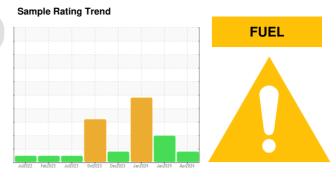


**OIL ANALYSIS REPORT** 

Area (34718UA) 828100

**Diesel Engine** 

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



## **DIAGNOSIS**

### Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

All component wear rates are normal.

## Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

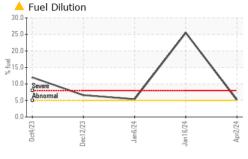
### **Fluid Condition**

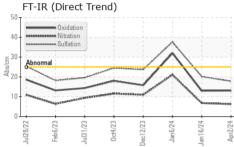
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

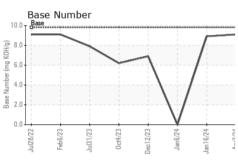
SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Date         Client Info         Q2 Apr 2024         16 Jan 2024         06 Jan 2024         10 Jan 2024							
Sample Date	SAMPLE INFORM	<u> 1ATION</u>	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         12130         12059         12030           Oil Age         hrs         Client Info         12130         12059         12030           Oil Changed         Client Info         Changed         Not Changd         N/A           Sample Status         BANORMAL         SEVERE           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >3         0         0         1         4           Aluminum         ppm         ASTM D5185m         >3         0         0         0         1         1         4         16         1         4         16         1         4         1         1         4         1	Sample Number		Client Info		GFL0116561	GFL0098180	GFL0108328
Oil Age         hrs         Client Info         12130         12059         12030           Oil Changed         Client Info         Changed         Not Changed         N/A           Sample Status         Client Info         Changed         Not Changed         NYA           Sample Status         Med         Imitity         NEG         NEG           Water         WC Method         >0.2         NEG         NEG         NEG           Water         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         ▲ 132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >20         6         4         16           Lead         ppm         ASTM D5185m         >30         0         0         0           Copper         ppm         ASTM D5185m	Sample Date		Client Info		02 Apr 2024	16 Jan 2024	06 Jan 2024
Client Info	Machine Age	hrs	Client Info		12130	12059	12030
ABNORMAL   SEVERE   SEVERE   CONTAMINATION   method   limit/base   current   history1   history2   history2	Oil Age	hrs			12130	12059	12030
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         ▲ 132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >20         6         4         16           Lead         ppm         ASTM D5185m         >20         6         4         16           Lead         ppm         ASTM D5185m         >33.0         1         1         4           Tir         ppm         ASTM D5185m         >33.0         1         1         4           Vanadium         ppm         ASTM D5185m         >1         0         0         0           Cadm	Oil Changed		Client Info		Changed	Not Changd	N/A
Water Glycol         WC Method WC Method         >0.2         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         ▲ 132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >4         0         <1	Sample Status				ABNORMAL	SEVERE	SEVERE
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         ▲ 132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >4         0         <1         4           Titanium         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >30         0         0         0           Aluminum         ppm         ASTM D5185m         >40         0         0         0           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >40         0         0         0           Calcadi         ppm         ASTM D5185m         0         0         0         0           Calcadium         ppm         ASTM D5185m         0         0         0         0	CONTAMINATION	ON	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         19         31         ▲ 132           Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >20         1         1         8           Titanium         ppm         ASTM D5185m         >3         0         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         1         1         8           Nickel         ppm         ASTM D5185m         >4         0         <1         4           Tittanium         ppm         ASTM D5185m         >3         0         0         <1           Siliver         ppm         ASTM D5185m         >3         0         0         0           Aluminum         ppm         ASTM D5185m         >20         6         4         16           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >15         0         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         17         9         10           Boron         ppm         ASTM D5185m         0         17         9         10           Barium         ppm         ASTM D5185m         0         17	WEAR METALS	3	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	19	31	<b>△</b> 132
Titanium	Chromium	ppm	ASTM D5185m	>20	1	1	8
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	4
Aluminum         ppm         ASTM D5185m         >20         6         4         16           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         1         1         4           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         17         9         10           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         51         58         58           Manganesium         ppm         ASTM D5185m         100         896         982         863           Calcium         ppm         ASTM D5185m         1070         1089         1103<	Titanium	ppm	ASTM D5185m		<1	0	<1
Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         1         1         4           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         >15         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         17         9         10           Barium         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         51         58         58           Manganese         ppm         ASTM D5185m         0         -1         <1         <1         2           Magnesium         ppm         ASTM D5185m         1010         896         982         863           Calcium         ppm         ASTM D5185m         1270         1194	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         1         1         4           Tin         ppm         ASTM D5185m         >15         0         0         <1	Aluminum		ASTM D5185m	>20	6	4	16
Tin ppm ASTM D5185m > 15 0 0 0 <1 Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;330</td> <th>1</th> <td>1</td> <td>4</td>	Copper	ppm	ASTM D5185m	>330	1	1	4
Vanadium         ppm         ASTM D5185m         <1         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         17         9         10           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         51         58         58           Manganese         ppm         ASTM D5185m         0         <1         <1         2           Magnesium         ppm         ASTM D5185m         1070         1089         1103         991           Phosphorus         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES	Vanadium		ASTM D5185m		<1	<1	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         51         58         58           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         51         58         58           Manganese         ppm         ASTM D5185m         0         <1         <1         2           Magnesium         ppm         ASTM D5185m         1010         896         982         863           Calcium         ppm         ASTM D5185m         1070         1089         1103         991           Phosphorus         ppm         ASTM D5185m         1150         910         1090         988           Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D7844							
Manganese         ppm         ASTM D5185m         0         <1         <1         2           Magnesium         ppm         ASTM D5185m         1010         896         982         863           Calcium         ppm         ASTM D5185m         1070         1089         1103         991           Phosphorus         ppm         ASTM D5185m         1150         910         1090         988           Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         225         7         6         9           Sodium         ppm         ASTM D5185m         20         6         4         12           Fuel         %         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D5185m         >3	Boron	ppm	ASTM D5185m	0	17	9	10
Magnesium         ppm         ASTM D5185m         1010         896         982         863           Calcium         ppm         ASTM D5185m         1070         1089         1103         991           Phosphorus         ppm         ASTM D5185m         1150         910         1090         988           Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         5.2         25.5         5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624							
Calcium         ppm         ASTM D5185m         1070         1089         1103         991           Phosphorus         ppm         ASTM D5185m         1150         910         1090         988           Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0
Phosphorus         ppm         ASTM D5185m         1150         910         1090         988           Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415	Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 51	0 58	0 58
Zinc         ppm         ASTM D5185m         1270         1194         1311         1139           Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base	Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 51 <1	0 58 <1	0 58 2
Sulfur         ppm         ASTM D5185m         2060         3658         3381         2634           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >2	Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 51 <1 896	0 58 <1 982	0 58 2 863
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 51 <1 896 1089	0 58 <1 982 1103	0 58 2 863 991
Silicon         ppm         ASTM D5185m         >25         7         6         9           Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 51 <1 896 1089 910	0 58 <1 982 1103 1090	0 58 2 863 991 988
Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	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 60 0 1010 1070 1150 1270	0 51 <1 896 1089 910 1194	0 58 <1 982 1103 1090 1311	0 58 2 863 991 988 1139
Sodium         ppm         ASTM D5185m         2         2         8           Potassium         ppm         ASTM D5185m         >20         6         4         12           Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 60 0 1010 1070 1150 1270 2060	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381	0 58 2 863 991 988 1139 2634
Fuel         %         ASTM D3524         >5         ▲ 5.2         ▲ 25.5         ▲ 5.4           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1	0 58 2 863 991 988 1139 2634 history2
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 51 <1 896 1089 910 1194 3658 current	0 58 <1 982 1103 1090 1311 3381 history1	0 58 2 863 991 988 1139 2634 history2
Soot %         %         *ASTM D7844 >3         0.5         1.5         ▲ 6           Nitration         Abs/cm         *ASTM D7624 >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.8         20.2         37.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 51 <1 896 1089 910 1194 3658 current 7	0 58 <1 982 1103 1090 1311 3381 history1 6	0 58 2 863 991 988 1139 2634 history2 9
Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 51 <1 896 1089 910 1194 3658 current 7 2	0 58 <1 982 1103 1090 1311 3381 history1 6 2	0 58 2 863 991 988 1139 2634 history2 9
Nitration         Abs/cm         *ASTM D7624         >20         6.3         6.8         21.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	0 51 <1 896 1089 910 1194 3658 current 7 2 6 ▲ 5.2	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.8         20.2         37.6           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         13.0         32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4 ▲ 25.5 history1	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4 history2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.1</b> 13.0 32.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4 ▲ 25.5 history1 1.5	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4 history2
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m  method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4 ▲ 25.5 history1 1.5 6.8	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4 history2
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D3524  method  *ASTM D7844  *ASTM D7624  *ASTM D76145	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4 ▲ 25.5 history1 1.5 6.8 20.2	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4 history2  ▲ 6 21.1 37.6
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm	ASTM D5185m  Method ASTM D5185m ASTM D7624 *ASTM D7624 *ASTM D7624 *ASTM D7615  method	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30 limit/base	0 51 <1 896 1089 910 1194 3658	0 58 <1 982 1103 1090 1311 3381 history1 6 2 4 ▲ 25.5 history1 1.5 6.8 20.2 history1	0 58 2 863 991 988 1139 2634 history2 9 8 12 ▲ 5.4 history2 ▲ 6 21.1 37.6 history2

