

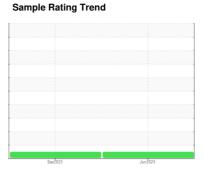
OIL ANALYSIS REPORT



(TK1640JU) 712060 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

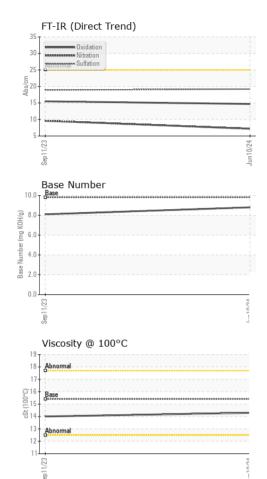
Fluid Condition

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 GFL0121966 GFL0084004 Sample Date Client Info 10 Jun 2024 11 Sep 2023 Machine Age hrs Client Info 0	10111-1011-10(,					
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 600 0	Sample Number		Client Info		GFL0121966	GFL0084004	
Machine Age hrs Client Info 600 0	Sample Date		Client Info		10 Jun 2024	11 Sep 2023	
Oil Age hrs Client Info 600 0	•	hrs	Client Info		0		
Client Info Changed Changed Changed Changed Changed NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 history2 water WC Method Sa.0. < 1.0. < 1.0. < 1.0. < 1.0. < 1.0. Water WC Method Sa.0. NEG NEG Seg Seg Seg NEG Seg Seg		hrs	Client Info		600		
NORMAL NORMAL CONTAMINATION method limit/base current history1 history1	•		Client Info				
Fuel WC Method Sa.0 Ca.0 Ca					_	Ü	
Water WC Method >0.2 NEG NEG	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >90 6 16	Water		WC Method	>0.2	NEG	NEG	
Irron	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	6	16	
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	
Lead	Silver	ppm	ASTM D5185m	>2	0	0	
Copper ppm ASTM D5185m >330 0 <1	Aluminum	ppm	ASTM D5185m	>20	1	3	
Tin	Lead	ppm	ASTM D5185m	>40	0	<1	
Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 8 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 1010 930 1061 Calcium ppm ASTM D5185m 1070 1023 1173 Phosphorus ppm ASTM D5185m 1270 1236 1337 Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>330	0	<1	
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 8 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 <1		ppm	ASTM D5185m	>15	0	<1	
ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 8 4 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 60 59 63 Manganese ppm ASTM D5185m 0 0 <1	Vanadium	ppm	ASTM D5185m		0	<1	
Boron	Cadmium	ppm	ASTM D5185m		0	0	
Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 60 59 63 Manganese ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 59 63 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m	0	8	4	
Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 1010 930 1061 Calcium ppm ASTM D5185m 1070 1023 1173 Phosphorus ppm ASTM D5185m 1150 1077 1044 Zinc ppm ASTM D5185m 1270 1236 1337 Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m >20 1 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 history1 Soot % % <t< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>0</th><td>0</td><td></td></t<>	Barium	ppm	ASTM D5185m	0	0	0	
Magnesium ppm ASTM D5185m 1010 930 1061 Calcium ppm ASTM D5185m 1070 1023 1173 Phosphorus ppm ASTM D5185m 1150 1077 1044 Zinc ppm ASTM D5185m 1270 1236 1337 Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m >20 1 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 histor Soot % % *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7414	Molybdenum	ppm	ASTM D5185m	60	59	63	
Calcium ppm ASTM D5185m 1070 1023 1173 Phosphorus ppm ASTM D5185m 1150 1077 1044 Zinc ppm ASTM D5185m 1270 1236 1337 Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1 history1 history2 Soliicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m >20 1 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION	Manganese	ppm	ASTM D5185m	0	0	<1	
Phosphorus ppm ASTM D5185m 1150 1077 1044 Zinc ppm ASTM D5185m 1270 1236 1337 Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m 20 1 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7414 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION *ASTM D7414 <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>930</th> <td>1061</td> <td></td>	Magnesium	ppm	ASTM D5185m	1010	930	1061	
Zinc	Calcium	ppm	ASTM D5185m	1070	1023	1173	
Sulfur ppm ASTM D5185m 2060 3523 3604 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m 4 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Phosphorus	ppm	ASTM D5185m	1150	1077	1044	
CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m 4 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 history1 history1 history1 history1 history1 Sulfation Abs/.1mm *ASTM D7414 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 history1 history2	Zinc	ppm	ASTM D5185m	1270	1236	1337	
Silicon ppm ASTM D5185m >25 2 3 Sodium ppm ASTM D5185m 4 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Sulfur	ppm	ASTM D5185m	2060	3523	3604	
Sodium ppm ASTM D5185m 4 1 Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history1 history1 history1 history2 history2 history2 history2 history2 history2 history2 history2 history2 history3 history3 history3 history3 history3 history3 history4 history3 history4 histo	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Silicon	ppm	ASTM D5185m	>25	2	3	
INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Sodium	ppm	ASTM D5185m		4	1	
Soot % % *ASTM D7844 >6 0.3 0.5 Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Potassium	ppm	ASTM D5185m	>20	1	1	
Nitration Abs/cm *ASTM D7624 >20 7.2 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.2 18.9 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Soot %	%	*ASTM D7844	>6	0.3	0.5	
FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 14.7 15.5	Nitration	Abs/cm	*ASTM D7624	>20	7.2	9.6	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.2	18.9	
	FLUID DEGRAD	NOITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.7	15.5	
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.8 8.1	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.8	8.1	



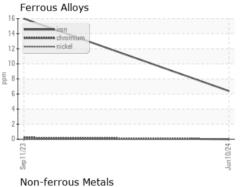
OIL ANALYSIS REPORT

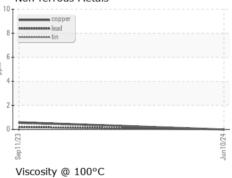


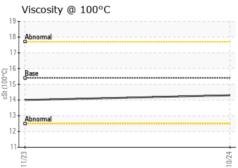
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance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

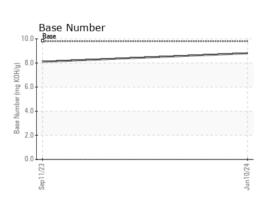
FLUID PROPI	ERITES	method	limit/base		history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.0	

GRAPHS













Certificate 12367

Sample No.

: GFL0121966 Lab Number : 06211245 Unique Number : 11084109

Test Package : FLEET

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

: 17 Jun 2024 : 18 Jun 2024 Diagnosed

: 18 Jun 2024 - Wes Davis

GFL Environmental - 401 - Fort Wayne Hauling 4429 ALLEN MARTIN DR

FORT WAYNE, IN US 46806

Contact: Zachory Roehm zroehm@gflenv.com

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)

Report Id: GFL401 [WUSCAR] 06211245 (Generated: 06/21/2024 22:09:21) Rev: 1

Submitted By: See also GFL401 - ZACHORY ROEHM

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