

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 413160

#### 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

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     GFL0065749     GFL0065687     GFL0065687     GFL0065687       Sample Date     Client Info     27 Jan 2024     04 Dec 2023     28 Sep 2023       Machine Age     hrs     Client Info     0     0     0       Oll Age     hrs     Client Info     0     0     0       Oll Age     Sample Status     Client Info     Changed     NoRMAL     NoRMAL     NoRMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Water     WC Method     >120     6     12     15       Chromium     ppm     ASTM 051888     >20     <1     0     0       Nickel     ppm     ASTM 051888     >20     3     2     6       Aumium     ppm     ASTM 051888     >20     3     2     6       Aumium<	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     0     0     1014       Oil Ghanged     Kris     Client Info     0     0     0       Oil Changed     Client Info     Changed     Not Changed     Changed       Sample Status     Imit/base     current     History1     History2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     >0.2     NEG     NEG     NEG       Chromium     ppm     ASTM D5185m     >20     6     12     15       Chromium     ppm     ASTM D5185m     >20     6     0     0       Silver     ppm     ASTM D5185m     >20     0     0     0       Silver     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >1	Sample Number		Client Info		GFL0065749	GFL0065687	GFL0065685
Oil Age     Ins     Client Info     0     0     0     0       Oil Changed     Client Info     Changed     Not Changed     Changed     Normal     Normal       Sample Status     Imit/bases     current     Normal     Normal     Normal       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0     NEG     NEG     NEG       Glycol     WC Method     >0     6     12     15       Trom     ppm     ASTM D5185m     >120     6     12     15       Chromium     ppm     ASTM D5185m     >20     <1     0     0       Silver     ppm     ASTM D5185m     >2     1     0     0       Copper     ppm     ASTM D5185m     >20     3     2     6       Cadmium     ppm     ASTM D5185m     >30     <1     1     2       Tian     ppm     ASTM D5185m     <1     0     0     0	Sample Date		Client Info		27 Jan 2024	04 Dec 2023	28 Sep 2023
Oil Changed Sample Status     Client Info     Changed NORMAL     Not Changd NORMAL     Changed NORMAL     Changed NORMAL     Changed NORMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	Machine Age	hrs	Client Info		0	0	1014
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     imit/base     current     history1     history2       Iron     ppm     ASTM D5186     >2     <1     0     0       Chromium     ppm     ASTM D5186     >2     <1     0     0       Silver     ppm     ASTM D5186     >2     0     0     0       Aluminum     ppm     ASTM D5186     >20     3     2     6       Lead     ppm     ASTM D5186     >20     3     2     6       Lead     ppm     ASTM D5186     >1     0     0     0       Copper     ppm <t< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></t<>	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     <1     0     0       Silver     ppm     ASTM D5185m     >2     <1     0     0       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >30     <1     1     2       Tin     ppm     ASTM D5185m     <1     <1     <1     2       Tin     ppm     ASTM D5185m     <1     <1     0     0	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel     WC Method     >3.0     <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water     WC Method     >0.2     NEG     NEG     NEG     NEG     NEG       Glycol     WC Method     Imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     6     12     15       Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     <1     0     0       Silver     ppm     ASTM D5185m     >2     <1     0     0       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Copper     ppm     ASTM D5185m     >15     <1     <1     <1       Vanadium     ppm     ASTM D5185m     0     0	CONTAMINAT	ION	method	limit/base	current	history1	history2
Water     WC Method     >0.2     NEG     NEG     NEG     NEG     NEG       Glycol     WC Method     Imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     6     12     15       Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     <1     0     0       Silver     ppm     ASTM D5185m     >2     <1     0     0       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     15     <1     1     2       Vanadium     ppm     ASTM D5185m     0     0	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >120     6     12     15       Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >2     <1     0     0       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >2     0     0     0       Copper     ppm     ASTM D5185m     >20     0     0     0       Copper     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >330     <1     1     2       Tin     ppm     ASTM D5185m     >330     <1     0     0       Cadmium     ppm     ASTM D5185m     <1     <1     1     1       Vanadium     ppm     ASTM D5185m     0     6     <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron     ppm     ASTM D5185m     >120     6     12     15       Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >5     <1     0     0       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >330     <1     1     2       Tin     ppm     ASTM D5185m     >15     <1     <1     0     0       Cadmium     ppm     ASTM D5185m     <1     <1     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0	Glycol		WC Method		NEG	NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1		S	method	limit/base	current	history1	history2
Chromium     ppm     ASTM D5185m     >20     <1	Iron	nnm	ASTM D5185m	>120	6	12	15
Nickel     ppm     ASTM D5185m     >5     <1					-		
Titanium     ppm     ASTM D5185m     >2     <1							
Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >40     <1     0     0       Copper     ppm     ASTM D5185m     >15     <1     <1     2       Tin     ppm     ASTM D5185m     >15     <1     0     0       Cadmium     ppm     ASTM D5185m     >15     <1     0     0       Cadmium     ppm     ASTM D5185m     <1     0     0     0       Cadmium     ppm     ASTM D5185m     <1     0     0     0       ADDTIVES     method     imit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     <1     1     1       Magnesium     ppm     ASTM D5185m     0     <1     1     1       Magnesium     ppm     ASTM D5185m     100     1333     1131							
Aluminum     ppm     ASTM D5185m     >20     3     2     6       Lead     ppm     ASTM D5185m     >40     <1     0     0       Copper     ppm     ASTM D5185m     >330     <1     1     2       Tin     ppm     ASTM D5185m     >15     <1     <1     <1       Vanadium     ppm     ASTM D5185m     >15     <1     0     0       Cadmium     ppm     ASTM D5185m     <1     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     6     <1     4       Barium     ppm     ASTM D5185m     0     0     0     0       Magnese     ppm     ASTM D5185m     0     5     <1     1     1       Magnesium     ppm     ASTM D5185m     1070     1393     1131     1076       Phosphorus     ppm     ASTM D5185m     1270     1564							
Lead     ppm     ASTM D5185m     >40     <1							
Copper     ppm     ASTM D5185m     >330     <1							
Tin     ppm     ASTM D5185m     >15     <1							
Vanadium     ppm     ASTM D5185m     <1							
Cadmium     ppm     ASTM D5185m     <1				10			
ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     6     <1     4       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     60     77     60     64       Manganese     ppm     ASTM D5185m     0     <1     <1     1       Magnesium     ppm     ASTM D5185m     1010     1236     1033     906       Calcium     ppm     ASTM D5185m     1070     1393     1131     1076       Phosphorus     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>							
Boron     ppm     ASTM D5185m     0     6     <1		1-1-					
Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     60     77     60     64       Manganese     ppm     ASTM D5185m     0     <1     <1     1       Magnesium     ppm     ASTM D5185m     1010     1236     1033     906       Calcium     ppm     ASTM D5185m     1010     1236     1033     906       Calcium     ppm     ASTM D5185m     1070     1393     1131     1076       Phosphorus     ppm     ASTM D5185m     1070     1393     1131     1007       Zinc     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm	ADDITIVES		method				history2
Molybdenum     ppm     ASTM D5185m     60     77     60     64       Manganese     ppm     ASTM D5185m     0     <1		nnm					
Manganese     ppm     ASTM D5185m     0     <1	Boron		ASTM D5185m	0	6	<1	4
Magnesium     ppm     ASTM D5185m     1010     1236     1033     906       Calcium     ppm     ASTM D5185m     1070     1393     1131     1076       Phosphorus     ppm     ASTM D5185m     1150     1534     1061     1007       Zinc     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/.1mm     *ASTM D7415	Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	6 0	<1 0	4 0
Calcium     ppm     ASTM D5185m     1070     1393     1131     1076       Phosphorus     ppm     ASTM D5185m     1150     1534     1061     1007       Zinc     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm<*ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.tmm<*ASTM D7415     >30	Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 77	<1 0 60	4 0 64
Phosphorus     ppm     ASTM D5185m     1150     1534     1061     1007       Zinc     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.tmm     *ASTM D7415 <t< th=""><th>Boron Barium Molybdenum Manganese</th><th>ppm ppm ppm</th><th>ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m</th><th>0 0 60 0</th><th>6 0 77 &lt;1</th><th>&lt;1 0 60 &lt;1</th><th>4 0 64 1</th></t<>	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 77 <1	<1 0 60 <1	4 0 64 1
Zinc     ppm     ASTM D5185m     1270     1564     1305     1227       Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.tmm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.tmm     *ASTM D7414<	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	6 0 77 <1 1236	<1 0 60 <1 1033	4 0 64 1 906
Sulfur     ppm     ASTM D5185m     2060     4907     3198     3429       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     >20     2     1     0       Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Soot %     %     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/cm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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	6 0 77 <1 1236 1393	<1 0 60 <1 1033 1131	4 0 64 1 906 1076
Silicon     ppm     ASTM D5185m     >25     5     4     5       Sodium     ppm     ASTM D5185m     3     <1	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	6 0 77 <1 1236 1393 1534	<1 0 60 <1 1033 1131 1061	4 0 64 1 906 1076 1007
Sodium     ppm     ASTM D5185m     3     <1	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	6 0 77 <1 1236 1393 1534 1564	<1 0 60 <1 1033 1131 1061 1305	4 0 64 1 906 1076 1007 1227
Potassium     ppm     ASTM D5185m     >20     2     1     9       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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	0 0 60 0 1010 1070 1150 1270 2060	6 0 77 <1 1236 1393 1534 1564 4907	<1 0 60 <1 1033 1131 1061 1305 3198	4 0 64 1 906 1076 1007 1227 3429
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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	0 0 60 1010 1070 1150 1270 2060	6 0 77 <1 1236 1393 1534 1564 4907 current	<1 0 60 <1 1033 1131 1061 1305 3198 history1	4 0 64 1 906 1076 1007 1227 3429 history2
Soot %     %     *ASTM D7844     >4     0.1     0.2     0.2       Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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>	0 0 60 1010 1070 1150 1270 2060	6 0 77 <1 1236 1393 1534 1564 4907 current 5	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4	4 0 64 1 906 1076 1007 1227 3429 history2 5
Nitration     Abs/cm     *ASTM D7624     >20     5.3     7.2     6.9       Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	6 0 77 <1 1236 1393 1534 1564 4907 <u>current</u> 5 3	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1	4 0 64 1 906 1076 1007 1227 3429 history2 5 0
Sulfation     Abs/.1mm     *ASTM D7415     >30     17.7     18.8     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	6 0 77 <1 1236 1393 1534 1564 4907 current 5 3 2	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9
FLUID DEGRADATION method limit/base current history1 history2   Oxidation Abs/.1mm *ASTM D7414 >25 13.4 14.6 14.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	6 0 77 <1 1236 1393 1534 1564 4907 current 5 3 2 2 current	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1 history1	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9 9
Oxidation     Abs/.1mm     *ASTM D7414     >25     13.4     14.6     14.3	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	6 0 77 <1 1236 1393 1534 1564 4907 <u>current</u> 5 3 2 2 <u>current</u> 0.1	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1 1 history1 0.2	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9 history2 0.2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	6 0 77 <1 1236 1393 1534 1564 4907 <i>current</i> 5 3 2 2 <i>current</i> 0.1 5.3	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1 history1 0.2 7.2	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9 history2 0.2 6.9
	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 <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	6 0 77 <1 1236 1393 1534 1564 4907 <u>current</u> 5 3 2 2 <u>current</u> 0.1 5.3 17.7	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1 1 history1 0.2 7.2 18.8	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9 <u>history2</u> 0.2 6.9 18.6
	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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	6 0 77 <1 1236 1393 1534 1564 4907 <i>current</i> 5 3 2 <i>current</i> 0.1 5.3 17.7 <i>current</i>	<1 0 60 <1 1033 1131 1061 1305 3198 history1 4 <1 1 1 history1 0.2 7.2 18.8 history1	4 0 64 1 906 1076 1007 1227 3429 history2 5 0 9 history2 0.2 6.9 18.6 history2



