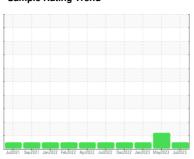


# **OIL ANALYSIS REPORT**

**Sample Rating Trend** 







Machine Id 926023-548

Component

**Diesel Engine** 

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

### DIAGNOSIS

### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

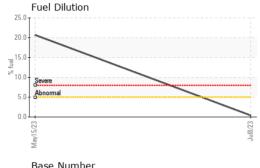
### **Fluid Condition**

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

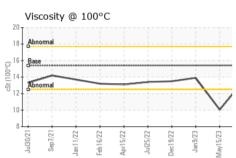
GAL)		Juiz021 Sep2	021 Jan2022 Feb2022 Apr2	022 Jul2022 Dec2022 Jan2023 May	2023 Jul2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0062205	GFL0062231	GFL0062213
Sample Date		Client Info		08 Jul 2023	15 May 2023	09 Jan 2023
Machine Age	hrs	Client Info		19917	19435	18935
Oil Age	hrs	Client Info		966	500	497
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	9	71	36
Chromium	ppm	ASTM D5185m	>20	<1	6	1
Nickel	ppm	ASTM D5185m	>4	0	1	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	7	3
Lead	ppm	ASTM D5185m	>40	<1	2	14
Copper	ppm	ASTM D5185m	>330	3	2	5
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	<b>o</b> current	0 history1	0 history2
	ppm		limit/base			-
ADDITIVES Boron Barium		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 9	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m ASTM D5185m	0	current 9 0	history1 5 2	history2 3 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 9 0 60	history1 5 2 46	history2 3 0 70
ADDITIVES  Boron Barium  Molybdenum  Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 9 0 60 <1	history1 5 2 46 1	history2 3 0 70 <1
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 9 0 60 <1 879	history1  5 2 46 1 656	history2  3  0  70  <1  986
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current  9  0  60  <1  879  1104	history1  5 2 46 1 656 844	history2  3  0 70  <1 986 1201
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150	current  9  0  60  <1  879  1104  1019	history1  5 2 46 1 656 844 733	history2  3  0  70  <1  986  1201  1086
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150	current  9  0  60  <1  879  1104  1019  1185	history1  5 2 46 1 656 844 733 915	history2  3 0 70 <1 986 1201 1086 1346
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  9  0  60  <1  879  1104  1019  1185  3033	history1  5 2 46 1 656 844 733 915 2355	history2  3  0 70  <1 986 1201 1086 1346 2671
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 0 1010 1070 1150 1270 2060	current  9  0  60  <1  879  1104  1019  1185  3033  current	history1  5 2 46 1 656 844 733 915 2355 history1	history2  3 0 70 <1 986 1201 1086 1346 2671 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 0 1010 1070 1150 1270 2060	current  9  0  60  <1  879  1104  1019  1185  3033  current  4	history1  5 2 46 1 656 844 733 915 2355 history1 14	history2  3 0 70 <1 986 1201 1086 1346 2671 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current  9  0  60  <1  879  1104  1019  1185  3033  current  4  <1	history1  5  2  46  1  656  844  733  915  2355  history1  14  6	history2  3  0 70  <1 986 1201 1086 1346 2671 history2 9 3
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 60 0 1010 1070 1150 1270 2060 limit/base >25	current  9  0 60 <1 879 1104 1019 1185 3033 current 4 <1	history1  5 2 46 1 656 844 733 915 2355 history1 14 6 2	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	current  9  0  60  <1  879  1104  1019  1185  3033  current  4  <1  2  0.4	history1  5 2 46 1 656 844 733 915 2355 history1 14 6 2	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2 <1.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	current  9  0 60 <1 879 1104 1019 1185 3033 current 4 <1 2 0.4 current	history1  5 2 46 1 656 844 733 915 2355 history1 14 6 2 ▲ 20.7 history1	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2 <1.0 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m  method  ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >5	current  9  0  60  <1  879  1104  1019  1185  3033  current  4  <1  2  0.4  current  0.3	history1  5  2 46  1 656 844 733 915 2355 history1 14 6 2  20.7 history1	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2 <1.0 history2 0.8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	method  ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >5	current  9  0  60  <1  879  1104  1019  1185  3033  current  4  <1  2  0.4  current  0.3  7.6	history1  5 2 46 1 656 844 733 915 2355 history1 14 6 2  20.7 history1	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2 <1.0 history2 0.8 11.8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	method  ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >3	current  9  0  60  <1  879  1104  1019  1185  3033  current  4  <1  2  0.4  current  0.3  7.6  20.4	history1  5 2 46 1 656 844 733 915 2355 history1 14 6 2 ▲ 20.7 history1	history2  3 0 70 <1 986 1201 1086 1346 2671 history2 9 3 2 <1.0 history2 0.8 11.8 24.5



# **OIL ANALYSIS REPORT**



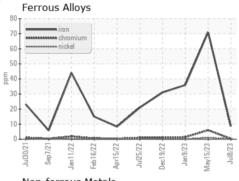
Base	e Nu	mber							
OH/g)	1		_					96 30 96 96 96	No. of Mr.
g 6.0-		~							
8.00 Mmber (mg KOH/g)									
2.0									
0.0 1Z/0Z/nC	Sep7/21-	Jan11/22 -	Feb16/22 -	Apr15/22 -	Jul25/22 -	Dec19/22 -	Jan9/23 -	May15/23 -	-

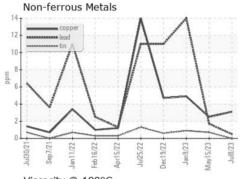


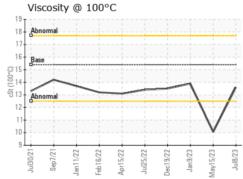
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

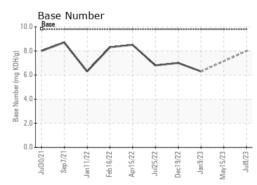
FLUID PROP	method			riistory i	riistory	
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	<b>△</b> 10.05	13.9

## **GRAPHS**













Laboratory Sample No. Lab Number Unique Number : 10553021

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

: GFL0062205 : 05897211

Received Diagnosed

: 13 Jul 2023 Diagnostician : Wes Davis

: 17 Jul 2023 Test Package : FLEET ( Additional Tests: PercentFuel )

GFL Environmental - 626 - Cadillac Hauling 1501 Ron Wilson St Cadillac, MI

US 49601 Contact: GARY BREWER

gbrewerjr@gflenv.com

T: F:

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.

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