

# **OIL ANALYSIS REPORT**

## (YA133454) [0111056] 3690C Component

**Natural Gas Engine** 

PETRO CANADA DURON GEO LD 15W40 (40 QTS)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### 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.





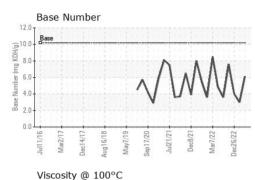
NORMAL

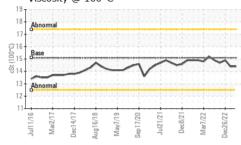
Sample Rating Trend

Sample Number         Client Info         GFL0111056         GFL0087755         GFL0062759           Sample Date         Client Info         18185         17760         15796           Oil Age         hrs         Client Info         1220         800         643           Oil Age         hrs         Client Info         1220         800         643           Oil Changed         Client Info         Client Info         NORMAL         NORMAL         NORMAL           Sample Status         Immode         Immit/base         current         History1         History2           Water         WC Method         >0.1         NEG         NEG         NEG           Chromium         ppm         ASTM 05185m         >50         8         18         21           Chromium         ppm         ASTM 05185m         >22         <1         <1         1           Titaniam         ppm         ASTM 05185m         >30         0         0         0           Silver         ppm         ASTM 05185m         >30         1         2         3         3           Chromium         ppm         ASTM 05185m         >30         1         2         1         5         1	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date         Client Info         06 Mar 2024         19 Sep 2023         26 Dec 2022           Machine Age         hrs         Client Info         18185         17760         15796           Oil Age         hrs         Client Info         1220         800         643           Oil Changed         Client Info         Changed         Not Changd         Not Changd           Sample Status         Imit Date         current         History1         History2           Water         WC Method         >0.1         NEG         NEG         NEG           Wetar         WC Method         >0.1         NEG         NEG         NEG           Wetar         WC Method         >0.1         NEG         NEG         NEG           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >2         <1         <1         1           Silver         ppm         ASTM D5185m         >3         0         0         0           Lead         ppm         ASTM D5185m         >30         1         2         3           Copper         ppm         ASTM D5185m         >3	Sample Number		Client Info		GFL0111056	GFL0087755	GFL0062759
Machine Age         hrs         Client Info         18185         17760         15796           Oil Age         hrs         Client Info         1220         800         643           Oil Changed         Client Info         Changed         Not Changd         Not Changd           Sample Status         Imit/base         current         NoRMAL         NORMAL           Veter         WC Method         >0.1         NEG         NEG         NEG           Water         WC Method         >0.1         NEG         NEG         NEG           Veter         WC Method         >0.1         NEG         NEG         NEG           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >4         2         3         3           Nickel         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >30         1         2         1           Copper         ppm         ASTM D5185m         >50         1         5         1           Caddium         ppm         ASTM D5185m         <			Client Info		06 Mar 2024	19 Sep 2023	26 Dec 2022
Oil Age         hrs         Client Info         1220         800         643           Oil Changed         Client Info         Changed         Not Changd         Not Changd           Sample Status         I         Imit/base         current         History1         History2           Water         WC Method         >0.1         NEG         NEG         NEG           Water         WC Method         >0.1         NEG         NEG         NEG           WeAR METALS         method         imit/base         current         History1         History2           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >2         <1         <1         1           Titanium         ppm         ASTM D5185m         >3         0         0         <1         5           Silver         ppm         ASTM D5185m         >30         1         2         3         3           Aduminum         ppm         ASTM D5185m         >30         1         <1         <1           Lead         ppm         ASTM D5185m         >50         15         <1         <1 <th></th> <th>hrs</th> <th></th> <th></th> <th></th> <th></th> <th></th>		hrs					
Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changed NORMAL         Not Changed NORMAL         Not Changed NORMAL           CONTAMINATION         method         limit/base         current         history1         Phistory2           Water         WC Method         >0.1         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         Phistory2           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >50         8         18         21           Nickel         ppm         ASTM D5185m         >30         0         0         <1	-	hrs	Client Info		1220	800	643
Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >2         <1	-		Client Info		Changed	Not Changd	Not Changd
Water         WC Method         >0.1         NEG         NEG         NEG           Wear         ppm         ASTM D5185m         >50         8         18         21           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >2         <1         <11         1           Titanium         ppm         ASTM D5185m         >2         <1         <1         1           Silver         ppm         ASTM D5185m         >3         0         0         <1         5           Lead         ppm         ASTM D5185m         >3         0         1         2         3         5           Vanadium         ppm         ASTM D5185m         >3         0         0         0         0           Vanadium         ppm         ASTM D5185m         >4         1         2         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         1         <1         <1 <t< th=""><th>•</th><th></th><th></th><th></th><th>•</th><th>NORMAL</th><th>0</th></t<>	•				•	NORMAL	0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >4         2         3         3           Nickel         ppm         ASTM D5185m         >0         0         <1         1           Titanium         ppm         ASTM D5185m         >3         0         0         <1           Silver         ppm         ASTM D5185m         >9         4         2         6           Lead         ppm         ASTM D5185m         >9         4         2         6           Copper         ppm         ASTM D5185m         >9         4         2         1           Vanadium         ppm         ASTM D5185m         >0         1         5         1           Cadmium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         5         15         <1         6           Barium         ppm         ASTM D5185m         50         14         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron         ppm         ASTM D5185m         >50         8         18         21           Chromium         ppm         ASTM D5185m         >4         2         3         3           Nickel         ppm         ASTM D5185m         >2         <1         <1         1           Tittanium         ppm         ASTM D5185m         >2         <1         <1         1           Silver         ppm         ASTM D5185m         >3         0         0         0         0           Aluminum         ppm         ASTM D5185m         >3         0         1         2         3           Copper         ppm         ASTM D5185m         >30         1         2         <1           Vanadium         ppm         ASTM D5185m         >4         1         2         <1           Cadmium         ppm         ASTM D5185m         >4         1         <1         <1           Cadmium         ppm         ASTM D5185m         0         15         <1         6           Cadmium         ppm         ASTM D5185m         50         15         <1         6           Boron         ppm         ASTM D5185m         50         <	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >4         2         3         3           Nickel         ppm         ASTM D5185m         >2         <1         <1         1           Titanium         ppm         ASTM D5185m         >2         <1         <1         1           Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >3         0         1         2         3           Copper         ppm         ASTM D5185m         >35         0         1         2         <1           Vanadium         ppm         ASTM D5185m         >4         1         2         <1         <1           Cadmium         ppm         ASTM D5185m         >4         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 <th>WEAR METAL</th> <th>S</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >2         <1	Iron	ppm	ASTM D5185m	>50	8	18	21
Titanium         ppm         ASTM D5185m         0         0         <1	Chromium	ppm	ASTM D5185m	>4	2	3	3
Silver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >9         4         2         6           Lead         ppm         ASTM D5185m         >30         1         2         3           Copper         ppm         ASTM D5185m         >35         0         1         5           Tin         ppm         ASTM D5185m         >4         1         2         <1	Nickel	ppm	ASTM D5185m	>2	<1	<1	1
Atuminum         ppm         ASTM D5185m         >9         4         2         6           Lead         ppm         ASTM D5185m         >30         1         2         3           Copper         ppm         ASTM D5185m         >35         0         1         5           Tin         ppm         ASTM D5185m         >4         1         2         <1           Vanadium         ppm         ASTM D5185m         >4         1         2         <1           Cadmium         ppm         ASTM D5185m         >4         1         <1         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         15         <1         6           Barium         ppm         ASTM D5185m         50         48         57         50           Magnaese         ppm         ASTM D5185m         760         769         703         667           Zinc         ppm         ASTM D5185m         780         <	Titanium	ppm	ASTM D5185m		0	0	<1
