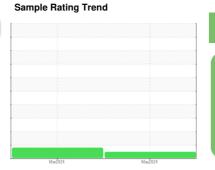


OIL ANALYSIS REPORT

(YA163447) 020 921089 Component

Diesel Engine

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





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

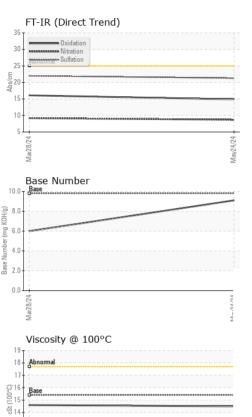
Fluid Condition

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 GFL0117842 GFL0103783 Sample Date Client Info 24 May 2024 Machine Age hrs Client Info 5528 5059 Client Info 650 650 650 Changed	N 3HF 15W40 (-	GAL)		Marzuz4	May2U24		
Client Info Client Info Client Info S528 S059	SAMPLE INFOF	RMATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 650 650 Dil Changed Changed Sample Status CONTAMINATION method limit/base current history1 history Fuel WC Method >0.2 NEG NEG Right NEG NEG Water WC Method NEG NEG WEAR METALS method limit/base current history1 history Fron ppm ASTM D5185m >120 29 39 Chromium ppm ASTM D5185m >20 2 2 2 Nickel ppm ASTM D5185m >20 2 2 2 Nickel ppm ASTM D5185m >20 13 ▲ 28 Lead ppm ASTM D5185m >20 13 ▲ 28 Lead ppm ASTM D5185m >40 2 0 Copper ppm ASTM D5185m >10 2 0 Cadmium ppm ASTM D5185m >10 1 Aluminum ppm ASTM D5185m >10 1 Cadmium ppm ASTM D5185m >10 0 Cadmium ppm ASTM D5185m >10 0 ADDITIVES method limit/base current history1 history Manganesse ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history ASTM D5185m 0 ADDITIVES method limit/base current history1 history Manganesium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history Manganesium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history Manganesium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history1 Manganesium ppm ASTM D5185m 1010 919 369 Calcium ppm ASTM D5185m 1010 919 369 Calcium ppm ASTM D5185m 1010 919 369 Calcium ppm ASTM D5185m 1010 919 369 CONTAMINANTS method limit/base current history1 history1 CONTAMINANTS method limit/base current history1 history1 NFRA-RED method limit/base current history1 his	Sample Number		Client Info		GFL0117842	GFL0103783	
Dil Age	Sample Date		Client Info		24 May 2024	28 Mar 2024	
Client Info	Machine Age	hrs	Client Info		5528	5059	
CONTAMINATION method limit/base current history1 history2 history3 history3 history3 history4 history4 history4 history5 hist	Oil Age	hrs	Client Info		650	650	
CONTAMINATION method minit/base current history1 history2 history3 history3 history4 history4 history4 history4 history4 history5 hist			Client Info		Changed	Changed	
Fuel WC Method >3.0	Sample Status				_	ABNORMAL	
Water WC Method >0.2 NEG NEG Glycol WC Method NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >20 2 2 Chromium ppm ASTM D5185m >20 2 2 Nickel ppm ASTM D5185m >2 <1	CONTAMINAT	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS	-uel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >120 29 39 Chromium ppm ASTM D5185m >20 2 2 Aluminum ppm ASTM D5185m >2 <1	<i>N</i> ater		WC Method	>0.2	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	
Description	WEAR METAL	_S	method	limit/base	current	history1	history2
Strickel	ron	ppm	ASTM D5185m	>120	29	39	
Description	Chromium	ppm	ASTM D5185m	>20	2	2	
Stilver	Nickel	ppm	ASTM D5185m	>5	2	2	
Saliver	Titanium		ASTM D5185m	>2	<1	<1	
Aluminum	Silver		ASTM D5185m	>2	<1	0	
Copper	Aluminum	ppm	ASTM D5185m	>20	13	<u>^</u> 28	
Tin	_ead	ppm	ASTM D5185m	>40	2	0	
Act	Copper	ppm	ASTM D5185m	>330	2	2	
ADDITIVES		ppm	ASTM D5185m	>15	1	<1	
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	
Boron	Cadmium	ppm	ASTM D5185m		<1	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 63 72 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	2	16	
Manganese ppm ASTM D5185m 0 <1 1 Magnesium ppm ASTM D5185m 1010 919 369 Calcium ppm ASTM D5185m 1070 1293 1645 Phosphorus ppm ASTM D5185m 1150 1123 967 Zinc ppm ASTM D5185m 1270 1332 1138 Sulfur ppm ASTM D5185m 2060 3792 3479 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 11 15 Sodium ppm ASTM D5185m 5 8 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	0	0	
Magnesium ppm ASTM D5185m 1010 919 369 Calcium ppm ASTM D5185m 1070 1293 1645 Phosphorus ppm ASTM D5185m 1150 1123 967 Zinc ppm ASTM D5185m 1270 1332 1138 Sulfur ppm ASTM D5185m 2060 3792 3479 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 11 15 Sodium ppm ASTM D5185m >20 2 2 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	63	72	
Calcium ppm ASTM D5185m 1070 1293 1645 Phosphorus ppm ASTM D5185m 1150 1123 967 Zinc ppm ASTM D5185m 1270 1332 1138 Sulfur ppm ASTM D5185m 2060 3792 3479 CONTAMINANTS method limit/base current history1 history Solicon ppm ASTM D5185m >25 11 15 Solium ppm ASTM D5185m 5 8 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Nitration Abs/cm *ASTM D7845 >30 21.3 22.0 FLUID DEGRADATION method limi	Manganese	ppm	ASTM D5185m	0	<1	1	
Phosphorus ppm ASTM D5185m 1150 1123 967 Zinc ppm ASTM D5185m 1270 1332 1138 Sulfur ppm ASTM D5185m 2060 3792 3479 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 11 15 Sodium ppm ASTM D5185m 5 8 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Nitration Abs/cm *ASTM D7624 >20 8.7 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base	Magnesium	ppm	ASTM D5185m	1010	919	369	
Time	Calcium	ppm	ASTM D5185m	1070	1293	1645	
Sulfur ppm ASTM D5185m 2060 3792 3479 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 11 15 Sodium ppm ASTM D5185m 5 8 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Nitration Abs/cm *ASTM D7624 >20 8.7 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	Phosphorus	ppm	ASTM D5185m	1150	1123	967	
CONTAMINANTS method limit/base current history1 history. Silicon ppm ASTM D5185m >25 11 15 Sodium ppm ASTM D5185m 5 8 Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Nitration Abs/cm *ASTM D7624 >20 8.7 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	Zinc	ppm	ASTM D5185m	1270	1332	1138	
Silicon ppm ASTM D5185m >25 11 15	Sulfur	ppm	ASTM D5185m	2060	3792	3479	
Sodium	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 1.6 0.6 Nitration Abs/cm *ASTM D7624 >20 8.7 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	Silicon	ppm	ASTM D5185m	>25	11	15	
INFRA-RED	Sodium	ppm	ASTM D5185m		5	8	
Soot %	Potassium	ppm	ASTM D5185m	>20	2	2	
Nitration Abs/cm *ASTM D7624 >20 8.7 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	Soot %	%	*ASTM D7844	>4	1.6	0.6	
Sulfation Abs/.1mm *ASTM D7415 >30 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 14.9 16.1	Vitration	Abs/cm	*ASTM D7624	>20	8.7	9.2	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.3		
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.9	16.1	
	Base Number (BN)	mg KOH/g	ASTM D2896		9.1	6.0	



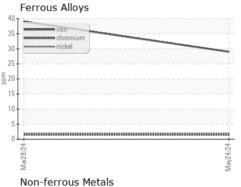
OIL ANALYSIS REPORT

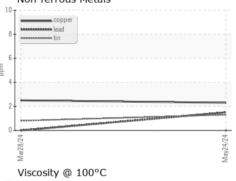


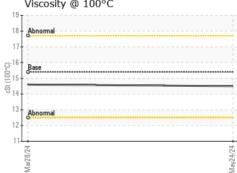
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance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

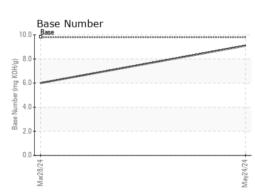
FLUID PROPE	ERITES	method	limit/base		history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.5	14.6	

GRAPHS











13 12



Certificate 12367

Laboratory Sample No.

: GFL0117842 Lab Number : 06195082 Unique Number : 11057205 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 30 May 2024 Tested : 31 May 2024

Diagnosed : 31 May 2024 - Wes Davis

GFL Environmental - 020 - Alamance

703 East Gilbreath St Graham, NC US 27253

Contact: Jorge Costa jorge.costa@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.

F: (336)229-0526 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)