

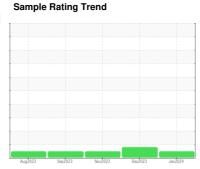
OIL ANALYSIS REPORT



(BD33498) 913018 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (33 QTS)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

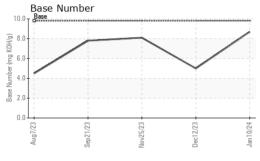
Fluid Condition

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

Sample Number Client Info GFL0110006 GFL0104227 GFL005928 Sample Date Client Info 10 Jan 2024 12 Dec 2023 25 Nov 2023 2	N 50P 15W40 (3	3 Q 13)	Aug2023	Sep 2023	Nov2023 Dec2023	Jan2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0110006	GFL0104227	GFL0059288
Machine Age hrs Client Info 3210 2840 2717			Client Info		10 Jan 2024	12 Dec 2023	25 Nov 2023
Oil Age hrs Client Info 3087 123 426 Oil Changed Sample Status Client Info Changed N/A N/A Changed Changed N/A N/A Changed Changed N/A N/A Changed Changed N/A N/A Changed Changed Changed N/A Changed Changed Changed N/A Changed Changed Changed Changed Changed N/A Changed Cha	•	hrs	Client Info			2840	2717
Oil Changed Sample Status Client Info Changed NORMAL N/A ABNORMAL ABNORMAL NORMAL Changed NORMAL ABNORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <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		hrs	Client Info		3087	123	426
NORMAL ABNORMAL NORMAL CONTAMINATION method limit/base current history1 history2	-		Client Info			N/A	Changed
Fuel WC Method >3.0	Sample Status				_		Ü
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 6 28 7 Chromium ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 1 <1 <1 Nickel ppm ASTM D5185m >5 0 ▲ 6 0 O <1 Nickel ppm ASTM D5185m >5 0 ▲ 6 0 O <1 O ASTM D5185m >2 0 <1 0 <1 0 <1 0 ASTM D5185m >20 1 1 4 4 <2 0 1 1 1 1 1 1 1 1 2 3 3 1 1 2 3 8 1 1 1 2 3 8 1 1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	6	28	7
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	0	<u>^</u> 6	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper ppm ASTM D5185m >330 <1 16 12 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	1	1	4
Tin	Lead	ppm	ASTM D5185m	>40	0	0	0
Vanadium ppm ASTM D5185m <1 0 <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 0 57 56 52 Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 968 912 800 Calcium ppm ASTM D5185m 1070 963 1006 969 Phosphorus ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>330	<1	16	12
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 0 <1	Tin	ppm	ASTM D5185m	>15	<1	1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 57 56 52 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 57 56 52 Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 968 912 800 Calcium ppm ASTM D5185m 1070 963 1006 969 Phosphorus ppm ASTM D5185m 1150 1065 938 901 Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % *6 **ASTM D7844 >4<	Boron	ppm	ASTM D5185m	0	1	2	3
Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 968 912 800 Calcium ppm ASTM D5185m 1070 963 1006 969 Phosphorus ppm ASTM D5185m 1150 1065 938 901 Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 968 912 800 Calcium ppm ASTM D5185m 1070 963 1006 969 Phosphorus ppm ASTM D5185m 1150 1065 938 901 Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	57	56	52
Calcium ppm ASTM D5185m 1070 963 1006 969 Phosphorus ppm ASTM D5185m 1150 1065 938 901 Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m >20 2 3 3 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	1	<1
Phosphorus ppm ASTM D5185m 1150 1065 938 901 Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method li	Magnesium	ppm	ASTM D5185m	1010	968	912	800
Zinc ppm ASTM D5185m 1270 1259 1244 1056 Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7	Calcium	ppm	ASTM D5185m	1070	963	1006	969
Sulfur ppm ASTM D5185m 2060 3146 2467 2648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Phosphorus	ppm	ASTM D5185m	1150	1065	938	901
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Zinc	ppm	ASTM D5185m	1270	1259	1244	1056
Silicon ppm ASTM D5185m >25 4 4 7 Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Sulfur	ppm	ASTM D5185m	2060	3146	2467	2648
Sodium ppm ASTM D5185m 3 6 4 Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Silicon	ppm	ASTM D5185m	>25	4	4	7
INFRA-RED	Sodium	ppm	ASTM D5185m		3	6	4
Soot % % *ASTM D7844 >4 0.2 0.9 0.2 Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Potassium	ppm	ASTM D5185m	>20	2	3	3
Nitration Abs/cm *ASTM D7624 >20 5.8 11.4 5.3 Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.2 23.7 18.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Soot %	%	*ASTM D7844	>4	0.2	0.9	0.2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Nitration	Abs/cm	*ASTM D7624	>20	5.8	11.4	5.3
Oxidation Abs/.1mm *ASTM D7414 >25 14.2 19.8 14.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.2	23.7	18.6
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.7 5.0 8.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	19.8	14.1
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.7	5.0	8.1



OIL ANALYSIS REPORT

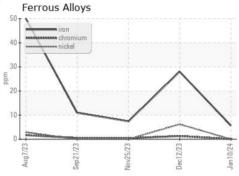


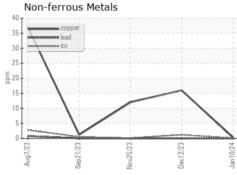
Viscosity	y @ 100°C			
18 - Abnormal				
016 - 10				
Base 0015				
3 14 - 13 - Abnormal				
12 -				
11 522	- 62/	2/23	- 62/23	
Aug7/23	Sep21/2;	Nov25/23	Decli	

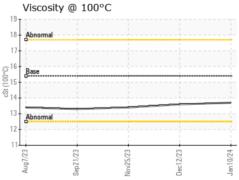
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

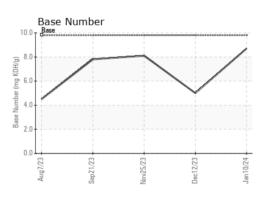
FLUID PROPE	RTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.6	13.4

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number

: 06064810 Unique Number : 10836192 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0110006 Recieved : 18 Jan 2024 Diagnosed

Diagnostician : Wes Davis

: 19 Jan 2024

GFL Environmental - 410 - Michigan West

39000 Van Born Rd Wayne, MI 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)