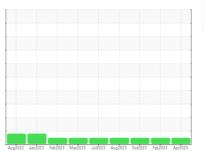


OIL ANALYSIS REPORT

Sample Rating Trend









Machine Id
912016
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (9 GAL)

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

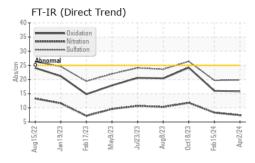
Fluid Condition

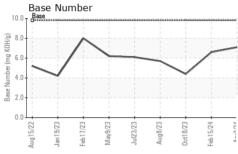
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

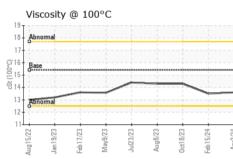
Sample Number Client Info GFL0115140 GFL0106710 GFL0097 Sample Date Client Info 02 Apr 2024 15 Feb 2024 18 Oct 20 Machine Age hrs Client Info 5813 5779 5427 5427 Oil Age hrs Client Info S813 5779 5427 Oil Age hrs Client Info S813 S779 5427 Oil Age hrs Client Info Changed Not Changed Not Changed Changed NormAL NOR	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 02 Apr 2024 15 Feb 2024 18 Oct 20 Machine Age hrs Client Info 5813 5779 5427							GFL0097704
Machine Age hrs Client Info 5813 5779 5427 Oil Age hrs Client Info 386 352 560 Oil Changed Client Info Changed Not Changd Changed Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 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 <th>·</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>18 Oct 2023</th>	·						18 Oct 2023
Oil Age hrs Client Info 386 352 560 Oil Changed Client Info Changed Not Changed Changed Changed Changed Changed Changed Changed Changed NoRMAL 1.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.1 4.0 2.0 4.1 4.1 4.0 4.0 4.0 4.0 4.0 4.0		hrs			•		
Oil Changed Sample Status Client Info Changed NORMAL Not Changed NORMAL Changed NoRG NEG NE							
CONTAMINATION	-						
CONTAMINATION method limit/base current history1 history1 Fuel WC Method >3.0 <1.0	-					Ŭ	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 14 20 54 Chromium ppm ASTM D5185m >20 <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
NEG NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 14 20 54 Chromium ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 2 2 Nickel ppm ASTM D5185m >5 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	14	20	54
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	2	2
Titanium	Nickel				<1	4	
Aluminum ppm ASTM D5185m >20 1 2 2 Lead ppm ASTM D5185m >40 <1	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead	Silver	ppm			0	<1	0
Lead	Aluminum		ASTM D5185m	>20	1	2	2
Copper ppm ASTM D5185m >330 9 19 5 Tin ppm ASTM D5185m >15 <1	Lead				<1	<1	3
Tin	Copper	• •	ASTM D5185m	>330	9	19	
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 2 6 2 Barium ppm ASTM D5185m 0 0 2 5 Molybdenum ppm ASTM D5185m 0 0 2 5 Molybdenum ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1070 1072 1496 1168 Phosphorus ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1					<1		
Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 2 6 2 Barium ppm ASTM D5185m 0 0 2 5 Molybdenum ppm ASTM D5185m 60 56 89 66 Manganese ppm ASTM D5185m 0 <1	Vanadium		ASTM D5185m		0	<1	0
Boron	Cadmium						<1
Barium ppm ASTM D5185m 0 0 2 5 Molybdenum ppm ASTM D5185m 60 56 89 66 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 89 66 Manganese ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1010 934 1334 955 Calcium ppm ASTM D5185m 1070 1072 1496 1168 Phosphorus ppm ASTM D5185m 1150 1031 1430 1076 Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m >20 0 4 3 Potassium ppm ASTM D5185m >20 0 4 3 INTERACED method	Boron	ppm	ASTM D5185m	0	2	6	2
Manganese ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1010 934 1334 955 Calcium ppm ASTM D5185m 1070 1072 1496 1168 Phosphorus ppm ASTM D5185m 1150 1031 1430 1076 Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	2	5
Magnesium ppm ASTM D5185m 1010 934 1334 955 Calcium ppm ASTM D5185m 1070 1072 1496 1168 Phosphorus ppm ASTM D5185m 1150 1031 1430 1076 Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 20 0 4 3 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/cm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	56	89	66
Calcium ppm ASTM D5185m 1070 1072 1496 1168 Phosphorus ppm ASTM D5185m 1150 1031 1430 1076 Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 25 3 8 6 Sodium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4	Manganese	ppm	ASTM D5185m	0	<1	2	<1
Phosphorus ppm ASTM D5185m 1150 1031 1430 1076 Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 4 5 13 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % "ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm "ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm "ASTM D7415 >30 19.8 19.7 26.4	Magnesium	ppm	ASTM D5185m	1010	934	1334	955
Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Calcium	ppm	ASTM D5185m	1070	1072	1496	1168
Zinc ppm ASTM D5185m 1270 1211 1851 1285 Sulfur ppm ASTM D5185m 2060 3383 4994 2333 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 4 5 13 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/lmm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Phosphorus	ppm	ASTM D5185m	1150	1031	1430	1076
CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 4 5 13 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Zinc	ppm	ASTM D5185m	1270	1211	1851	1285
Silicon ppm ASTM D5185m >25 3 8 6 Sodium ppm ASTM D5185m 4 5 13 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Sulfur	ppm	ASTM D5185m	2060	3383	4994	2333
Sodium ppm ASTM D5185m 4 5 13 Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	CONTAMINAN [*]	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 4 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Silicon	ppm	ASTM D5185m	>25	3	8	6
INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Sodium	ppm	ASTM D5185m		4	5	13
Soot % % *ASTM D7844 >4 0.5 0.3 1.6 Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Potassium	ppm	ASTM D5185m	>20	0	4	3
Nitration Abs/cm *ASTM D7624 >20 7.4 8.3 11.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history	Soot %	%	*ASTM D7844	>4	0.5	0.3	1.6
Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.7 26.4 FLUID DEGRADATION method limit/base current history1 history1	Nitration	Abs/cm	*ASTM D7624	>20	7.4	8.3	11.8
	Sulfation						
Oxidation Abs/.1mm *ASTM D7414 >25 15.8 16.0 24.2	ELLID DEGRAD	ATION	method	limit/base	current	history1	history2
	I LOID DEGITAL						
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.1 6.6 4.4		Abs/.1mm	*ASTM D7414	>25	15.8	16.0	24.2



OIL ANALYSIS REPORT



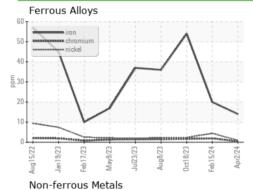


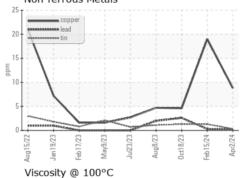


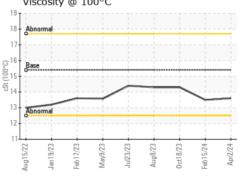
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

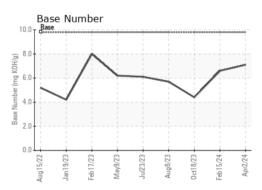
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.5	14.3

GRAPHS













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0115140 Lab Number : 06140835 Unique Number : 10965643

Received **Tested** Diagnosed

: 08 Apr 2024 : 08 Apr 2024 : 08 Apr 2024 - Wes Davis

GFL Environmental - 405 - Arbor Hills 7811 Chubb Rd NORTHVILLE, MI US 48168

> Contact: John Nahal jnahal@gflenv.com T:

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)

F: