

### **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL

# Machine Id 223021-630252

#### Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

No evidence of coolant present in the oil. There is no indication of any contamination in the oil.

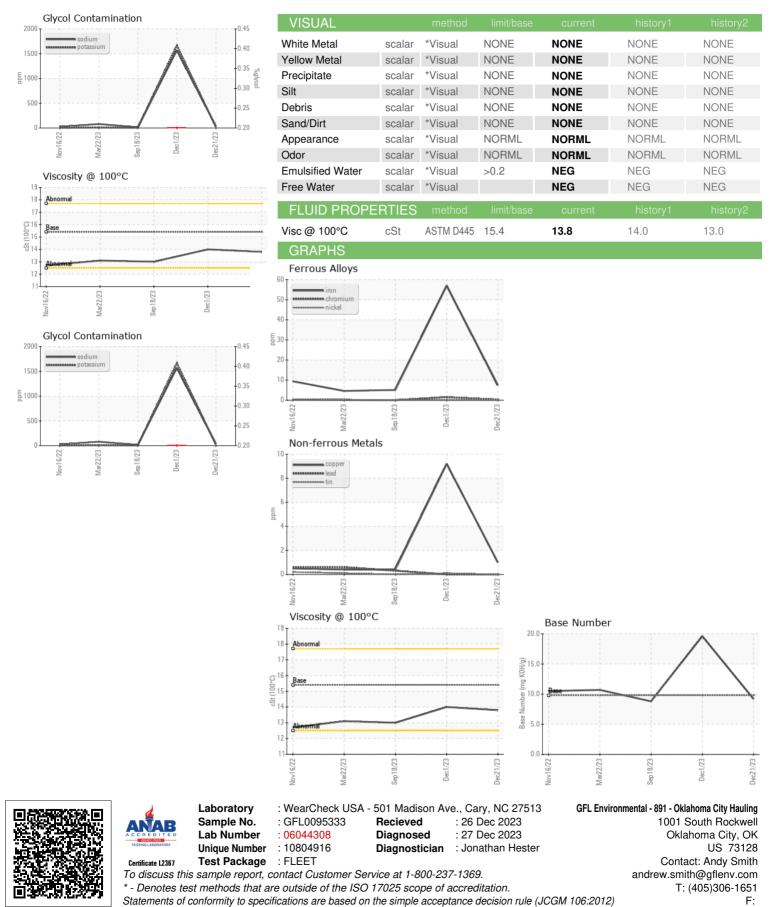
#### Fluid Condition

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

Sample Number         Client Info         Not Changd         Not Changd         Changed         Changed         Client Info         Not Changd         Not Changd         Changed         Changed         Info         NorRMAL         SEVERE         NorRMAL           CONTAMINATION         Tetlod         Info         NorRMAL         SEVERE         NORMAL         SEVERE         NORMAL           Water         WC Method         >2.0         <1.0         <1.0         <1.0         <1.0           Water         WC Method         >2.0         <1.0         NEG         NEG         NEG           Wether         ppm         ASTM 051655         >2.0         <1.0         <1.0         <1.0           Nickel         ppm         ASTM 051655         >3.0         0         0         0         0           Silver         ppm         ASTM 051655         >3.3         0         0         0         0           Silver         ppm         ASTM 051655	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         13901         0         13825           Oil Age         hrs         Client Info         100         0         650           Oil Changed         Client Info         Not Changd         Not Changd         Not Changd         NortMAL           Sample Status         Imit/base         current         History1         History2           Fuel         WC Method         >2.0         <1.0         <1.0         <1.0           Wear         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         imit/base         current         History1         History2           Iron         ppm         ASTM 05185m         >20         <1         2         0           Nickel         ppm         ASTM 05185m         >4         0         0         2           Iron         ppm         ASTM 05185m         >40         0         <1         2           Aluminum         ppm         ASTM 05185m         >30         <1         9         <1           Tim         ppm         ASTM 05185m         0         <0         <0         <1           Vanadium <td< th=""><th>Sample Number</th><th></th><th>Client Info</th><th></th><th>GFL0095333</th><th>GFL0095320</th><th>GFL0095326</th></td<>	Sample Number		Client Info		GFL0095333	GFL0095320	GFL0095326
Oil Age         hrs         Client Info         100         0         650           Oil Changed         Client Info         Not Changd         Not Changd         Changed         Changed           Sample Status         Imitibase         current         Not Changd         Nor MALL         SEVERE         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >0.0         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NetG           Wear         Method         0.2         NEG         NetG         NetG           Nickel         ppm         ASTM D5185m         >20         <1         2         0           Silver         ppm         ASTM D5185m         >20         2         10         2         10           Copper         ppm         ASTM D5185m         >3         0         0         0         11         1         0           Not Kims         >351M D5185m         >15         0         <1         0         1         1         0           Copper         ppm	Sample Date		Client Info		21 Dec 2023	01 Dec 2023	18 Sep 2023
Oli Changed     Client Info     Not Changd NORMAL     Not Changd SEVERE     Changed NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >0.0     <1.0     <1.0     <1.0       Water     WC Method     >0.0     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     8     57     5       Chromium     ppm     ASTM D5185m     >20     <1     2     0       Nickel     ppm     ASTM D5185m     >20     <1     0     0       Silver     ppm     ASTM D5185m     >20     <10     2     2       Lead     ppm     ASTM D5185m     >20     2     <10     2       Lead     ppm     ASTM D5185m     >30     0     0     0       Cadmium     ppm     ASTM D5185m     >30     1     9     3       Tin     ppm     ASTM D5185m     >10     <1     0       Vanadium     ppm     ASTM D5185m     0     <1     0       Sott M5185     1100     94     377     2 <t< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>13901</th><th>0</th><th>13825</th></t<>	Machine Age	hrs	Client Info		13901	0	13825
