

OIL ANALYSIS REPORT

(H904550) Machine Id 2683

Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (10 GAL)

#2018 Jasz2019 Fes2020 Aug2020 Mar2021 Aug2021 Jan2022 Dec2022

Sample Rating Trend



DIAGNOSIS

Recommendation

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

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

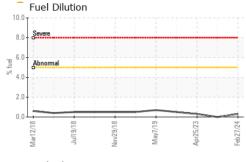
Fluid Condition

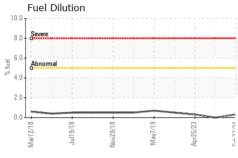
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

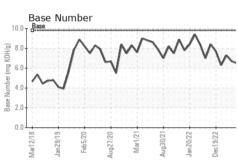
· <i>)</i>		ir2018 Jan20	19 Feb2020 Aug2020	Mar2021 Aug2021 Jan2022 I	Dec2022	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0099749	GFL0073290	GFL0073357
Sample Date		Client Info		27 Feb 2024	08 Nov 2023	07 Aug 2023
Machine Age	hrs	Client Info		600	600	600
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	0.0	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	11	32	13
Chromium	ppm	ASTM D5185m	>4	<1	2	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	8	3	<1
Lead	ppm	ASTM D5185m	>45	<1	30	0
Copper	ppm	ASTM D5185m	>85	<1	4	4
Tin	ppm	ASTM D5185m	>4	<1	1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVEO		use a the a al	line it /le e e e		11.0	history
ADDITIVES						
Boron	ppm	ASTM D5185m		9	18	19
	ppm		0		·	
Boron		ASTM D5185m	0	9	18	19
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	9 0	18	19 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	9 0 65	18 0 110	19 0 75
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	9 0 65 <1	18 0 110 <1	19 0 75 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	9 0 65 <1 795	18 0 110 <1 905	19 0 75 <1 851
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	9 0 65 <1 795 948	18 0 110 <1 905 1164	19 0 75 <1 851 1057
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	9 0 65 <1 795 948 920	18 0 110 <1 905 1164 971	19 0 75 <1 851 1057 926
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	9 0 65 <1 795 948 920 1148	18 0 110 <1 905 1164 971 1233	19 0 75 <1 851 1057 926 1121
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	9 0 65 <1 795 948 920 1148 3002	18 0 110 <1 905 1164 971 1233 2816	19 0 75 <1 851 1057 926 1121 3435
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	9 0 65 <1 795 948 920 1148 3002	18 0 110 <1 905 1164 971 1233 2816 history1	19 0 75 <1 851 1057 926 1121 3435 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	9 0 65 <1 795 948 920 1148 3002 current	18 0 110 <1 905 1164 971 1233 2816 history1	19 0 75 <1 851 1057 926 1121 3435 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	9 0 65 <1 795 948 920 1148 3002 current 6	18 0 110 <1 905 1164 971 1233 2816 history1 10 224	19 0 75 <1 851 1057 926 1121 3435 history2 5 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	9 0 65 <1 795 948 920 1148 3002 current 6 3	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30 >20 >5	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >30 >5 limit/base	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3 current 0.2	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0 history1	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >30 >5 limit/base	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0 history1 2.3	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >30 >5 limit/base	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3 current 0.2 6.8	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0 history1 2.3 14.5	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0 history2 0.3 8.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 method	0 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >20 >5 limit/base >3 	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3 current 0.2 6.8 17.6 current	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0 history1 2.3 14.5 28.3 history1	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0 history2 0.3 8.1 18.5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D76185m ASTM D76184 *ASTM D76185m ASTM D76185	0 0 0 0 1010 1070 1150 1270 2060 limit/base >30 >5 limit/base >3 >20 >3 >20 >3	9 0 65 <1 795 948 920 1148 3002 current 6 3 1 0.3 current 0.2 6.8 17.6	18 0 110 <1 905 1164 971 1233 2816 history1 10 224 50 <1.0 history1 2.3 14.5 28.3	19 0 75 <1 851 1057 926 1121 3435 history2 5 3 2 <1.0 history2 0.3 8.1 18.5



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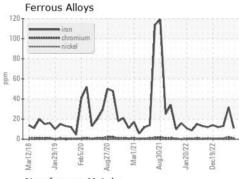


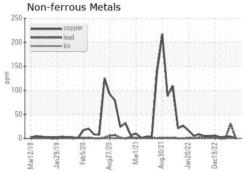


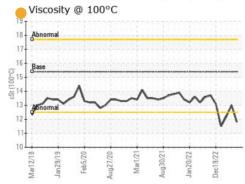
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

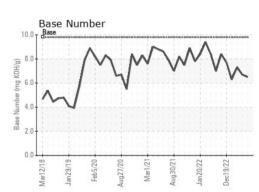
FLUID PROPI	ERHES					
Visc @ 100°C	cSt	ASTM D445	15.4	11.8	13.0	12.2

GRAPHS













Laboratory Sample No. Lab Number : 06104025 Unique Number: 10902255

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0099749

Received **Tested**

: 29 Feb 2024 Diagnosed

: 04 Mar 2024 : 04 Mar 2024 - Jonathan Hester

GFL Environmental - 102 - Morristown TN 415 Ryder Lane, PO Box 1894

Morristown, TN US 37813 Contact: Ricky Dunlap

T: (800)207-6618

ricky.dunlap@gflenv.com

Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel) 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)