

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

^{Machine Id} 225045-630227

Component Diesel Engine

Fluid 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

All component wear rates are normal.

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.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105157	GFL0090161	GFL0051324
Sample Date		Client Info		20 Dec 2023	04 Oct 2023	22 Mar 2023
Machine Age	hrs	Client Info		3363	3342	3066
Oil Age	hrs	Client Info		150	150	3066
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	SEVERE	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	<1	25	8
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	3
Aluminum	ppm	ASTM D5185m	>20	<1	5	1
Lead	ppm	ASTM D5185m	>40	0	<1	2
Copper	ppm	ASTM D5185m	>330	<1	2	4
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
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ADDITIVES		methoa	limit/base	current	history1	nistory2
Boron	ppm	ASTM D5185m	0	o current	history1 7	60
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0 0	0 0	history1 7 0	60 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 54	7 0 51	60 0 137
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 54 0	7 0 51 <1	60 0 137 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 54 0 931	7 0 51 <1 800	60 0 137 1 747
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	0 0 54 0 931 971	nistory1 7 0 51 <1 800 875	60 0 137 1 747 963
ADDITIVES 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 54 0 931 971 1035	nistory1 7 0 51 <1 800 875 891	60 0 137 1 747 963 865
ADDITIVES 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 0 1010 1070 1150 1270 2060	Current 0 0 54 0 931 971 1035 1221 2105	nistory1 7 0 51 <1 800 875 891 1067 2852	nistory2 60 0 137 1 747 963 865 1064 2990
ADDITIVES 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 54 0 931 971 1035 1221 3105	Allow 7 0 51 <1 800 875 891 1067 2852	60 0 137 1 747 963 865 1064 2990
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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 MSTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	Current 0 0 54 0 931 971 1035 1221 3105 current	nistory1 7 0 51 <1 800 875 891 1067 2852 history1	60 0 137 1 747 963 865 1064 2990 history2
ADDITIVES 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 Method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 0 54 0 931 971 1035 1221 3105 current 4	7 0 51 <1 800 875 891 1067 2852 history1 9 22	History2 60 0 137 1 747 963 865 1064 2990 history2 7
ADDITIVES 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	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 0 54 0 931 971 1035 1221 3105 current 4 1 2	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 C	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 -20	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 2.5	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5	nistory2 60 0 137 1 747 963 865 1064 2990 history2 7 1021 29 1021
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >20 >20	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5	7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5	Anistory2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <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 TS ppm ppm ppm %	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 >20 >20 20.	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5 current	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 • 11.5 history1	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <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 TS ppm ppm %	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Vinit/base >20 >20 >2.0 Vinit/base >3	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5 current 0.1	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5 history1 0.8	History2 60 0 137 1 747 963 865 1064 2990 history2 7 1021 29 <1.0 history2 0.1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	Imethod ASTM D5185m ASTM D7824 *ASTM D7844 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20 >3 >20	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.55 current 0.1 4.4	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5 history1 0.8 7.5	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <1.0 history2 0.1 12.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 >20 >2.0 <i>limit/base</i> >3 >20 >30	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5 current 0.1 4.4 17.7	Nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5 history1 0.8 7.5 19.6	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <1.0 history2 0.1 12.3 11.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm % % Abs/cm Abs/cm	Method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >20 >20 >20 >20 33 >20 >30 <i>limit/base</i>	current 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5 current 0.1 4.4 17.7 current	nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 ● 11.5 history1 0.8 7.5 19.6	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <1.0 history2 0.1 12.3 11.5 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Imethod ASTM D5185m ASTM D7624 *ASTM D7415 method *ASTM D7414	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >20 >20 >30 limit/base >30 limit/base	0 0 54 0 931 971 1035 1221 3105 current 4 1 0 0.5 current 4.4 17.7 current 13.0	Nistory1 7 0 51 <1 800 875 891 1067 2852 history1 9 36 6 11.5 history1 0.8 7.5 19.6 history1 15.0	History2 60 0 137 1 747 963 865 1064 2990 history2 7 ▲ 1021 ▲ 29 <1.0 history2 0.1 12.3 11.5 history2 16.2



OIL ANALYSIS REPORT



\sim	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
t20/22	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
0c De	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	14.5	• 10.0	14.8
	GRAPHS						
	Ferrous Alloys						
0dd20/22 Mai(22/23 0dd/23 0dd/23 0dd/23	20 15 10 10 10 10 10 10 10 10 10 10	0et20/22	Mar22/23	Dec20/23			
	Viscosity @ 100°C				Base Number		
	18 - Abnormal			30.0			
				25.0 ©			
	© 15	1	_	······ 호 20.0			
	0 <u>0</u> 14 <i>5</i> 12		$\mathbf{\lambda}$	ja 15.0			· \
	12		$\langle \rangle$	10.0	Base		
	11			5.0			-
	9			0.0			
	r25/20 an5/21 121/22	t20/22	r22/23 ct4/23	s20/23	r25/20 an5/21	121/22	ct4/23 :20/23
	Ma Ju Ju	00	Ma	Dei	Ma	Ju Mai	Dec
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, of * - Denotes test methods that a Statements of conformity to spec	: WearCheck USA - 5 : GFL0105157 : 06042868 : 10803476 : FLEET (Additional contact Customer Servi are outside of the ISO 1. ifications are based on the	i01 Madia Recieved Diagnost Diagnost Tests: Pe ice at 1-8 7025 sco he simple	son Ave., Ca d : 22 I ed : 27 I itician : We ercentFuel) 200-237-1369 pe of accred acceptance of	ry, NC 27513 Dec 2023 Dec 2023 s Davis Davis Davis Davis decision rule (J	GFL Env JCGM 106:2012	vironmental - 821 - 339 Contact: La landen.johnso T: ')	Ozarks Hauling 24 Olath Drive Lebanon, MO US 65536 unden Johnson n@gflenv.com (417)664-0010 F: