

## **OIL ANALYSIS REPORT**

### Sample Rating Trend



# Machine Id 811044

# 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.

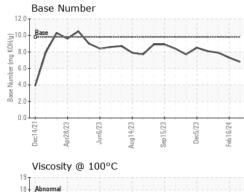
### Fluid Condition

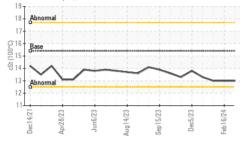
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

			11.00.10.0		1.	hint or
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0115363	GFL0110888	GFL0110905
Sample Date		Client Info		07 Mar 2024	16 Feb 2024	27 Jan 2024
Machine Age	hrs	Client Info		6379	6270	6169
Oil Age	hrs	Client Info		109	101	146
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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
Iron	ppm	ASTM D5185m	>100	34	24	20
Chromium	ppm	ASTM D5185m		2	1	<1
Nickel	ppm	ASTM D5185m	>4	- <1	0	0
Titanium	ppm	ASTM D5185m	- 1	0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m		17	12	11
Lead	ppm	ASTM D5185m		<1	<1	0
Copper	ppm	ASTM D5185m		2	2	5
Tin	ppm	ASTM D5185m	>15	_ <1	<1	<1
Vanadium	ppm	ASTM D5185m	210	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ррпп		L'and to the second		-	-
ADDITIVES	ppm	method	limit/base	current	history1	history2
	ppm	method ASTM D5185m	0	current 1	history1 1	history2 1
ADDITIVES Boron Barium		method ASTM D5185m	0	current 1 0	history1 1 0	history2 1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 1 0 66	history1 1 0 53	history2 1 0 57
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60 0	current 1 0	history1 1 0 53 <1	history2 1 0 57 <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 1 0 66 <1 1010	history1 1 0 53 <1 968	history2 1 0 57 <1 894
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 1 0 66 <1 1010 1129	history1 1 0 53 <1 968 1066	history2 1 0 57 <1 894 982
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 1 0 66 <1 1010 1129 1123	history1 1 0 53 <1 968 1066 981	history2 1 0 57 <1 894 982 1027
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           1           0           66           <1           1010           1129           1123           1299	history1 1 0 53 <1 968 1066 981 1235	history2 1 0 57 <1 894 982 1027 1162
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	0 0 60 0 1010 1070 1150	Current 1 0 66 <1 1010 1129 1123	history1 1 0 53 <1 968 1066 981 1235 3119	history2 1 0 57 <1 894 982 1027 1162 2917
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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	current           1           0           66           <1           1010           1129           1123           1299           3207           current	history1           1           0           53           <1           968           1066           981           1235           3119           history1	history2 1 0 57 <1 894 982 1027 1162 2917 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 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	current           1           0           66           <1           1010           1129           1123           1299           3207           current           8	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6	history2           1           0           57           <1           894           982           1027           1162           2917           history2           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current           1           0           66           <1           1010           1129           1123           1299           3207           current           8           7	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6           7	history2           1           0           57           <1           894           982           1027           1162           2917           history2           6           6           6
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	current           1           0           66           <1           1010           1129           1123           1299           3207           current           8	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6	history2           1           0           57           <1           894           982           1027           1162           2917           history2           6
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 2060 225 >25	current         1         0         66         <1         1010         1129         1123         1299         3207         current         8         7         19         current	history1         1         0         53         <1         968         1066         981         1235         3119         history1         6         7         16         history1	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         6         13         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         1         0         66         <1         1010         1129         1123         1299         3207         current         8         7         19         current         1.2	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6           7           16           history1           1	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         13         history2         0.8
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 limit/base >25 >20 limit/base >3 >20	current         1         0         66         <1         1010         1129         3207         current         8         7         19         current         1.2         10.6	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6           7           16           history1           1           9.8	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         6         13         history2         0.8         8.7
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         1         0         66         <1         1010         1129         1123         1299         3207         current         8         7         19         current         1.2	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6           7           16           history1           1	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         13         history2         0.8
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           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	current         1         0         66         <1         1010         1129         3207         current         8         7         19         current         1.2         10.6	history1           1           0           53           <1           968           1066           981           1235           3119           history1           6           7           16           history1           1           9.8	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         13         history2         0.8         8.7
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 ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	current         1         0         66         <1         1010         1129         1299         3207         current         8         7         19         current         1.2         10.6         20.9         current	history1         1         0         53         <1         968         1066         981         1235         3119         history1         6         7         16         history1         1         9.8         20.1         history1	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         6         13         history2         0.8         8.7         19.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7624           *ASTM D7415           method	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 3 20 3 20 3 3 20 3 3 20 3 3 20 3 3 3 20 3 3 3 20 3 3 3 3	current         1         0         66         <1         1010         1129         1123         1299         3207         current         8         7         19         current         1.2         10.6         20.9	history1         1         0         53         <1         968         1066         981         1235         3119         history1         6         7         16         history1         1         9.8         20.1	history2         1         0         57         <1         894         982         1027         1162         2917         history2         6         6         6         13         history2         0.8         8.7         19.5         history2



# **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	13.0	13.0	13.0
GRAPHS						

Ferrous Alloys 140 120 100 80 ppm 60 40 20 n Dec14/21-Aug14/23 Sep 15/23 nr28/73 eb16/24 C/guin Non-ferrous Metals 16 14 lead 10 bpm 8 6 4 Sep 15/23 Aug 14/23 eb16/2 Dec1 Viscosity @ 100°C Base Number 19 12.0 18 10. 17 Base Number (mg KOH/g) ()-16 ()-00 () 15 () 14 8 ( B 6.0 4.0 Abno 2 ( 12 11 0.0 Dec14/21-Dec5/23 -Jun6/23 Dec14/21-Sep15/23 Dec5/23 Feb16/24 Sep 15/23 Feb16/24 Apr28/23 Apr28/23 Aug14/23 Jun6/23 Aug14/23 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 814 - Little Rock Hauling Laboratory Sample No. : GFL0115363 Received : 18 Mar 2024 4005 Hwy 161 N. Lab Number : 06121522 Tested : 19 Mar 2024 Little Rock, AR Unique Number : 10930355 Diagnosed : 19 Mar 2024 - Wes Davis US 72117 Test Package : FLEET Contact: Brad Koenig bkoenig@gflenv.com



 Certificate L2367
 Test Package
 : FLEET

 To discuss this sample report, contact Customer Service at 1-800-237-1369.
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 \* - 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)

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