Lead         ppm         ASTM D5185m         >30         1         2         3           Copper         ppm         ASTM D5185m         >35         0         1         5           Tin         ppm         ASTM D5185m         >4         1         2         <1           Vanadium         ppm         ASTM D5185m         >4         1         2         <1           Cadmium         ppm         ASTM D5185m         >4         1         <1         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         15         <1         6           Barium         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         760         769         703         667           Zinc         ppm         ASTM D5185m         240	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >35         0         1         5           Tin         ppm         ASTM D5185m         >4         1         2         <1           Vanadium         ppm         ASTM D5185m         >4         1         21         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         15         <1         6           Barium         ppm         ASTM D5185m         50         48         57         50           Magnesium         ppm         ASTM D5185m         50         48         57         50           Magnesium         ppm         ASTM D5185m         50         14         <1         <1           Magnesium         ppm         ASTM D5185m         50         13         590         549           Calcium         ppm         ASTM D5185m         760         769         703         667           Zinc         ppm         ASTM D5185m         740         2439 <t< th=""><th>Aluminum</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;9</th><th>4</th><th>2</th><th>6</th></t<>	Aluminum	ppm	ASTM D5185m	>9	4	2	6
Tin         ppm         ASTM D5185m         >4         1         2         <1	Lead	ppm		>30	1	2	3
Vanadium         ppm         ASTM D5185m         <1	Copper	ppm	ASTM D5185m	>35	0	1	5
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         15         <1         6           Barium         ppm         ASTM D5185m         50         0         0         0           Molybdenum         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         760         769         703         667           Zinc         ppm         ASTM D5185m         780         951         985         983           Sulfur         ppm         ASTM D5185m         2400         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Solium         ppm         ASTM D5185m         >20         2         <	Tin	ppm	ASTM D5185m	>4	1	2	<1
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         50         15         <1         6           Barium         ppm         ASTM D5185m         50         0         0         0           Molybdenum         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         760         763         667           Zinc         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         2	Vanadium	ppm	ASTM D5185m		<1	<1	<1
Boron         ppm         ASTM D5185m         50         15         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         5         0         0         0           Molybdenum         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         0         1         4         <1           Magnesium         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANT         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         2         3         2           Sodium         ppm         ASTM D7624         >20							
Molybdenum         ppm         ASTM D5185m         50         48         57         50           Manganese         ppm         ASTM D5185m         0         1         4         <1           Magnesium         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         1510         1496         1730         1584           Phosphorus         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         3         2           NFRA-RED         method         limit/base         current         history1         history2           Soot %         %         'ASTM D7844         0 </th <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Manganese         ppm         ASTM D5185m         0         1         4         <1		ppm					
Magnesium         ppm         ASTM D5185m         560         531         590         549           Calcium         ppm         ASTM D5185m         1510         1496         1730         1584           Phosphorus         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/.mm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.lmm         *ASTM D7415         >30<	Boron		ASTM D5185m	50 5	15	<1	6
Calcium         ppm         ASTM D5185m         1510         1496         1730         1584           Phosphorus         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.9         10.7         12.2           Sout %         %         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/cm         *ASTM D7415	Boron Barium	ppm	ASTM D5185m ASTM D5185m	50 5	15 0	<1 0 57	6 0
Phosphorus         ppm         ASTM D5185m         780         769         703         667           Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         8         2           Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.mm         *ASTM D741         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7415	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50	15 0 48	<1 0 57	6 0 50
Zinc         ppm         ASTM D5185m         870         951         985         983           Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         8         2           Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7624	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	15 0 48 1	<1 0 57 4 590	6 0 50 <1 549
