

OIL ANALYSIS REPORT

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Machine Id
814055
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the

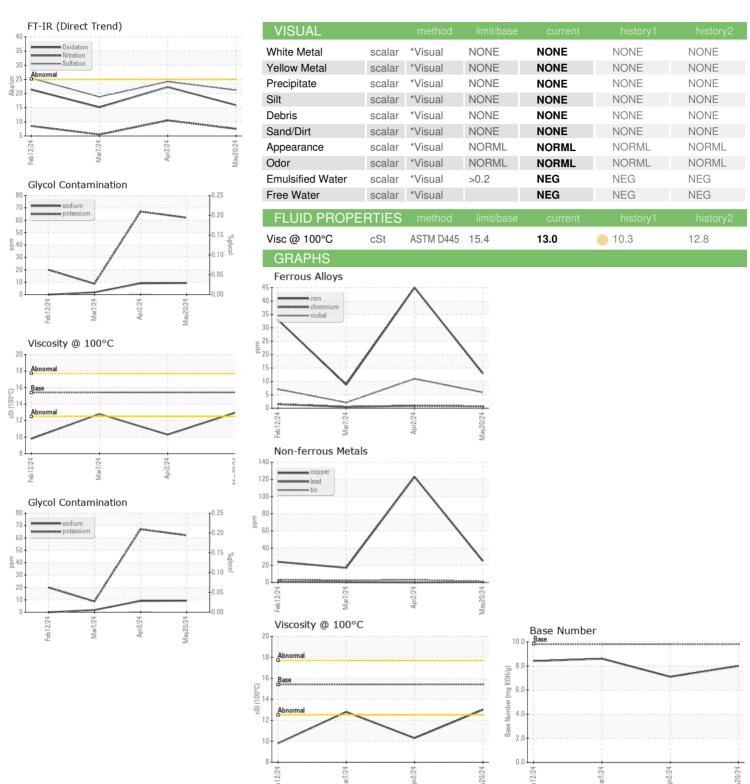
Fluid Condition

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

SAMPLE INFORMATION method limit/base current history1 history2	M 3HF 13W40 (GAL)					
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 874 612 466 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info Changed N/A Not Changd Sample Status NoRMAL ABNORMAL NoRMAL ABNORMAL NoRMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0099334	GFL0099258	GFL0099264
Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info Changed N/A Not Changed Sample Status NORMAL NORMAL ABNORMAL NORMAL CONTAMINATION method Imilibase current history1 history2 Fuel WC Method >3.0 <1.0	Sample Date		Client Info		20 May 2024	02 Apr 2024	07 Mar 2024
Oil Changed Sample Status Client Info Changed NORMAL N/A Not Changed NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 0.3 <1.0 Water WC Method >0.0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ASTM D5185m >12.0 13 45 9 Chromium ppm ASTM D5185m >2.0 <1	Machine Age	hrs	Client Info		874	612	466
CONTAMINATION	Oil Age	hrs	Client Info		0	0	0
Fuel	Oil Changed		Client Info		Changed	N/A	Not Changd
Fuel WC Method >0.2 NEG NEG NEG NEG	Sample Status				NORMAL	ABNORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 13 45 9 Chromium ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 13 45 9 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0	0.3	<1.0
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >5 6 ▲ 11 2 Titanium ppm ASTM D5185m >2 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 6 ▲ 11 2 Titanium ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>120	13	45	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 <1 0 0 Aluminum ppm ASTM D5185m >20 2 5 3 Lead ppm ASTM D5185m >40 <1 0 <1 Copper ppm ASTM D5185m >330 25 123 17 Tin ppm ASTM D5185m >15 1 3 2 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 146 60 Boron ppm ASTM D5185m 0 41 0 0 Molybdenum ppm ASTM D5185m 0 41 7 2 Magnesium ppm ASTM D5185m 1010 844 720	Nickel	ppm	ASTM D5185m	>5	6	<u> 11</u>	2
Aluminum ppm ASTM D5185m >20 2 5 3 Lead ppm ASTM D5185m >40 <1	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead ppm ASTM D5185m >40 <1 0 <1 Copper ppm ASTM D5185m >330 25 123 17 Tin ppm ASTM D5185m >15 1 3 2 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 18 146 60 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 146 60 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 7 2 Magnesium ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1270 1176	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5185m >330 25 123 17 Tin ppm ASTM D5185m >15 1 3 2 Vanadium ppm ASTM D5185m 0 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	2	5	3
Tin ppm ASTM D5185m >15 1 3 2 Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 41 0 0 Barium ppm ASTM D5185m 0 41 0 0 Molybdenum ppm ASTM D5185m 0 41 7 2 Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 344	Lead	ppm	ASTM D5185m	>40	<1	0	<1
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 146 60 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 60 69 115 73 Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current <	Copper	ppm	ASTM D5185m	>330	25	123	17
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 146 60 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 69 115 73 Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current	Tin	ppm	ASTM D5185m	>15	1	3	2
