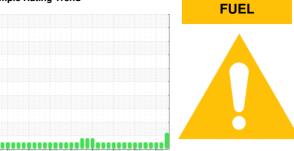


OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id
4479
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (40 LTR)

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

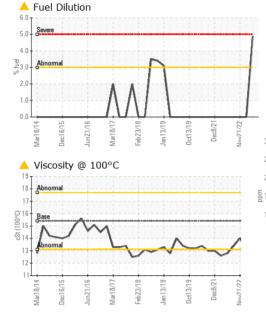
Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

		sr2014 Dec201	5 Jun 2016 Mar 2017 Feb	Ž018 JanŽ019 OctŽ019 DecŽ021		
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088934	GFL0074262	GFL0061084
Sample Date		Client Info		20 Aug 2023	16 Mar 2023	21 Nov 2022
Machine Age	hrs	Client Info		0	42291	40890
Oil Age	hrs	Client Info		0	1411	10
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				ABNORMAL	NORMAL	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)	>120	18	9	3
Chromium	ppm	ASTM D5185(m)	>20	<1	<1	0
Nickel	ppm	ASTM D5185(m)	>5	<1	0	0
Titanium	ppm	ASTM D5185(m)	>2	0	0	0
Silver	ppm	ASTM D5185(m)	>2	0	0	0
Aluminum	ppm	ASTM D5185(m)	>20	<1	<1	<1
Lead	ppm	ASTM D5185(m)	>40	2	<1	<1
Copper	ppm	ASTM D5185(m)	>330	3	2	2
Tin	ppm	ASTM D5185(m)	>15	0	0	0
Antimony	ppm	ASTM D5185(m)		0	0	0
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					
Boron		ASTM D5185(m)	0	4	5	6
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	0	4 0	5	6
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 60	4 0 58	5 0 56	6 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 0 58 <1	5 0 56 <1	6 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) ASTM D5185(m)	0 0 60 0 1010	4 0 58 <1 930	5 0 56 <1 915	6 0 57 <1 931
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070	4 0 58 <1 930 998	5 0 56 <1 915 1017	6 0 57 <1 931 1020
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150	4 0 58 <1 930 998 1015	5 0 56 <1 915 1017 1038	6 0 57 <1 931 1020 1053
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 0 58 <1 930 998 1015 1123	5 0 56 <1 915 1017 1038 1100	6 0 57 <1 931 1020 1053 1133
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 0 58 <1 930 998 1015 1123 2465	5 0 56 <1 915 1017 1038 1100 2538	6 0 57 <1 931 1020 1053 1133 2629
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 0 58 <1 930 998 1015 1123 2465 <1	5 0 56 <1 915 1017 1038 1100 2538 <1	6 0 57 <1 931 1020 1053 1133 2629 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060	4 0 58 <1 930 998 1015 1123 2465 <1	5 0 56 <1 915 1017 1038 1100 2538	6 0 57 <1 931 1020 1053 1133 2629 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm 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 0 58 <1 930 998 1015 1123 2465 <1 current	5 0 56 <1 915 1017 1038 1100 2538 <1 history1	6 0 57 <1 931 1020 1053 1133 2629 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 58 <1 930 998 1015 1123 2465 <1 current 5	5 0 56 <1 915 1017 1038 1100 2538 <1 history1	6 0 57 <1 931 1020 1053 1133 2629 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1 0 4.9 current	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1 <1 <1.0	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2 0 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* method ASTM D78444	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1 0 ▲ 4.9 current	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1 <1 <1.0 history1 0.6	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2 0 <1.0 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1 0 4.9 current	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1 <1 <1.0	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2 0 <1.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593* method ASTM D7844* ASTM D7624* ASTM D7624*	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20 >30	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1 0 ▲ 4.9 current 1 6.9 20.0	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1 <1 <1.0 history1 0.6 6.5 21.6	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2 0 <1.0 history2 0 4.9 18.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593* method ASTM D7844* ASTM D7624* ASTM D7624*	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base	4 0 58 <1 930 998 1015 1123 2465 <1 current 5 1 0 4.9 current 1 6.9	5 0 56 <1 915 1017 1038 1100 2538 <1 history1 3 1 <1 <1.0 history1 0.6 6.5	6 0 57 <1 931 1020 1053 1133 2629 <1 history2 3 2 0 <1.0 history2 0 4.9



OIL ANALYSIS REPORT



VIOLIAL			11 17 17			
VISUAL		method	limit/base	current	history1	history2
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPE		method	limit/base	current	history1	history2
/isc @ 100°C	cSt	ASTM D7279(m)	15.4	12.7	13.2	14.0
GRAPHS						
Iron (ppm)		100000000000000000000000000000000000000	90	Lead (ppm)		
Severe			80			
			70			
Abnormal			E 50	Abnormal		
			30			
			20 10			
\$ \frac{1}{2} \fra	8 6	- 12 - 12	0	4 5 9	18	19
Mar18/14 Dec16/15 Jun21/16 Mar18/17	Feb23/18 Jan13/19	Oct13/19 Dec8/21	Nov21/22	Mar18/14 Dec16/15 Jun21/16	Mar18/17 Feb23/18 Jan13/19	Oct13/19 Dec8/21
Aluminum (ppm)				Chromium (opm)	
Severe			45	C		
			35 30			
			E 25			
Abnormal			15			
			10	+		
			5			
Mar18/14 Dec16/15 Jun21/16 Mar18/17	Feb23/18 Jan13/19	Oct13/19 Dec8/21	Nov21/22	Mar18/14 Dec16/15 Jun21/16	Mar18/17 Feb23/18 Jan13/19	Oct13/19 Dec8/21
, _	Ja Fe	00	N	Silicon (ppm)		00 N
Copper (ppm)		10001000100	80) 	
Abnormal			70 60			
			50			
			E 40			
			30	- Automital		
			10			
715	81/1	3/21	0	715	7178	3/21-
Mar18/14 Dec16/15 Jun21/16 Mar18/17	Feb23/18 Jan13/19	Oct13/19 Dec8/21	Nov21/22	Mar18/14 Dec16/15 Jun21/16	Mar18/17 Feb23/18 Jan13/19	Oct13/19 Dec8/21 Nov21/22
Viscosity @ 100°	С			Fuel Dilution		

5.0 4.0

2.0

0.0

: 21 Aug 2023

: 22 Aug 2023



CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number : 5630152

12

: GFL0088934 : 02577092

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

Diagnostician : Wes Davis **Test Package**: MOB 1 (Additional Tests: FuelDilution, 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 Toronto, ON CA M4B 0A6

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