Sulfur         ppm         ASTM D5185m         2040         2439         2755         2921           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >20         2         8         2           Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.tm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.tm         *ASTM D74	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560	15 0 48 1 531	<1 0 57 4 590	6 0 50 <1 549 1584
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         >+100         5         2         8           Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.tmm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.tmm         *ASTM D7414         >25         16.8         19.1         19.3	Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 5 50 0 560 1510	15 0 48 1 531 1496 769	<1 0 57 4 590 1730 703	6 0 50 <1 549 1584 667
Silicon         ppm         ASTM D5185m         >+100         4         19         10           Sodium         ppm         ASTM D5185m         ><100	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	50 5 50 0 560 1510 780	15 0 48 1 531 1496 769 951	<1 0 57 4 590 1730 703	6 0 50 <1 549 1584 667 983
Sodium         ppm         ASTM D5185m         5         2         8           Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	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	50 5 50 0 560 1510 780 870	15 0 48 1 531 1496 769 951	<1 0 57 4 590 1730 703 985	6 0 50 <1 549 1584 667 983
Potassium         ppm         ASTM D5185m         >20         2         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	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	50 5 50 0 560 1510 780 870 2040	15 0 48 1 531 1496 769 951 2439	<1 0 57 4 590 1730 703 985 2755	6 0 50 <1 549 1584 667 983 2921
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.tmm         *ASTM D7615         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.tmm         *ASTM D7414         >25         16.8         19.1         19.3	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 ASTM D5185m	50 5 50 0 560 1510 780 870 2040	15 0 48 1 531 1496 769 951 2439 current	<1 0 57 4 590 1730 703 985 2755 history1	6 0 50 <1 549 1584 667 983 2921 history2
Soot %         %         *ASTM D7844         0         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	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 <b>method</b>	50 5 50 0 560 1510 780 870 2040	15 0 48 1 531 1496 769 951 2439 current 4	<1 0 57 4 590 1730 703 985 2755 history1 19	6 0 50 <1 549 1584 667 983 2921 history2 10
Nitration         Abs/cm         *ASTM D7624         >20         9.9         10.7         12.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	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 ASTM D5185m <b>method</b> ASTM D5185m	50 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	15 0 48 1 531 1496 769 951 2439 current 4 5	<1 0 57 4 590 1730 703 985 2755 history1 19 2	6 0 50 <1 549 1584 667 983 2921 history2 10 8
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.3         23.8         23.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	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	50 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	15 0 48 1 531 1496 769 951 2439 current 4 5 2	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     16.8     19.1     19.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 <b>limit/base</b> >+100	15 0 48 1 531 1496 769 951 2439 current 4 5 2 2	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3 3 history1	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2 2 history2
Oxidation         Abs/.1mm         *ASTM D7414         >25         16.8         19.1         19.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 0 560 1510 780 870 2040 2040 >+100 >20 20 }	15 0 48 1 531 1496 769 951 2439 <u>current</u> 4 5 2 2 <u>current</u> 0	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3 history1 0.1	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2 2 history2 0.1
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 00 560 1510 780 870 2040 <b>Iimit/base</b> >+100 20 <b>Iimit/base</b>	15 0 48 1 531 1496 769 951 2439 <i>current</i> 4 5 2 2 <i>current</i> 0 9.9	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3 history1 0.1 10.7	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2 2 history2 0.1 12.2
Base Number (BN)         mg KOH/g         ASTM D2896         10.2         6.1         3.0         4.0	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 50 560 1510 780 870 2040 <b>Iinit/base</b> >+100 \$-20 <b>Iinit/base</b> \$-20	15 0 48 1 531 496 769 951 2439 <u>current</u> 4 5 2 2 <u>current</u> 0 9.9 19.3	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3 3 history1 0.1 10.7 23.8	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2 2 10 8 2 2 history2 0.1 12.2 23.6
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	50 50 560 1510 780 870 2040 >+100 >+100 20 imit/base >20 >20 >30	15 0 48 1 531 1496 769 951 2439 <i>current</i> 4 5 2 2 <i>current</i> 0 9.9 19.3	<1 0 57 4 590 1730 703 985 2755 history1 19 2 3 history1 0.1 10.7 23.8 history1	6 0 50 <1 549 1584 667 983 2921 history2 10 8 2 2 history2 0.1 12.2 23.6 history2

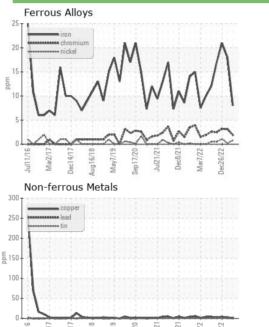


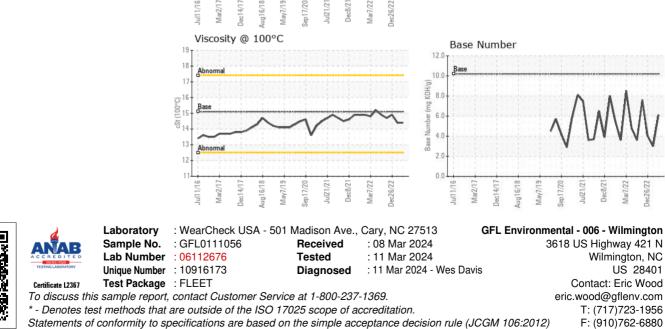
# **OIL ANALYSIS REPORT**





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	>0.1	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	15.1	14.4	14.4	14.9
GRAPHS						





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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