Oli Changed Sample Status     Client Info     Not Changd NORMAL     Not Changd SEVERE     Changed NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >0.0     <1.0     <1.0     <1.0       Water     WC Method     >0.0     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >100     8     57     5       Chromium     ppm     ASTM D5185m     >100     <1     2     0       Nickel     ppm     ASTM D5185m     >20     <1     0     0       Silver     ppm     ASTM D5185m     >20     2     <10     2       Lead     ppm     ASTM D5185m     >20     2     <10     2       Lead     ppm     ASTM D5185m     >30     0     0     0       Cadmium     ppm     ASTM D5185m     >30     1     0     0       Vanadium     ppm     ASTM D5185m     >10     <1     0       Copper     ppm     ASTM D5185m     0     <1     0       Vanadium     ppm     ASTM D5185m     0 <t< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>100</th><th>0</th><th>650</th></t<>	Oil Age	hrs	Client Info		100	0	650
Sample Status         Image: Status         NORMAL         SEVERE         NORMAL           CONTAMINATION         method         imit/base         current         history1         history2           Fuel         WC Method         >2.0         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         imit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         8         57         5           Chromium         ppm         ASTM D5185m         >20         <1         2         0           Nickel         ppm         ASTM D5185m         >20         2         100         2           Lead         ppm         ASTM D5185m         >20         2         100         2           Cadmium         ppm         ASTM D5185m         >30         0         0         0           Cadmium         ppm         ASTM D5185m         >40         0         0         0           Cadmium         ppm         ASTM D5185m         0         <1         0           Cadmium	-		Client Info		Not Changd	Not Changd	Changed
Fuel         WC Method         >2.0         <1.0	-				NORMAL		
Water         WC Method         >0.2         NEG         NEG         NEG           Wear         WC Method         >0.2         NEG         NEG         NEG           Wear         ppm         ASTM D5165m         >20         <1         2         0           Nickel         ppm         ASTM D5165m         >20         <1         2         0           Nickel         ppm         ASTM D5165m         >4         0         0         0           Aluminum         ppm         ASTM D5165m         >3         0         0         0           Aluminum         ppm         ASTM D5165m         >3         0         0         2           Lead         ppm         ASTM D5165m         >330         1         9         <1           Tin         ppm         ASTM D5165m         >15         0         <1         0           Vanadium         ppm         ASTM D5165m         0         68         357         54           Barium         ppm         ASTM D5165m         0         <1         <1         0           Molybdenum         ppm         ASTM D5165m         0         <68         357         54	CONTAMINAT	ION	method	limit/base	current	history1	history2
Water         WC Method         >0.2         NEG         NEG         NEG           Wear         WC Method         >0.2         NEG         NEG         NEG         NEG           Wear         ppm         ASTM D5165m         >20         <1         2         0           Nickel         ppm         ASTM D5165m         >20         <1         2         0           Nickel         ppm         ASTM D5165m         >20         <1         2         0           Nickel         ppm         ASTM D5165m         >4         0         0         0           Aluminum         ppm         ASTM D5165m         >3         0         0         2           Lead         ppm         ASTM D5165m         >15         0         <1         0           Vanadium         ppm         ASTM D5165m         0         0         0         0           Cadmium         ppm         ASTM D5165m         0         <1         0         0           Vanadium         ppm         ASTM D5165m         0         <1         <1         0           Vanadium         ppm         ASTM D5165m         0         <1         <1         0	Fuel		WC Method	>2.0	<10	<10	<10
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         8         57         5           Chromium         ppm         ASTM D5185m         >20         <1         2         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >3         0         0         <1           Copper         ppm         ASTM D5185m         >30         1         9         <1         1           Copper         ppm         ASTM D5185m         >15         0         <1         0         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0         0           Cadmium         ppm         ASTM D5185m         0         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         <1         0         0           Cadmium         ppm         ASTM				/ =			
