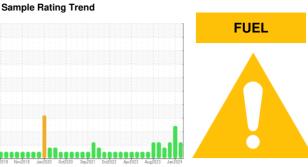


OIL ANALYSIS REPORT

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Machine Id
701021
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (22 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

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.

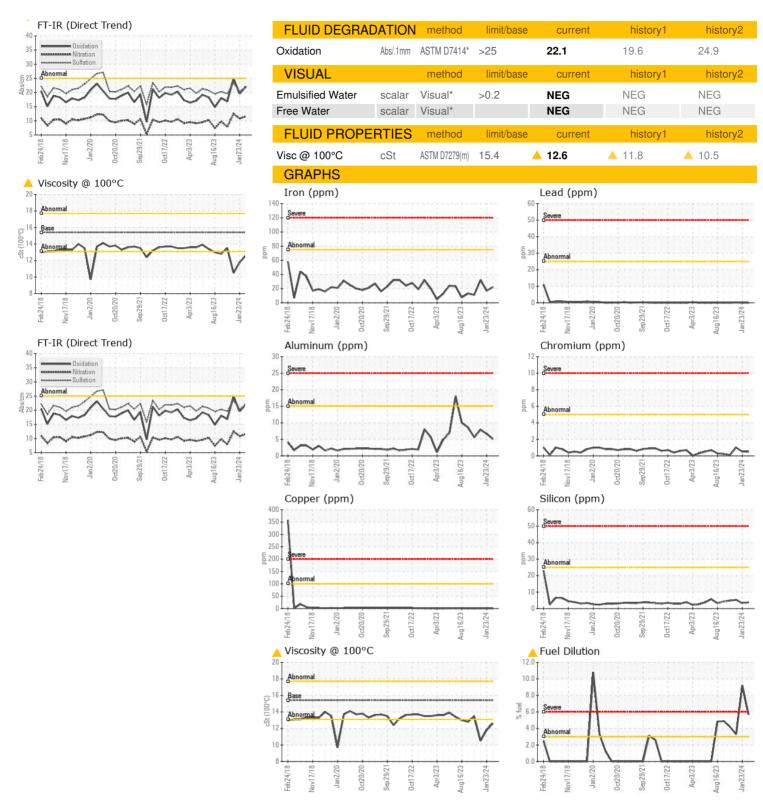
Fluid Condition

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

Sample Date	N SHP 15W40 (2	Z LIN)	b2018 Nov20	18 Jan 2020 Oct2020 S	iep2021 Oct2022 Apr2023 Aug20	23 Jdll2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0061142	GFL0097587	GFL0097532
Dil Age	Sample Date		Client Info		09 Jun 2024	23 Jan 2024	10 Dec 2023
Contamination	Machine Age	hrs	Client Info		0	19772	0
ABNORMAL SEVERE ABNORMAL SEVERE ABNORMAL	Oil Age	hrs	Client Info		0	427	0
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG NEG Silycol WC Method NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM 05185(m) >75 22 17 32 Chromium ppm ASTM 05185(m) >4 0 <1	Oil Changed		Client Info		N/A	Changed	N/A
Water WC Method >0.2 NEG NEG NEG Biglycol WC Method Ilmit/base current history1 history2 WEAR METALS method limit/base current history1 history2 ron ppm ASTM 05185(m) >75 22 17 32 Chromium ppm ASTM 05185(m) >4 0 <1 <1 Vickel ppm ASTM 05185(m) >4 0 <1 <1 Silver ppm ASTM 05185(m) >2 <1 0 <1 Aluminum ppm ASTM 05185(m) >2 0 0 <1 Lead ppm ASTM 05185(m) >25 0 0 <1 Lead ppm ASTM 05185(m) >25 0 0 <1 Copper ppm ASTM 05185(m) 0 0 0 0 Copper ppm ASTM 05185(m) 0 0 0	Sample Status				ABNORMAL	SEVERE	ABNORMAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Water			>0.2	NEG		NEG
Port Port	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185(m) >4 0 <1 <1 <1 <1 <1 <1 <1	Iron	ppm	ASTM D5185(m)	>75	22	17	32
Description	Chromium	ppm	ASTM D5185(m)	>5	<1	<1	1
Saliver	Nickel	ppm	ASTM D5185(m)	>4	0	<1	<1
Aluminum ppm ASTM D5185(m) >15 5 7 8 Lead ppm ASTM D5185(m) >25 0 0 <1 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 0 Vanadium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Barium ppm ASTM D5185(m) 0 0 0 ADDITIVES method 56 53 52 Wanganese ppm ASTM D5185(m) 0 <1 0 Walganesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Sodium ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Euel % ASTM D5185(m) >20 8 11 13 INFRA-RED method limit/base current history1 history2 Soot % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Titanium	ppm	ASTM D5185(m)	>2	<1	0	0
Lead ppm ASTM D5185(m) >25 0 0 <1 Copper ppm ASTM D5185(m) >100 <1 <1 <1 Fin ppm ASTM D5185(m) >4 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 4 3 4 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 4 3 4 ADDITIVES method limit/base current history1	Silver	ppm	ASTM D5185(m)	>2	0	0	<1
Copper ppm ASTM D5185(m) > 100 <1 <1 <1 Fin ppm ASTM D5185(m) > 4 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Boron ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 Boron ppm ASTM D5185(m) 0 0 0 0 Boron ppm ASTM D5185(m) 0 </td <td>Aluminum</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>>15</td> <th>5</th> <td>7</td> <td>8</td>	Aluminum	ppm	ASTM D5185(m)	>15	5	7	8
Fin	Lead	ppm	ASTM D5185(m)	>25	0	0	<1
Antimony ppm ASTM D5185(m) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Copper	ppm	ASTM D5185(m)	>100	<1	<1	<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 Boron ppm ASTM D5185(m) 0 4 3 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 0 0 0 Manganese ppm ASTM D5185(m) 0 <1 0 0 Magnesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) <1 <1 <1 <t< td=""><td>Tin</td><td>ppm</td><td>ASTM D5185(m)</td><td>>4</td><th>0</th><td>0</td><td>0</td></t<>	Tin	ppm	ASTM D5185(m)	>4	0	0	0
