

# **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 921047-260381

#### 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

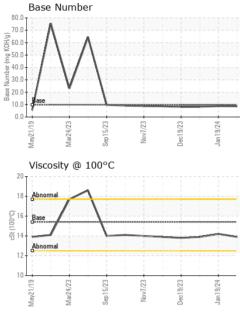
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108028	GFL0108150	GFL0102487
Sample Date		Client Info		14 Feb 2024	19 Jan 2024	28 Dec 2023
Machine Age	hrs	Client Info		7180	7043	6903
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	Not Changd	Changed
Sample Status				NORMAL	NORMAL	ATTENTION
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	8	3	15
Chromium	ppm	ASTM D5185m	>20	o <1	0	1
Nickel	ppm	ASTM D5185m	>20	0	<1	0
Titanium	ppm	ASTM D5185m	~ 1	0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	3	4
Lead	ppm	ASTM D5185m	>40	3	0	<1
Copper	ppm	ASTM D5185m	>330	0	0	2
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m	10	0	0	0
	ppm			•	Ū	
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current	history1 3	history2 4
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current <1 0	history1 3 0	history2 4 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 0 56	history1 3	history2 4
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60 0	<pre>current &lt;1 0 56 0</pre>	history1 3 0 55 <1	history2 4 0 61
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 0 56	history1 3 0 55	history2 4 0 61 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current <1 0 56 0 1023	history1 3 0 55 <1 898	history2 4 0 61 <1 913
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	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 56 0 1023 1093	history1 3 0 55 <1 898 979	history2 4 0 61 <1 913 1032
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 56 0 1023 1093 1063	history1 3 0 55 <1 898 979 1015	history2 4 0 61 <1 913 1032 1038
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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           56           0           1023           1093           1063           1264	history1 3 0 55 <1 898 979 1015 1212	history2           4           0           61           <1           913           1032           1038           1181
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 <1 0 56 0 1023 1093 1063 1264 3267	history1 3 0 55 <1 898 979 1015 1212 2957	history2 4 0 61 <1 913 1032 1038 1181 2918
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 56 0 1023 1093 1063 1264 3267 Current	history1 3 0 55 <1 898 979 1015 1212 2957 history1	history2         4         0         61         <1         913         1032         1038         1181         2918         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 0 1010 1070 1150 1270 2060 kimit/base >25	current           <1           0           56           0           1023           1093           1063           1264           3267           current           3	history1           3           0           55           <1           898           979           1015           1212           2957           history1           3	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6
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 0 1010 1070 1150 1270 2060 kimit/base >25	current           <1           0           56           0           1023           1093           1063           1264           3267           current           3           22	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154
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 <b>limit/base</b> >25	<1         0         56         0         1023         1093         1063         1264         3267         current         3         22         2	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16         1         history1         0.3	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154         5
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 >20 Limit/base >20	current         <1         0         56         0         1023         1093         1063         1264         3267         current         3         22         2         2         2         current	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16         1         history1	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154         5         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 2060 225 >25 >20 Limit/base >20	current         <1         0         56         0         1023         1093         1063         1264         3267         current         3         22         2         current         0.5	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16         1         history1         0.3	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154         5         history2         0         0.7
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 t t t t	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	current         <1         0         56         0         1023         1093         1063         1264         3267         current         3         22         2         current         0.5         6.2	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16         1         history1         0.3         5.2	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154         5         history2         0.7         8.0
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 t t t t	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 320 33 20 20 20 20 20 20 20 20 20 20 20 20 20	current         <1         0         56         0         1023         1093         1063         1264         3267         current         3         22         2         current         0.5         6.2         18.5	history1         3         0         55         <1         898         979         1015         1212         2957         history1         3         16         1         history1         0.3         5.2         18.2	history2         4         0         61         <1         913         1032         1038         1181         2918         history2         6         154         5         history2         0.7         8.0         20.1



# **OIL ANALYSIS REPORT**

Ferrous Alloys



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	13.9	14.2	13.9
GRAPHS						

8 70 60 50 H 40 30 20 10 0 Sep 15/23 Mar24/23 Nov7/23 9/24 Dec19/23 Non-ferrous Metals 90 80 70 60 50 40 30 20 10 0 Sep 15/23 FC/LVO Dec19/23 Jan 19/24 Mav21 Aar74 Viscosity @ 100°C Base Number 20 80.0 19 70.0 18 (BH0) K0H<sup>(1)</sup> 50.0 St (100°C) 16 는 험 40.0 ≣ 30.0 R 20.0 10.0 12 0.0 Sep15/23 Nov7/23 Sep15/23 Nov7/23 Jan 19/24 Mar24/23 Dec19/23 Jan 19/24 Mar24/23 May21/19 May21/19 Dec19/23 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 837 - Harrison TS Laboratory Sample No. : GFL0108028 Received : 05 Mar 2024 22820 S State Route 291 Lab Number : 06109285 Tested : 06 Mar 2024 Harrisonville, MO Unique Number : 10912782 Diagnosed : 06 Mar 2024 - Wes Davis US 64701 Test Package : FLEET Contact: JOHNNY PEREZ To discuss this sample report, contact Customer Service at 1-800-237-1369. johnny.perez@gflenv.com Т:



\* - 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)

Certificate L2367

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