0068650           Oil Age         hrs         Client Info         141309         141448         11920         10663           Oil Age         hrs         Client Info         Changed         Changed         Changed           Sample Status         Imit/base         current         Fistoryl         Fistoryl         Fistoryl           Fuel         WC Method         >0.2         NEG         NEG         NEG           Otromium         ppm         ASTM 051856         >2         <1         1         1           Nickel         ppm         ASTM 051856         >2         <1         0         <1           Nickel         ppm         ASTM 051856         >30         0         0         0           Kron         ppm         ASTM 051856         >30         0         0         0           Corromium         ppm							
SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         GFL0101465         GFL0101577         GFL00068603         19 Jan 2023           Machine Age         hrs         Client Info         GFL0101465         GFL0101465         GFL0101465         GFL0101677         GFL00068603           Oil Age         hrs         Client Info         14148         11920         10663           Oil Changed         Client Info         Changed         Changed         Changed         Client Info           GONTAMINATION         method         Imit/base         current         history1         history1           Fuel         WC Method         >5         <1.0         A 3.8         9 33.3           Water         WC Method         >0.2         NEG         NEG         NEG           Rico         ppm         ASTM 05185n         >5         <1         1         1           Nickel         ppm         ASTM 05185n         >3         0         0         0           Silver         ppm         ASTM 05185n         >3         0         0         0         0           Silver         ppm							
SAMPLE INFORMATION         method         Imit/base         current         history1         history2           Sample Number         Client Info         GFL0101465         GFL0101577         GFL00068503           Sample Date         Client Info         14309         14148         11920           Oil Age         hrs         Client Info         14148         11920         10663           Oil Changed         Client Info         14148         11920         10663         Changed           Sample Status         Client Info         Changed         Changed         Client Info         Changed         Client Info         Changed         NEG	N SHP 15W40 (	- GAL)					
Sample Number         Client Info         GFL0101465         GFL0101577         GFL0068650           Sample Date         Client Info         06 Dec 2023         16 Nov 2023         19 Jan 2023           Machine Age         hrs         Client Info         14309         14148         11920           Di Age         hrs         Client Info         Changed         NoRMAL         NEG         NEG           Solycol         WC Method         >5         <1.0         A 3.8         3.3.3         NEG           Silvorl         WC Method         >5         <1.0         A 3.8         3.3.3         NEG           Otornium         ppm         ASTM 05185m         >60         23         21         30           Silver         method         Imit/base         current         history1         history2           Silver         ppm         ASTM 05185m         >30         0         0         0           Silver         ppm         ASTM 05185m         >30         0         0<			Apr2021 Jun2			historv1	historv2
Sample Date         Client Info         06 Dec 2023         16 Nov 2023         19 Jan 2023           Machine Age         hrs         Client Info         14309         14148         11920         10663           Dil Age         hrs         Client Info         14148         11920         10663           Sample Status         Client Info         Changed         Changed							
Machine Age         hrs         Client Info         14309         14148         11920         10663           Dil Age         hrs         Client Info         14148         11920         10663           Dil Changed         Client Info         Changed         Stevere           CONTAMINATION         method         imit/base         current         histony1         histony2           Water         WC Method         >5         <1							
Dil Age         Inrs         Client Info         14148         11920         10663           Dil Changed         Client Info         Changed         SevERE         Current         history1         history2         Mater         WCM WcM wcMethod         >0.2         NEG         Nickel         ppm         ASTM D5185m         >5         <1	-	hrs					
Dil Changed     Client Info     Changed     Changed     Changed     Changed     Changed     SEVERE       Sample Status     method     imit/base     current     history1     history2       Fuel     WC Method     >5     <1.0							
Sample Status         NORMAL         MARGINAL         SEVERE           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0	•				_		
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0	-				-		
Fuel         WC Method         >5         <1.0         A 3.8         ● 33.3           Nater         WC Method         >0.2         NEG         NEG         NEG           Bilycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >80         23         21         30           Chromium         ppm         ASTM D5185m         >5         <1         1         1           Nickel         ppm         ASTM D5185m         >2         <1         0         <11         0           Silver         ppm         ASTM D5185m         >30         Q         0         0           Aumanium         ppm         ASTM D5185m         >30         Q         0         0           Copper         ppm         ASTM D5185m         >30         Q         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         2         <1         <1           Saron         ppm         ASTM D5185m         0         2         <1	-	ION	method	limit/base		history1	history2
Nater         WC Method         >0.2         NEG         NEG         NEG           Blycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185m         >80         23         21         30           Chromium         ppm         ASTM D5185m         >5         <1			WC Method	<u>\</u> 5	<10	4.3.8	<b>a</b> 33 3
Glycol         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         23         21         30           Chromium         ppm         ASTM D5185m         >5         <1							. •
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         23         21         30           Chromium         ppm         ASTM D5185m         >5         <1				20.L	-		
Iron         ppm         ASTM D5185m         >80         23         21         30           Chromium         ppm         ASTM D5185m         >5         <1	-	<u>د</u>		limit/base			
Drm         ASTM D5185m         >5         <1         1         1           Nickel         ppm         ASTM D5185m         >2         <1						,	,
Nickel         ppm         ASTM D5185m         >2         <1         0         <1           Titanium         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >30         2         3         2           Lead         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m         >30         0         0         0           Yanadium         ppm         ASTM D5185m         >5         0         0         <1	-				_		
Titanium         ppm         ASTM D5185m         0         <1         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         2         3         2           Lead         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m         >150         2         2         <1							
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         2         3         2           Lead         ppm         ASTM D5185m         >30         2         2         3         2           Lead         ppm         ASTM D5185m         >30         2         2         <1           Copper         ppm         ASTM D5185m         >150         2         2         <1           Tin         ppm         ASTM D5185m         >5         0         0         <1         0           Cadmium         ppm         ASTM D5185m         0         2         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         2         <1<         <1<           Magnesium         ppm         ASTM D5185m         0         <10         874         888         392           Calcium         ppm         ASTM D518				>2			
Aluminum         ppm         ASTM D5185m         >30         2         3         2           ead         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m         >150         2         2         <1           Tin         ppm         ASTM D5185m         >5         0         0         <1				<u>_3</u>			
Lead         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m         >150         2         2         <1							
Copper         ppm         ASTM D5185m         >150         2         2         <1           Tin         ppm         ASTM D5185m         >5         0         0         <1							
Tin         ppm         ASTM D5185m         >5         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         874         888         392           Calcium         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur							
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1							
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1				20	-		
Boron         ppm         ASTM D5185m         0         2         <1         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         55         55         26           Manganese         ppm         ASTM D5185m         0         <1							
Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         55         55         26           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         55         55         26           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	2	<1	<1
Maganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         874         888         392           Calcium         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1150         980         954         440           Zinc         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         1         2         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         874         888         392           Calcium         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1150         980         954         440           Zinc         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         1         2         <1	Molybdenum	ppm	ASTM D5185m	60	55	55	26
Calcium         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1150         980         954         440           Zinc         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         1         2         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Calcium         ppm         ASTM D5185m         1070         994         1007         446           Phosphorus         ppm         ASTM D5185m         1150         980         954         440           Zinc         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         1         2         <1	Magnesium	ppm	ASTM D5185m	1010	874	888	392
Zinc         ppm         ASTM D5185m         1270         1198         1216         525           Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         1         2         <1	Calcium		ASTM D5185m	1070	994	1007	446
Sulfur         ppm         ASTM D5185m         2060         2738         2544         1460           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         4         5         6           Potassium         ppm         ASTM D5185m         >20         1         2         <1	Phosphorus	ppm	ASTM D5185m	1150	980	954	440
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         >20         4         5         6           Potassium         ppm         ASTM D5185m         >20         1         2         <1	Zinc	ppm	ASTM D5185m	1270	1198	1216	525
Silicon         ppm         ASTM D5185m         >20         4         5         6           Sodium         ppm         ASTM D5185m         7         8         4           Potassium         ppm         ASTM D5185m         >20         1         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	Sulfur	ppm	ASTM D5185m	2060	2738	2544	1460
Sodium         ppm         ASTM D5185m         7         8         4           Potassium         ppm         ASTM D5185m         >20         1         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         1         2         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	Silicon	ppm	ASTM D5185m	>20	4	5	6
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	Sodium	ppm	ASTM D5185m		7		4
Soot %         %         *ASTM D7844         >3         0.7         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	Potassium	ppm	ASTM D5185m	>20	1	2	<1
Nitration         Abs/cm         *ASTM D7624         >20         11.6         10.5         13.7	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	*ASTM D7844	>3	0.7	0.6	0.3
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.7         20.7         21.5	Nitration	Abs/cm	*ASTM D7624	>20	11.6	10.5	13.7
	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.7	20.7	21.5

20.0

6.2

### Recommendation

Resample at the next service interval to monitor.

Machine Ic

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### 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.

26.0

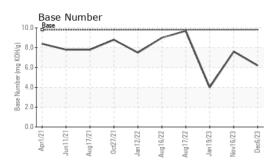
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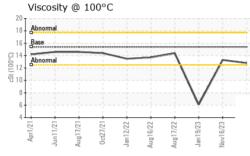
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7.6

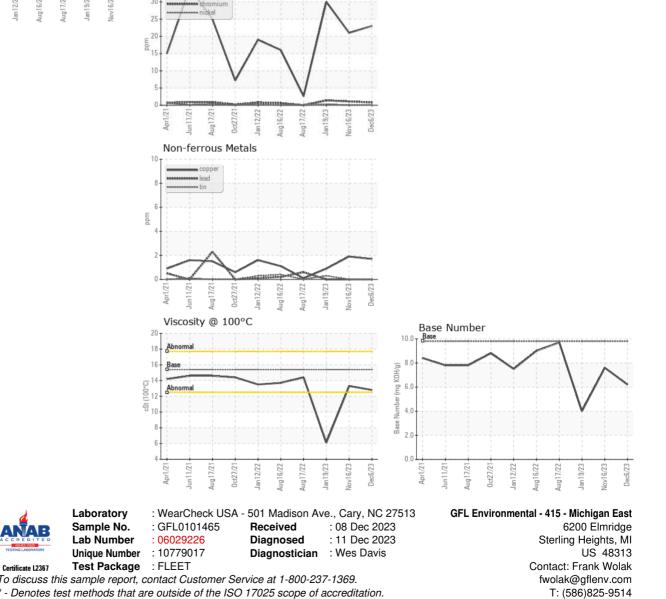


# **OIL ANALYSIS REPORT**





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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	13.3	6.1
GRAPHS						
Ferrous Alloys						



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)

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