Beryllium	Antimony	ppm	ASTM D5185(m)		0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 4 3 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 56 53 52 Manganese ppm ASTM D5185(m) 0 <1 0 0 Magnesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Silicon ppm ASTM D5185(m) >225	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES	Beryllium	ppm	ASTM D5185(m)		0	0	0
Soron ppm ASTM D5185(m) 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 60 56 53 52 Manganese ppm ASTM D5185(m) 0 <1 0 0 Magnesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) >25 4 3 5 Collicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7	Boron	ppm	ASTM D5185(m)	0	4	3	4
Manganese ppm ASTM D5185(m) 0 <1 0 0 Magnesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 9.2 3.3 INFRA-RED method limit/b	Barium	ppm	ASTM D5185(m)	0	0	0	0
Magnesium ppm ASTM D5185(m) 1010 908 847 798 Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) 2060 2315 2402 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 4 9.2 3.3 INFRA-RED method limit/base current history1 history2 Soot % %	Molybdenum	ppm	ASTM D5185(m)	60	56	53	52
Calcium ppm ASTM D5185(m) 1070 984 922 889 Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)	0	<1	0	0
Phosphorus ppm ASTM D5185(m) 1150 923 909 837 Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) < 1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 9.2 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Magnesium	ppm	ASTM D5185(m)	1010	908	847	798
Zinc ppm ASTM D5185(m) 1270 1114 1031 1001 Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >25 4 3 5 Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 9.2 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Calcium	ppm	ASTM D5185(m)	1070	984	922	889
Sulfur ppm ASTM D5185(m) 2060 2315 2402 2054 Lithium ppm ASTM D5185(m) 2060 2315 2402 2054 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 9.2 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Phosphorus	ppm	ASTM D5185(m)	1150	923	909	837
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) 6 5 8 Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 ▲ 9.2 ▲ 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Zinc	ppm	ASTM D5185(m)	1270	1114	1031	1001
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) 6 5 8 Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 ▲ 9.2 ▲ 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Sulfur	ppm	ASTM D5185(m)	2060	2315	2402	2054
Soliticon ppm ASTM D5185(m) >25 4 3 5 Sodium ppm ASTM D5185(m) 6 5 8 Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 5.7 ▲ 9.2 ▲ 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) 6 5 8 Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 ▲ 5.7 ▲ 9.2 ▲ 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 8 11 13 Fuel % ASTM D7593* >3.0 ▲ 5.7 ▲ 9.2 ▲ 3.3 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Silicon	ppm	ASTM D5185(m)	>25	4	3	5
Fuel % ASTM D7593* >3.0	Sodium	ppm	ASTM D5185(m)		6	5	8
INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Potassium	ppm	ASTM D5185(m)	>20	8		13
Soot % % ASTM D7844* >6 0.5 0.3 0.6 Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Fuel	%	ASTM D7593*	>3.0	<u>\$ 5.7</u>	4 9.2	▲ 3.3
Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm ASTM D7624* >20 11.6 10.8 12.5	Soot %	%	ASTM D7844*	>6	0.5	0.3	0.6
	Nitration	Abs/cm	ASTM D7624*				
	Sulfation						



OIL ANALYSIS REPORT







Sample No. Unique Number : 5789853

Laboratory

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : GFL0061142 Lab Number : 02640691

Received **Tested**

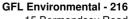
: 11 Jun 2024 Diagnosed : 11 Jun 2024 - Wes Davis

: 10 Jun 2024

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.



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