

# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id **413038** Component

Fluid

Diesel Engine

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.

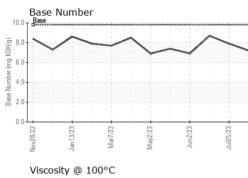
### Fluid Condition

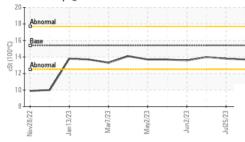
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0090998	GFL0082719	GFL0082709
Sample Date		Client Info		15 Aug 2023	25 Jul 2023	30 Jun 2023
Machine Age	hrs	Client Info		2129	1985	1814
Oil Age	hrs	Client Info		144	171	132
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	7	5	3
Chromium	ppm	ASTM D5185m	>20	، <1	0	<1
Nickel	ppm	ASTM D5185m	>20	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver		ASTM D5185m	>2	0	<1	0
Aluminum	ppm ppm	ASTM D5185m	>2	5	4	0
Lead		ASTM D5185m	>20	0	4 <1	0
Copper	ppm ppm	ASTM D5185m		43	47	39
Tin				43 <1		
Vanadium	ppm	ASTM D5185m ASTM D5185m	>15	<1	<1 0	<1 <1
Cadmium	ppm	ASTM D5185m		<1 0	0	< 1
	ppm	ASTIVI DOTODIII		0	0	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	3	4	9
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	3 0	4 0	9 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 78	4 0 80	9 0 76
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 78 <1	4 0 80 <1	9 0 76 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 78 <1 1009	4 0 80 <1 881	9 0 76 <1 971
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 78 <1 1009 1092	4 0 80 <1 881 1078	9 0 76 <1 971 1077
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 78 <1 1009 1092 1011	4 0 80 <1 881 1078 973	9 0 76 <1 971 1077 1004
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 78 <1 1009 1092 1011 1249	4 0 80 <1 881 1078 973 1185	9 0 76 <1 971 1077 1004 1240
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	0 0 60 0 1010 1070 1150	3 0 78 <1 1009 1092 1011	4 0 80 <1 881 1078 973	9 0 76 <1 971 1077 1004
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 78 <1 1009 1092 1011 1249	4 0 80 <1 881 1078 973 1185	9 0 76 <1 971 1077 1004 1240
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 78 <1 1009 1092 1011 1249 3272	4 0 80 <1 881 1078 973 1185 3098	9 0 76 <1 971 1077 1004 1240 3685
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 78 <1 1009 1092 1011 1249 3272 current	4 0 80 <1 881 1078 973 1185 3098 history1	9 0 76 <1 971 1077 1004 1240 3685 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 <b>method</b>	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	3 0 78 <1 1009 1092 1011 1249 3272 current 5	4 0 80 <1 881 1078 973 1185 3098 history1 4	9 0 76 <1 971 1077 1004 1240 3685 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	3 0 78 <1 1009 1092 1011 1249 3272 <u>current</u> 5 4	4 0 80 <1 881 1078 973 1185 3098 history1 4 0	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm 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 78 <1 1009 1092 1011 1249 3272 current 5 4 13	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	3 0 78 <1 1009 1092 1011 1249 3272 current 5 4 13 current	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14 history1	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2 11 11 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	3 0 78 <1 1009 1092 1011 1249 3272 current 5 4 13 current 0.2	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14 14 history1 0.2	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2 11 1 history2 0.1
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	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 78 <1 1009 1092 1011 1249 3272 current 5 4 13 current 0.2 7.2	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14 14 0.2 6.8	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2 11 11 history2 0.1 5.8
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 >30	3 0 78 <1 1009 1092 1011 1249 3272 <i>current</i> 5 4 13 <i>current</i> 0.2 7.2 19.1	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14 0 14 0.2 6.8 19.3	9 0 76 <1 971 1077 1004 1240 3685 <b>history2</b> 4 2 11 <b>history2</b> 0.1 5.8 18.9
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	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 78 <1 1009 1092 1011 1249 3272 current 5 4 13 current 0.2 7.2 19.1	4 0 80 <1 881 1078 973 1185 3098 history1 4 0 14 history1 0.2 6.8 19.3 history1	9 0 76 <1 971 1077 1004 1240 3685 history2 4 2 11 history2 0.1 5.8 18.9 history2



# **OIL ANALYSIS REPORT**





VISUAL		method				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	13.7	13.8	14.0
GRAPHS						

Ferrous Alloys 3! 30 25 20 15 10 5 0. Jan 13/23 Mar7/23 Jun2/23 Mav2/23 Non-ferrous Metals 250 200 150 100 50 0 Mar7/23 Mav2/23 lan1 Viscosity @ 100°C Base Number 20 10.0 18 8 (mg KOH/g) 16 cSt (100°C) 6 | umber 4 ( 12 Base 10 0.0 8 Jan 13/23 -Mar7/23 Mar7/23 Vov28/22 Jan 13/23 Mav2/23 Vov28/22 Mav2/23 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 814 - Little Rock Hauling Laboratory Sample No. : GFL0090998 Received : 22 Aug 2023 4005 Hwy 161 N. Lab Number : 05931368 Diagnosed : 23 Aug 2023 Little Rock, AR : 10616639 Unique Number Diagnostician : Wes Davis



Test Package : FLEET Certificate L2367 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)

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