Iron         ppm         ASTM D5185m         >100         8         57         5           Chromium         ppm         ASTM D5185m         >20         <1         2         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         0         0         <11           Copper         ppm         ASTM D5185m         >30         1         9         <1           Copper         ppm         ASTM D5185m         >330         1         9         <1           Copper         ppm         ASTM D5185m         >15         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         <1         1         0							
Chromium         ppm         ASTM D5185m         >20         <1	WEAR METAL	S	method	limit/base		history1	
Nickel         ppm         ASTM D5185m         >4         0         0         1           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         ▲         10         2           Lead         ppm         ASTM D5185m         >330         1         9         -1           Tin         ppm         ASTM D5185m         >40         0         0         0           Cadmium         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         <1         <1         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         0           Magneseum         ppm         ASTM D5185m         1010         945         840         771           Magnesium         ppm         ASTM D5185m         1070         1064 </th <th>Iron</th> <th>ppm</th> <th>ASTM D5185m</th> <th>&gt;100</th> <th></th> <th></th> <th></th>	Iron	ppm	ASTM D5185m	>100			
Titanium         ppm         ASTM D5185m         >3         0         <1		ppm					
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         10         2           Lead         ppm         ASTM D5185m         >40         0         0         <1				>4			-
Aluminum         ppm         ASTM D5185m         >20         2         ▲ 10         2           Lead         ppm         ASTM D5185m         >40         0         0         <1           Copper         ppm         ASTM D5185m         >330         1         9         <1           Tin         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         4         37         2           Boron         ppm         ASTM D5185m         0         <1         <1         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         0           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         2060         3067		ppm					
Lead         ppm         ASTM D5185m         >40         0         0         <1							
Copper         ppm         ASTM D5185m         >330         1         9         <1		ppm					
Tin         ppm         ASTM D5185m         >15         0         <1	Lead	ppm	ASTM D5185m	>40	0		<1
Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         41         <1	Copper	ppm	ASTM D5185m	>330	1	9	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         <1         <1         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         0           Maganesiem         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         945         840         771           Calcium         ppm         ASTM D5185m         1070         1064         9922         920           Phosphorus         ppm         ASTM D5185m         1150         1095         731         885           Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           Sulfur         ppm         ASTM D5185m         20         16	Tin	ppm	ASTM D5185m	>15	0	<1	
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         <1         <1         0           Molybdenum         ppm         ASTM D5185m         60         68         357         54           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         945         840         7711           Calcium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m	Vanadium	ppm	ASTM D5185m		0	0	0
Boron         ppm         ASTM D5185m         0         4         37         2           Barium         ppm         ASTM D5185m         0         <1         <1         0           Molybdenum         ppm         ASTM D5185m         60         68         357         54           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         945         840         771           Calcium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANT         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         16         1666         2           Glycol         %         *ASTM D5185m         >20<	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         <1			method			history1	history2
