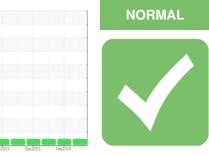


# **OIL ANALYSIS REPORT**

Sample Rating Trend



#### Area (74789V) Wachine Id 411043 Component Diesel Engine Fluid PETRO CANAL

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

### 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.

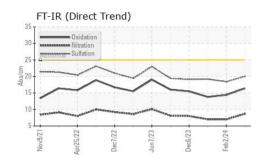
### Fluid Condition

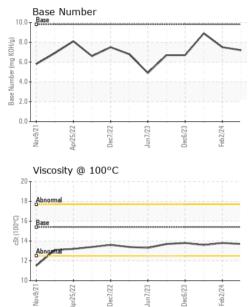
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number		Client Info		GFL0118491	GFL0104990	GFL0104996
Sample Date		Client Info		04 Apr 2024	02 Feb 2024	09 Jan 2024
Machine Age	hrs	Client Info		04 Api 2024 0	6396	6259
Oil Age	hrs	Client Info		0	0	650
Oil Changed	1115	Client Info		0 Not Changd	Not Changd	Changed
Sample Status		Client Inio		NORMAL	NORMAL	NORMAL
·				NORMAL	NORMAL	NORIVIAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	15	2	16
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	0	1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	5	3	2
Lead	ppm	ASTM D5185m	>40	<1	1	<1
Copper	ppm	ASTM D5185m	>330	2	2	<1
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		and the second			1 C	biotory 0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	o current	history1 1	<1
	ppm ppm					
Boron		ASTM D5185m	0	0	1	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	1 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 61	1 0 59	<1 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 61 <1	1 0 59 <1	<1 0 60 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 61 <1 939	1 0 59 <1 911	<1 0 60 0 935
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 0 61 <1 939 1081	1 0 59 <1 911 1004	<1 0 60 0 935 1004
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 ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 61 <1 939 1081 941	1 0 59 <1 911 1004 981	<1 0 60 0 935 1004 962
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 0 1010 1070 1150 1270	0 0 61 <1 939 1081 941 1125	1 0 59 <1 911 1004 981 1211	<1 0 60 0 935 1004 962 1252
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	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	0 0 61 <1 939 1081 941 1125 2936	1 0 59 <1 911 1004 981 1211 2929	<1 0 60 0 935 1004 962 1252 2916
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 ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060	0 0 61 <1 939 1081 941 1125 2936 current	1 0 59 <1 911 1004 981 1211 2929 history1	<1 0 60 0 935 1004 962 1252 2916 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> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 0 61 <1 939 1081 941 1125 2936 current 13	1 0 59 <1 911 1004 981 1211 2929 history1 3	<1 0 60 0 935 1004 962 1252 2916 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 <b>Method</b> ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 0 61 <1 939 1081 941 1125 2936 <u>current</u> 13 6	1 0 59 <1 911 1004 981 1211 2929 history1 3 4	<1 0 60 0 935 1004 962 1252 2916 history2 3 3 31
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	0 0 61 <1 939 1081 941 1125 2936 current 13 6 <1	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4	<1 0 60 0 935 1004 962 1252 2916 history2 3 3 31 33
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	0 0 61 <1 939 1081 941 1125 2936 <u>current</u> 13 6 <1 <u>current</u>	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4 4	<1 0 60 0 935 1004 962 1252 2916 history2 3 31 33 33 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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	0 0 61 <1 939 1081 941 1125 2936 <u>current</u> 13 6 <1 <u>current</u> 0.3	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4 4 history1 0.2	<1 0 60 0 935 1004 962 1252 2916 history2 3 31 33 31 33 history2 0.9
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 <b>TS</b> ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	0 0 61 <1 939 1081 941 1125 2936 <i>current</i> 13 6 <1 <i>current</i> 0.3 8.7	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4 4 history1 0.2 7.0	<1 0 60 0 935 1004 962 1252 2916 history2 3 3 31 33 31 33 history2 0.9 7.0
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 2060 225 20 225 20 <b>imit/base</b> >20 <b>imit/base</b> >20	0 0 61 <1 939 1081 941 1125 2936 Current 13 6 <1 Current 0.3 8.7 20.0 Current	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4 4 history1 0.2 7.0 18.4 history1	<1 0 60 0 935 1004 962 1252 2916 history2 3 3 31 33 history2 0.9 7.0 19.2 history2
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 <b>TS</b> ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	0 0 61 <1 939 1081 941 1125 2936 <u>current</u> 13 6 <1 <u>current</u> 0.3 8.7 20.0	1 0 59 <1 911 1004 981 1211 2929 history1 3 4 4 4 history1 0.2 7.0 18.4	<1 0 60 0 935 1004 962 1252 2916 history2 3 3 31 33 31 33 history2 0.9 7.0 19.2



# **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	13.7	13.8	13.6
GRAPHS						

Ferrous Alloys

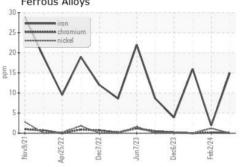
Non-ferrous Metals

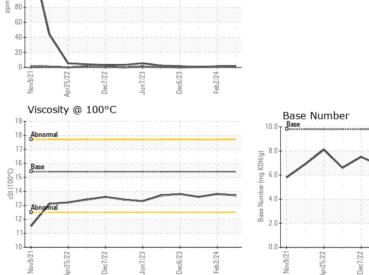
lead

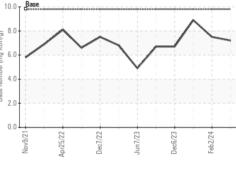
160

140

120







Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 893 - OK East Hauling Sample No. : GFL0118491 2100 Lilly Street Received : 12 Apr 2024 Lab Number : 06148031 Tested : 15 Apr 2024 Seminole, OK US 74868 Unique Number : 10978109 Diagnosed : 15 Apr 2024 - Wes Davis Test Package : FLEET Contact: Roger Barlow Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. rbarlow@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (405)204-6183 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Contact/Location: Roger Barlow - GFL893