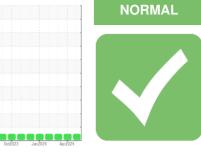


# **OIL ANALYSIS REPORT**

Sample Rating Trend





413048 Component Diesel Engine

Machine Id

PETRO CANADA DURON SHP 15W40 (--- 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.

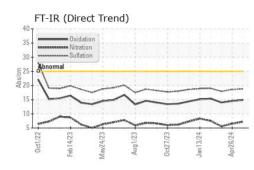
### Fluid Condition

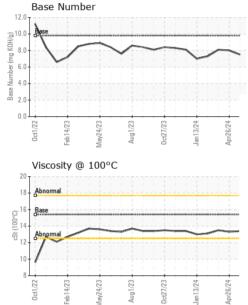
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0111471	GFL0111475	GFL0111464
Sample Date		Client Info		20 May 2024	26 Apr 2024	05 Apr 2024
Machine Age	hrs	Client Info		2808	2688	2596
Oil Age	hrs	Client Info		341	221	129
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/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
WEAR METAL	S	method	limit/base	current	history1	history2
		ASTM D5185m	>120	4	2	2
Iron	ppm			4	2	<1
Chromium Nickel	ppm	ASTM D5185m ASTM D5185m	>20	0	0	<1
	ppm	ASTM D5185m	>5	0	0	<1
Titanium Silver	ppm	ASTM D5185m ASTM D5185m	>2 >2	0	0	<1
Aluminum	ppm ppm	ASTM D5185m	>20	0	2	1
Lead		ASTM D5185m	>20	0	0	<1
Copper	ppm ppm	ASTM D5185m		۰ <1	0	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m	>15	0	0	<1
Cadmium		ASTM D5185m				<1
				0	()	
	ppm			0	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 0	history1 4	history2 2
ADDITIVES Boron Barium		method ASTM D5185m ASTM D5185m	0	current 0 0	history1 4 0	history2 2 0
ADDITIVES Boron Barium Molybdenum	ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 0 0 59	history1 4 0 54	history2 2 0 56
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 0 0 59 0	history1 4 0 54 <1	history2 2 0 56 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 0 0 59 0 983	history1 4 0 54 <1 879	history2 2 0 56 <1 1004
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current     0     59     0     983     1108	history1 4 0 54 <1 879 968	history2 2 0 56 <1 1004 1087
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current     0     59     0     983     1108     1071	history1 4 0 54 <1 879 968 963	history2     2     0     56     <1     1004     1087     1060
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current     0     59     0     983     1108     1071     1296	history1 4 0 54 <1 879 968 963 1146	history2     2     0     56     <1     1004     1087     1060     1319
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current     0     0     59     0     983     1108     1071     1296     3526	history1 4 0 54 <1 879 968 963 1146 3293	history2   2   0   56   <1   1004   1087   1060   1319   3823
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	current     0     0     59     0     983     1108     1071     1296     3526     current	history1 4 0 54 <1 879 968 963 1146 3293 history1	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	current     0     0     59     0     983     1108     1071     1296     3526     current     3	history1     4     0     54     <1     879     968     963     1146     3293     history1     3	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1	history1     4     0     54     <1     879     968     963     1146     3293     history1     3     6	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	current     0     0     59     0     983     1108     1071     1296     3526     current     3	history1     4     0     54     <1     879     968     963     1146     3293     history1     3	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     1     current	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1   2   history2
ADDITIVES 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	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     current     0     0.2	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1   0.2	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1   2   1   3823
ADDITIVES 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	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     current     0     0.2     7.2	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1   0.2   6.5	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1   2   1   2   0.1   5.6
ADDITIVES 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	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     current     0     0.2	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1   0.2	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1   2   1   3823
ADDITIVES 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 <b>TS</b> ppm ppm ppm	method     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     current     0     0.2     7.2	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1   0.2   6.5	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1   2   1   2   0.1   5.6
ADDITIVES 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 <b>TS</b> ppm ppm ppm	method     ASTM D5185m     ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >20 <b>imit/base</b> >4 >20	current     0     0     59     0     983     1108     1071     1296     3526     current     3     1     current     0.2     7.2     18.8	history1   4   0   54   <1   879   968   963   1146   3293   history1   3   6   2   history1   0.2   6.5   18.6	history2   2   0   56   <1   1004   1087   1060   1319   3823   history2   2   1   2   1   2   1.1   2.1   5.6   17.9



# **OIL ANALYSIS REPORT**





VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.3	13.5
GRAPHS						

Ferrous Alloys

20

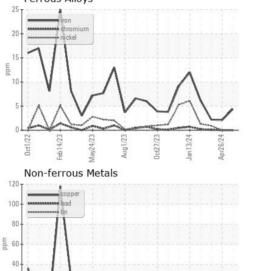
20

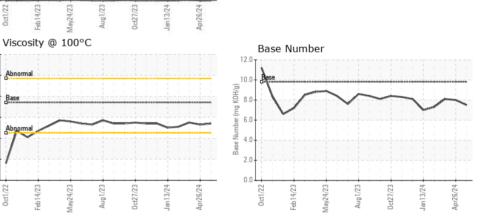
18

16

12

cSt (100°C)





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 073 - Warner Robins - Transwaste Sample No. : GFL0111471 Received : 22 May 2024 155 Story Road Lab Number : 06187469 Tested : 23 May 2024 Warner Robins, GA Unique Number : 11044221 Diagnosed : 23 May 2024 - Wes Davis US 31093 Test Package : FLEET Contact: JOSH MALONEY Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jmaloney@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: ٦ž Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: GFL073 [WUSCAR] 06187469 (Generated: 05/23/2024 17:41:43) Rev: 1

Submitted By: JOSH MALONEY Page 2 of 2