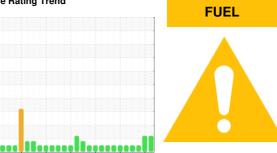


OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id
701021
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (22 LTR)

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

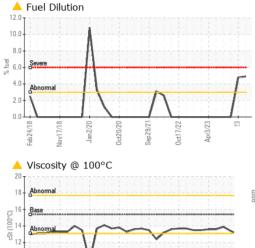
▲ Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.

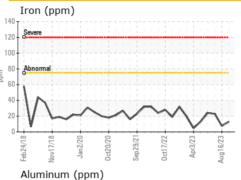
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088950	GFL0088937	GFL0088923
Sample Date		Client Info		27 Sep 2023	16 Aug 2023	24 Jul 2023
Machine Age	hrs	Client Info		18135	17529	17343
Oil Age	hrs	Client Info		606	186	572
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	ABNORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>75	13	8	23
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Nickel	ppm	ASTM D5185(m)	>4	0	0	<1
Titanium	ppm	ASTM D5185(m)	>2	0	<1	<1
Silver	ppm	ASTM D5185(m)	>2	<1	0	0
Aluminum	ppm	ASTM D5185(m)	>15	9	10	18
Lead	ppm	ASTM D5185(m)	>25	0	0	0
Copper	ppm	ASTM D5185(m)	>100	<1	<1	1
Tin	ppm	ASTM D5185(m)	>4	0	0	0
Antimony	ppm	ASTM D5185(m)		0	0	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base	current 4	history1	history2
	ppm ppm	ASTM D5185(m)				
Boron		ASTM D5185(m)	0	4	5	3
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	0	4 <1	5	3
Boron Barium Molybdenum	ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60	4 <1 58	5 0 55	3 0 57
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0	4 <1 58 0	5 0 55 <1	3 0 57 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60 0 1010	4 <1 58 0 915	5 0 55 <1 906	3 0 57 <1 926
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070	4 <1 58 0 915 1013	5 0 55 <1 906 992	3 0 57 <1 926 998
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150	4 <1 58 0 915 1013 958	5 0 55 <1 906 992 1014	3 0 57 <1 926 998 1010
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270	4 <1 58 0 915 1013 958 1147	5 0 55 <1 906 992 1014 1117	3 0 57 <1 926 998 1010 1136
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270	4 <1 58 0 915 1013 958 1147 2406	5 0 55 <1 906 992 1014 1117 2495	3 0 57 <1 926 998 1010 1136 2395
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	4 <1 58 0 915 1013 958 1147 2406 <1	5 0 55 <1 906 992 1014 1117 2495	3 0 57 <1 926 998 1010 1136 2395 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) method ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	4 <1 58 0 915 1013 958 1147 2406 <1 current	5 0 55 <1 906 992 1014 1117 2495 <1 history1	3 0 57 <1 926 998 1010 1136 2395 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	4 <1 58 0 915 1013 958 1147 2406 <1 current	5 0 55 <1 906 992 1014 1117 2495 <1	3 0 57 <1 926 998 1010 1136 2395 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) method ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	4 <1 58 0 915 1013 958 1147 2406 <1 current 4	5 0 55 <1 906 992 1014 1117 2495 <1 history1	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17 4.9 current	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4 19 ▲ 4.8 history1	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185(m) ASTM D7593* method ASTM D77844*	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17 ▲ 4.9 current 0.3	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4 19 ▲ 4.8 history1 0.1	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35 <1.0 history2 0.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185(m) ASTM D7844* ASTM D7624*	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17 ▲ 4.9 current 0.3 9.8	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4 19 4.8 history1 0.1 7.4	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35 <1.0 history2 0.5 10.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593* ASTM D7844* ASTM D7624* ASTM D7624*	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20 >30	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17 ▲ 4.9 current 0.3 9.8 20.3	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4 19 ▲ 4.8 history1 0.1 7.4 19.5	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35 <1.0 history2 0.5 10.3 20.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593* ASTM D7844* ASTM D7624* ASTM D7624*	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	4 <1 58 0 915 1013 958 1147 2406 <1 current 4 6 17 ▲ 4.9 current 0.3 9.8	5 0 55 <1 906 992 1014 1117 2495 <1 history1 3 4 19 4.8 history1 0.1 7.4	3 0 57 <1 926 998 1010 1136 2395 <1 history2 6 7 35 <1.0 history2 0.5 10.3

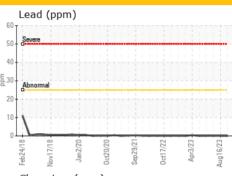


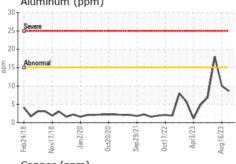
OIL ANALYSIS REPORT

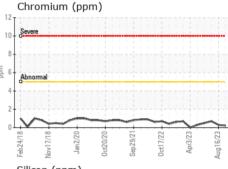


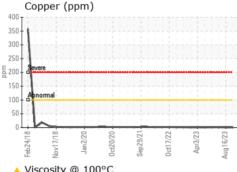
VISUAL		method	limit/base	current	history1	history2	
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG	
Free Water	scalar	Visual*		NEG	NEG	NEG	
FLUID PROPERTIES		method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D7279(m)	15.4	<u> </u>	△ 13.0	13.4	
GRAPHS							
Iron (nnm)	Load (nnm)						

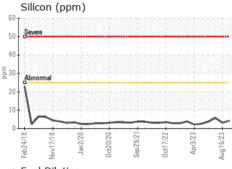


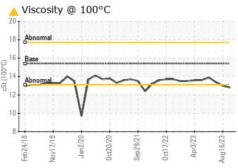


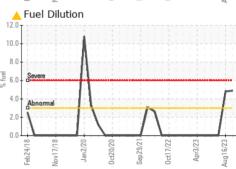














CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number **Unique Number**

: GFL0088950 : 02585712 : 5646777

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received

: 28 Sep 2023 Diagnosed : 02 Oct 2023 Diagnostician : Wes Davis

Test Package : MOB 1 (Additional Tests: PercentFuel) To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

GFL Environmental - 216

15 Bermondsey Road, Building B Toronto, ON CA M4B 1Y9

Contact: Tom Hatzioannidis thatzioannidis@gflenv.com T: (416)678-9340