Molybdenum         ppm         ASTM D5185m         60         68         357         54           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         945         840         771           Calcium         ppm         ASTM D5185m         1010         945         840         771           Calcium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1150         1095         731         885           Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         16         1666         2           Glycol         %         *ASTM D5185m         >20         16         A1666         2           Glycol         %         *ASTM D7844	ADDITIVEO		method	iiiiiibase	Current	Thistory I	motoryz
Manganese         ppm         ASTM D5185m         0         <1		ppm					
Magnesium         ppm         ASTM D5185m         1010         945         840         771           Calcium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1150         1095         731         885           Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         30         2           Sodium         ppm         ASTM D5185m         >25         3         30         2           Sodium         ppm         ASTM D5185m         >20         16         1666         2           Glycol         %         *ASTM D2982         NEG         0.20         NEG         0.20           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         <	Boron		ASTM D5185m	0	4	37	2
Calcium         ppm         ASTM D5185m         1070         1064         992         920           Phosphorus         ppm         ASTM D5185m         1150         1095         731         885           Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         30         2           Sodium         ppm         ASTM D5185m         >20         16         4         1666         2           Glycol         %         *ASTM D5185m         >20         16         4         1666         2           Glycol         %         *ASTM D5898         >20         16         4         1666         2           Glycol         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/.mm         *ASTM D7624         >20         5.6         18.6         4.8      Sulfa	Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 <1	37 <1	2 0
Phosphorus         ppm         ASTM D5185m         1150         1095         731         885           Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         ▲ 30         2           Sodium         ppm         ASTM D5185m         >25         3         ▲ 30         2           Sodium         ppm         ASTM D5185m         >20         16         ▲ 1666         2           Glycol         %         *ASTM D2982         NEG         0.20         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/tmm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/tmm         *ASTM D7415         >30 </th <th>Boron Barium Molybdenum</th> <th>ppm ppm</th> <th>ASTM D5185m ASTM D5185m ASTM D5185m</th> <th>0 0 60</th> <th>4 &lt;1 68</th> <th>37 &lt;1 357</th> <th>2 0 54</th>	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 <1 68	37 <1 357	2 0 54
Zinc         ppm         ASTM D5185m         1270         1259         1124         1042           Sulfur         ppm         ASTM D5185m         2060         3067         2924         2911           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         30         2           Sodium         ppm         ASTM D5185m         >25         3         1570         13           Potassium         ppm         ASTM D5185m         >20         16         1666         2           Glycol         %         *ASTM D2982         NEG         0.20         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         <	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 <1 68 <1	37 <1 357 <1	2 0 54 0
SulfurppmASTM D5185m2060306729242911CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>253302SodiumppmASTM D5185m>253157013PotassiumppmASTM D5185m>201616662Glycol%*ASTM D2982NEG0.20NEGINFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.42.20.2NitrationAbs/cm*ASTM D7624>205.618.64.8SulfationAbs/tm*ASTM D7415>3018.325.617.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/tm*ASTM D7414>2513.219.712.6	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 <1 68 <1 945	37 <1 357 <1 840	2 0 54 0 771
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>253▲ 302SodiumppmASTM D5185m>253▲ 157013PotassiumppmASTM D5185m>2016▲ 16662Glycol%*ASTM D2982NEG0.20NEGINFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.42.20.2NitrationAbs/cm*ASTM D7624>205.618.64.8SulfationAbs/rm*ASTM D7415>3018.325.617.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2513.219.712.6	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 <1 68 <1 945 1064	37 <1 357 <1 840 992	2 0 54 0 771 920
Silicon       ppm       ASTM D5185m       >25       3       ▲ 30       2         Sodium       ppm       ASTM D5185m       38       ▲ 1570       13         Potassium       ppm       ASTM D5185m       >20       16       ▲ 1666       2         Glycol       %       *ASTM D2982       NEG       0.20       NEG         INFRA-RED       method       limit/base       current       history1       history2         Soot %       %       *ASTM D7844       >3       0.4       2.2       0.2         Nitration       Abs/cm       *ASTM D7624       >20       5.6       18.6       4.8         Sulfation       Abs/tmm       *ASTM D7415       >30       18.3       25.6       17.1         FLUID DEGRADATION       method       limit/base       current       history1       history2         Oxidation       Abs/.tmm       *ASTM D7414       >25       13.2       19.7       12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	4 <1 68 <1 945 1064 1095	37 <1 357 <1 840 992 731	2 0 54 0 771 920 885
Sodium         ppm         ASTM D5185m         38         ▲ 1570         13           Potassium         ppm         ASTM D5185m<>20         16         ▲ 1666         2           Glycol         %         *ASTM D2982         NEG         0.20         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844<>3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	4 <1 68 <1 945 1064 1095 1259	37 <1 357 <1 840 992 731 1124	2 0 54 0 771 920 885 1042
Potassium         ppm         ASTM D5185m         >20         16         ▲ 1666         2           Glycol         %         *ASTM D2982         NEG         0.20         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 <1 68 <1 945 1064 1095 1259 3067	37 <1 357 <1 840 992 731 1124 2924	2 0 54 0 771 920 885 1042 2911
Glycol         %         *ASTM D2982         NEG         0.20         NEG           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 <1 68 <1 945 1064 1095 1259 3067 current	37 <1 357 <1 840 992 731 1124 2924 history1	2 0 54 0 771 920 885 1042 2911 history2
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/tmm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 <1 68 <1 945 1064 1095 1259 3067 current 3	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30	2 0 54 0 771 920 885 1042 2911 history2 2
Soot %         %         *ASTM D7844         >3         0.4         2.2         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	4 <1 68 <1 945 1064 1095 1259 3067 current 3 3 38	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570	2 0 54 0 771 920 885 1042 2911 history2 2 13
Nitration         Abs/cm         *ASTM D7624         >20         5.6         18.6         4.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	4 <1 68 <1 945 1064 1095 1259 3067 current 3 38 16	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570 ▲ 1666	2 0 54 0 771 920 885 1042 2911 history2 2 13 2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	4 <1 68 <1 945 1064 1095 1259 3067 current 3 3 38 16 NEG	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570 ▲ 1666 ● 0.20	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         25.6         17.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.2         19.7         12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	4 <1 68 <1 945 1064 1095 1259 3067 <i>current</i> 3 38 16 NEG	37 <1 357 <1 840 992 731 1124 2924 bistory1 ▲ 30 ▲ 1570 ▲ 1666 ➡ 0.20 bistory1	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG history2
Oxidation Abs/.1mm *ASTM D7414 >25 13.2 19.7 12.6	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b>	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20	4 <1 68 <1 945 1064 1095 1259 3067 current 3 38 16 NEG current 0.4	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570 ▲ 1666 ● 0.20 history1 2.2	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG history2 0.2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm %	ASTM D5185m ASTM D2982 <b>method</b> *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 >220 20 imit/base >20	4 <1 68 <1 945 1064 1095 1259 3067 current 3 38 16 NEG current 0.4 5.6	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570 ▲ 1666 ● 0.20 history1 2.2 18.6	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG history2 0.2 4.8
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D2982 <b>Method</b> *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20 320 320 33 >20 33 >20	4 <1 68 <1 945 1064 1095 1259 3067 current 3 38 16 NEG current 0.4 5.6 18.3	37 <1 357 <1 840 992 731 1124 2924 <b>bistory1</b> ▲ 30 ▲ 1570 ▲ 1666 ● 0.20 <b>bistory1</b> 2.2 18.6 25.6	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG history2 0.2 4.8 17.1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b> *ASTM D7844 *ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >3 >20 <b>imit/base</b>	4 <1 68 <1 945 1064 1095 1259 3067 current 3 38 16 NEG 0.4 5.6 18.3 current	37 <1 357 <1 840 992 731 1124 2924 history1 ▲ 30 ▲ 1570 ▲ 1666 ● 0.20 history1 2.2 18.6 25.6 history1	2 0 54 0 771 920 885 1042 2911 history2 2 13 2 13 2 NEG history2 0.2 4.8 17.1



## **OIL ANALYSIS REPORT**



Contact/Location: Andy Smith - GFL891