Sep28/23

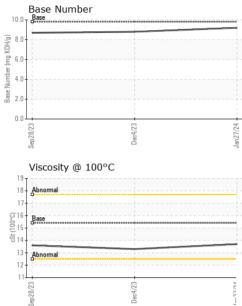
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# **OIL ANALYSIS REPORT**

VISUAL



	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
Jan27/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jan 2	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.3	13.6
	GRAPHS						
	Ferrous Alloys						
VC	14- iron						
LC	12-	-					
	10-						
	E 8-						
	6-						
	4						
	2-						
	0 2			5			
	3ep 28/23	Dec4/23		Jan 27/24			
				20			
	Non-ferrous Meta	15					
	copper						
	8 - sesses tin						
	6-						
	udd						
	4						
	2-						
		/23	Access Construction	/24			
	Sep 28/23	Dec4/23		Jan27/24			
	Viscosity @ 100°C			,			
	<sup>19</sup> T	-		10.0	Base Number		
	18 - Abnormal						
	17-			(B) 8.0			
	ço <sup>16</sup> Base			ġ			
	ට <sup>16</sup> Base 15 දී 14			0.9 Base Number (mg KOH/g)			
	<sup>63</sup> 14			4.0	+		
				e 2.0			
	13 Abnormal	1		2.0	1		
	13 Abnormal						
	12 11	<u></u>		0.0		~~~~~	
	12 11	lec4/23			p28/23	ec4/23 +	
	Abnoimai	Dec4/23		0.0	Sep 28/23	Dec4/23 -	
l aboratory	12			Jan27/24			ral Missouri Hau
Laboratory Sample No.	12 11			Jan27/24		onmental - 823 - Cent	ral Missouri Hau bak Grove La
Sample No. Lab Number	: WearCheck USA - 50 : GFL0065749 : 06080572	)1 Madison Receiv Tested	<b>/ed</b> : 05 1 : 06	NC 27513 Feb 2024 Feb 2024	GFL Enviro	onmental - 823 - Cent	ak Grove La Sedalia, N
Sample No. Lab Number Unique Number	: WearCheck USA - 50 : GFL0065749 : 06080572 : 10862663	)1 Madison <b>Receiv</b>	<b>/ed</b> : 05 1 : 06	, NC 27513 Feb 2024	GFL Enviro	onmental - 823 - Cent 24461 O	ak Grove La Sedalia, N US 653
Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 50 : GFL0065749 : 06080572 : 10862663	)1 Madison Receiv Tested Diagno	ved     : 05       1     : 06       osed     : 07	, NC 27513 Feb 2024 Feb 2024 Feb 2024 - Don	GFL Enviro	nmental - 823 - Cent 24461 O Contact: 7	ak Grove La Sedalia, N

Contact/Location: Terry Randolph - GFL823