

OIL ANALYSIS REPORT

(BB29494) Machine Id 370M

Component
Diesel Engine

PETRO CANADA DURON SHP 15W40 (36 QTS)

Sample Rating Trend New2023 New2023 Jan2024 Jan2024



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

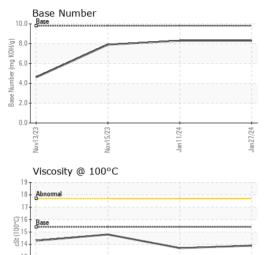
Fluid Condition

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

Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0110048	GFL0110015	GFL0059242
Oil Age hrs Client Info 600 600 17122 Oil Changed Changed Changed Not Changed 1.0<	Sample Date		Client Info		27 Jan 2024	11 Jan 2024	15 Nov 2023
Oil Changed Sample Status Client Info NORMAL NO	Machine Age	hrs	Client Info		17563	17421	17122
Sample Status	Oil Age	hrs	Client Info		600	600	17122
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Oil Changed		Client Info		Changed	Changed	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >10 15 17 25 Chromium ppm ASTM D5185m >20 <1 <1 1 Nickel ppm ASTM D5185m >4 0 0 <1 0 0 Silver ppm ASTM D5185m >10 <	CONTAMINATI	ON	method	limit/base	current	history1	history2
Silycol WC Method NEG NEG NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	15	17	25
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Titanium	Nickel		ASTM D5185m	>4	0	0	<1
Silver	Titanium				<1	0	0
Lead ppm ASTM D5185m >40 <1	Silver		ASTM D5185m	>3	0	0	0
Lead ppm ASTM D5185m >40 <1	Aluminum	ppm	ASTM D5185m	>20	6	7	4
Copper ppm ASTM D5185m >330 2 0 0 Tin ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 2 3 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 49 55 61 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Lead			>40	<1	0	3
Tin ppm ASTM D5185m >15 <1	Copper		ASTM D5185m	>330	2	0	0
Vanadium ppm ASTM D5185m <1			ASTM D5185m	>15	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 2 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 49 55 61 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 840 882 986 Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3	Vanadium		ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 0 <1	Cadmium		ASTM D5185m		0		0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 49 55 61 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 840 882 986 Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1150 933 1050 1101 Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base </th <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 49 55 61 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 840 882 986 Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1150 933 1050 1101 Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base </th <th>Boron</th> <th>ppm</th> <th>ASTM D5185m</th> <th>0</th> <th><1</th> <th>2</th> <th>3</th>	Boron	ppm	ASTM D5185m	0	<1	2	3
Molybdenum ppm ASTM D5185m 60 49 55 61 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 840 882 986 Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1150 933 1050 1101 Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 <	Barium		ASTM D5185m	0	0	0	0
Manganese ppm ASTM D5185m 0 <1	Molybdenum		ASTM D5185m	60	49	55	61
Magnesium ppm ASTM D5185m 1010 840 882 986 Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1150 933 1050 1101 Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0	Manganese		ASTM D5185m	0	<1	<1	<1
Calcium ppm ASTM D5185m 1070 904 960 1117 Phosphorus ppm ASTM D5185m 1150 933 1050 1101 Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0	Magnesium		ASTM D5185m	1010	840	882	986
Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 2 Potassium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	Calcium		ASTM D5185m	1070	904	960	1117
Zinc ppm ASTM D5185m 1270 1118 1222 1347 Sulfur ppm ASTM D5185m 2060 2582 2977 3067 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	Phosphorus	ppm	ASTM D5185m	1150	933	1050	1101
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m 10 2 2 Potassium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	Zinc	ppm	ASTM D5185m	1270	1118	1222	1347
Silicon ppm ASTM D5185m >25 6 6 7 Sodium ppm ASTM D5185m 10 2 2 Potassium ppm ASTM D5185m >20 3 2 <1	Sulfur	ppm	ASTM D5185m	2060	2582	2977	3067
Sodium ppm ASTM D5185m 10 2 2 Potassium ppm ASTM D5185m >20 3 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 2 <1	Silicon	ppm	ASTM D5185m	>25	6	6	7
Potassium ppm ASTM D5185m >20 3 2 <1	Sodium	ppm	ASTM D5185m		10	2	2
Soot % *ASTM D7844 >3 0.6 0.7 0.4 Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	3	2	<1
Nitration Abs/cm *ASTM D7624 >20 8.2 8.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2	Soot %	%	*ASTM D7844	>3	0.6	0.7	0.4
Sulfation Abs/.1mm *ASTM D7415 >30 19.4 20.0 21.0 FLUID DEGRADATION method limit/base current history1 history2				. 20	0.0		0.7
	Nitration	Abs/cm	*ASTM D7624	>20	0.2	0.0	5.7
Ovidation							
Oxidation App. 111111 April 1014 725 13.7 13.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.4	20.0	
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.3 8.3 7.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.4	20.0	21.0



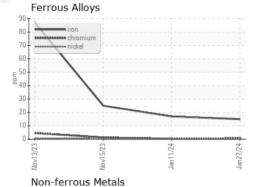
OIL ANALYSIS REPORT

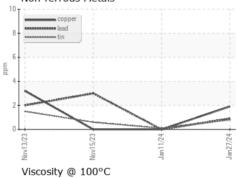


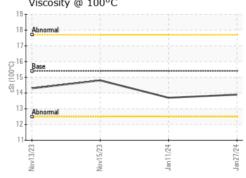
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

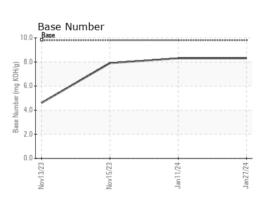
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Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.7	14.8

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

: 06076543 Unique Number : 10858634

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0110048 Recieved : 01 Feb 2024 Diagnosed : 01 Feb 2024

Diagnostician : Wes Davis

39000 Van Born Rd Wayne, MI

GFL Environmental - 410 - Michigan West

US 48184 Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

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

* - 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)