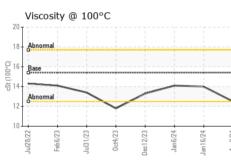


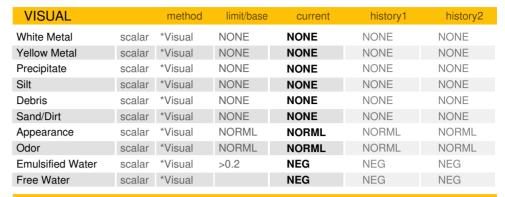
# **OIL ANALYSIS REPORT**





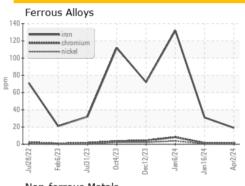


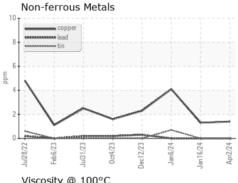


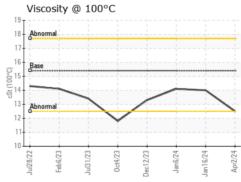


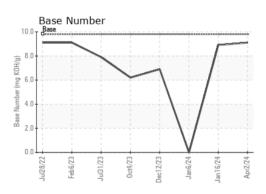
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.5	14.0	14.1

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

: GFL0116561 Lab Number : 06138420 Unique Number : 10963228

Received **Tested** Diagnosed

: 04 Apr 2024 : 08 Apr 2024

: 08 Apr 2024 - Wes Davis

GFL Environmental - 652 - Fredericksburg Hauling 10954 Houser Drive Fredericksburg, VA

US 22408

Contact: WILLIAM MILO wmilo@gflenv.com T:

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.

Test Package : FLEET ( Additional Tests: PercentFuel )

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

F: