

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 631M 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.

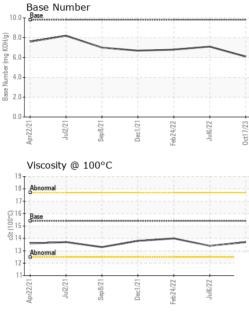
### Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093165	GFL0055175	GFL0042355
Sample Date		Client Info		17 Oct 2023	06 Jul 2022	24 Feb 2022
Machine Age	hrs	Client Info		12893	10283	9675
Oil Age	hrs	Client Info		10283	9675	8378
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	7	7
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum	ppm	ASTM D5185m	>20	6	1	2
Lead	ppm	ASTM D5185m	>40	<1	1	<1
Copper	ppm	ASTM D5185m	>330	2	1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 3	history1 4	history2 4
	ppm ppm					
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3	4	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 0	4	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 63	4 0 55	4 0 60 <1 1023
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 63 0 917 1073	4 0 55 <1	4 0 60 <1 1023 1151
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	3 0 63 0 917 1073 908	4 0 55 <1 881 1080 869	4 0 60 <1 1023 1151 1040
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	3 0 63 0 917 1073 908 1218	4 0 55 <1 881 1080 869 1102	4 0 60 <1 1023 1151 1040 1371
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	3 0 63 0 917 1073 908	4 0 55 <1 881 1080 869	4 0 60 <1 1023 1151 1040
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	3 0 63 0 917 1073 908 1218	4 0 55 <1 881 1080 869 1102	4 0 60 <1 1023 1151 1040 1371
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 1010 1070 1150 1270 2060	3 0 63 0 917 1073 908 1218 2616	4 0 55 <1 881 1080 869 1102 2837	4 0 60 <1 1023 1151 1040 1371 2461
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	3 0 63 0 917 1073 908 1218 2616 current	4 0 55 <1 881 1080 869 1102 2837 history1	4 0 60 <1 1023 1151 1040 1371 2461 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	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 kimit/base >25	3 0 63 0 917 1073 908 1218 2616 current 6	4 0 55 <1 881 1080 869 1102 2837 history1 3	4 0 60 <1 1023 1151 1040 1371 2461 history2 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 1010 1070 1150 1270 2060 kimit/base >25	3 0 63 0 917 1073 908 1218 2616 <u>current</u> 6 2	4 0 55 <1 881 1080 869 1102 2837 history1 3 5	4 0 60 <1 1023 1151 1040 1371 2461 <b>history2</b> 3 2
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	3 0 63 0 917 1073 908 1218 2616 current 6 2 2	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 2
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b>	3 0 63 0 917 1073 908 1218 2616 current 6 2 2 2 2	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0 0	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 history2
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20 <b>limit/base</b>	3 0 63 0 917 1073 908 1218 2616 <i>current</i> 6 2 2 2 <i>current</i> 0.6	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0 history1 0.4	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 2 history2 0.4
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	3 0 63 0 917 1073 908 1218 2616 <i>current</i> 6 2 2 2 <i>current</i> 0.6 8.1	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0 history1 0.4 8.0	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 history2 0.4 9.9
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 25 20 20 <b>limit/base</b> >20 <b>limit/base</b> >20	3 0 63 0 917 1073 908 1218 2616 <i>current</i> 6 2 2 2 <i>current</i> 0.6 8.1 19.9	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0 history1 0.4 8.0 19.9	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 history2 0.4 9.9 21.5
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	3 0 63 0 917 1073 908 1218 2616 <i>current</i> 6 2 2 2 <i>current</i> 0.6 8.1 19.9	4 0 55 <1 881 1080 869 1102 2837 history1 3 5 0 history1 0.4 8.0 19.9 history1	4 0 60 <1 1023 1151 1040 1371 2461 history2 3 2 2 history2 0.4 9.9 21.5 history2



# **OIL ANALYSIS REPORT**



			method	limit/base	current	history1	history2
White Meta		scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Meta	al	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	Э	scalar	*Visual	NORML	NORML	NORML	NORML
Odor		scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified		scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water		scalar	*Visual		NEG	NEG	NEG
FLUID F	PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100	°C	cSt	ASTM D445	15.4	13.7	13.4	14.0
GRAPH	IS						
Ferrous A	lloys						
iron		$\wedge$					
8 - nicl	omium kel						
6	$\leq$ /						
	$\sim$						
4							
2							
		Contractores	Constant of the owner of the owner	Contenant			
Apr22/21 Jul2/21	Sep8/21	Dec1/21	Feb24/22 Jul6/22	0ct17/23			
JL							
4	Se	Ō	J. Feb	Oct			
Non-ferro			Feb	00			
Non-ferro	ous Meta		Feb	00			
Non-ferro	ous Meta		Feb	001			
Non-ferro	ous Meta		Feb.	001			
Non-ferro	ous Meta		Feb	00			
Non-ferro	ous Meta		Feb	Oct			
Non-ferro	ous Meta		Feb	Od			
Non-ferro	ous Meta		Feb	Oct			
Non-ferro	ous Meta		Feb	Oct			
Non-ferror	per	ls					
Non-ferro	ous Meta						
Non-ferror	Pus Meta	Dec [12]		0ct17/23 - [ ( 0ct	Raco Number		
Non-ferror	Pus Meta	Dec [12]		0et17/23	Base Number		
Non-ferro	Pus Meta	Dec [12]		0et11/23	Base	-	
Non-ferror Non-ferror leac	Pus Meta	Dec [12]		0et11/23	Base		
Non-ferror Non-ferror leac	Pus Meta	Dec [12]		0et11/23	Base		
Non-ferror Non-ferror leac	Pus Meta	Dec [12]		0et11/23	Base		
Non-ferror	Pus Meta	Dec [12]		0et11/23	Base		
Non-ferror	Pus Meta	Dec [12]		0.01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Base		
Non-ferror	Pus Meta	Dec [12]		0et11/23	Base		
Non-ferror	@ 100°C	Is Dec[2]	Feb24/22	0.01 0000 000 0	Base		
Non-ferror	Pus Meta	Dec [12]		0.0.0 0.8 0.6 0.8 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base		- 22/k7/22 Jul6/22

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 415 - Michigan East Laboratory : 19 Oct 2023 Sample No. : GFL0093165 Received 6200 Elmridge Lab Number : 05983414 Diagnosed : 20 Oct 2023 Sterling Heights, MI Unique Number : 10700709 Diagnostician : Wes Davis US 48313 Test Package : FLEET Contact: Frank Wolak Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. fwolak@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (586)825-9514 F:

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