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 146 60 Barium ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 0 18 146 60 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 69 115 73 Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 62 67 9 Glycol "ASTM D5185m >20 <td>Cadmium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 69 115 73 Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 225 9 63 20 Sodium ppm ASTM D5185m 9 9 9 2 Potassium ppm ASTM D5185m 9 9 9 2 Glycol *aSTM D5185m >20	Boron	ppm	ASTM D5185m	0	18	146	60
Manganese ppm ASTM D5185m 0 1 7 2 Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 63 20 Sodium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *A	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium ppm ASTM D5185m 1010 844 720 873 Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m 9 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 NEG 0.0 NEG INFRA-RED method limit/bas	Molybdenum	ppm	ASTM D5185m	60	69	115	73
Calcium ppm ASTM D5185m 1070 1072 1545 1165 Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 225 9 63 20 Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.5 10.5	Manganese	ppm	ASTM D5185m	0	1	7	2
Phosphorus ppm ASTM D5185m 1150 1033 747 858 Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30	Magnesium	ppm	ASTM D5185m	1010	844	720	873
Zinc ppm ASTM D5185m 1270 1176 891 1135 Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D5185m >20 62 67 9 Glycol % *ASTM D78292 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 <t< td=""><td>Calcium</td><td>ppm</td><td>ASTM D5185m</td><td>1070</td><th>1072</th><td>1545</td><td>1165</td></t<>	Calcium	ppm	ASTM D5185m	1070	1072	1545	1165
Sulfur ppm ASTM D5185m 2060 3199 2817 3449 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15	Phosphorus	ppm	ASTM D5185m	1150	1033	747	858
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Zinc	ppm	ASTM D5185m	1270	1176	891	1135
Silicon ppm ASTM D5185m >25 9 63 20 Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Sulfur	ppm	ASTM D5185m	2060	3199	2817	3449
Sodium ppm ASTM D5185m 9 9 2 Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 62 67 9 Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Silicon	ppm	ASTM D5185m	>25	9	△ 63	20
Glycol % *ASTM D2982 NEG 0.0 NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Sodium	ppm	ASTM D5185m		9	9	2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Potassium	ppm	ASTM D5185m	>20	62	67	9
Soot % % *ASTM D7844 >4 0.4 0.6 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Glycol	%	*ASTM D2982		NEG	0.0	NEG
Nitration Abs/cm *ASTM D7624 >20 7.5 10.5 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.2 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Soot %	%	*ASTM D7844	>4	0.4	0.6	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Nitration	Abs/cm	*ASTM D7624	>20	7.5	10.5	5.5
Oxidation Abs/.1mm *ASTM D7414 >25 15.9 22.3 15.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	24.2	18.8
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.9	22.3	15.1



OIL ANALYSIS REPORT







Certificate 12367

Laboratory Sample No.

: GFL0099334 Lab Number : 06190000 Unique Number : 11046752

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 23 May 2024 **Tested**

: 31 May 2024 Diagnosed Test Package : FLEET (Additional Tests: Glycol)

: 31 May 2024 - Sean Felton

US 42445 Contact: ROBERT THIBAULT robert.thibault@gflenv.com T: (931)237-6045

10129 Highway 62 West

GFL Environmental - 844 - Princeton Hauling

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Princeton, KY