

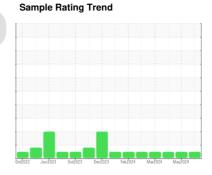
OIL ANALYSIS REPORT



423031-402164

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

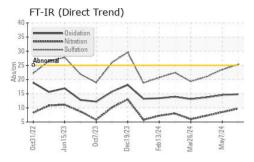
Fluid Condition

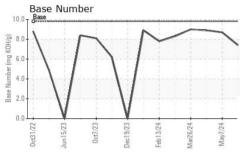
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

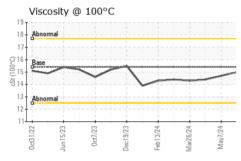
Sample Number Client Info GFL0093446 GFL0109306 GFL0109402 Sample Date Client Info 30 May 2024 07 May 2024 12 Apr 2024 45522 45522 41552 45522 41552 20 01 Changed Not Changd Not Changd Northall Nort	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2						
Sample Date						•	<u> </u>						
Machine Age hrs Client Info 45802 45647 45522 Oil Age hrs Client Info 159 415 290 Oil Changed Client Info Changed Not Changd Not Changd Sample Status Wolf Method North MAL NoRMAL NORMAL CONTAMINATION method limit/base current history1 Fuel WC Method >3.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG WEAR METALS method limit/base current history1 Iron ppm ASTM D5185m >120 27 21 16 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >20 2 <1 2 Silver ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >20 2 <1	·												
Oil Age hrs Client Info 159 415 290 Oil Changed Sample Status Client Info Changed Not Changd Not Changd Not Changd Not Changd Not Changd NormAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >3.0 <1.0 <1.0 <1.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 27 21 16 Chromium ppm ASTM D5185m >120 27 21 16 Chromium ppm ASTM D5185m >20 1 1 <1 <1 Iron ppm ASTM D5185m >20 2 1 2 1 Iron ppm ASTM D5185m >20 2 <1 2 2 Illiaminum ppm		hrs			•	,							
Client Info Changed Not Changed NorMAL NORMAL NORMAL													
NORMAL NORMAL NORMAL NORMAL	-												
Fuel	-					Ü	_						
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imiti/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 27 21 16 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >2 8 8 8 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 2 3 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <th>CONTAMINATIO</th> <th>N</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINATIO	N	method	limit/base	current	history1	history2						
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 27 21 16 Chromium ppm ASTM D5185m >20 1 1 <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0						
WEAR METALS	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 0 <1	WEAR METALS		method	limit/base	current	history1	history2						
Nickel	Iron	ppm	ASTM D5185m	>120	27	21	16						
Titanium	Chromium	ppm	ASTM D5185m	>20	1	1	<1						
Silver	Nickel	ppm	ASTM D5185m	>5	0	0	<1						
Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 2 3 1 Copper ppm ASTM D5185m >330 <1	Titanium	ppm	ASTM D5185m	>2	8	8	8						
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0						
Copper ppm ASTM D5185m >330 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Aluminum	ppm	ASTM D5185m	>20	2	<1	2						
Tin	Lead	ppm	ASTM D5185m	>40	2	3	1						
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 7 8 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 922 939 861 Calcium ppm ASTM D5185m 1070 1112 1163 1121 Phosphorus ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 <th< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>330</td><th><1</th><td><1</td><td><1</td></th<>	Copper	ppm	ASTM D5185m	>330	<1	<1	<1						
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 7 8 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		0	0	0						
Boron	Cadmium	ppm	ASTM D5185m		0	0	0						
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 55 52 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2						
Molybdenum ppm ASTM D5185m 60 55 55 52 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 922 939 861 Calcium ppm ASTM D5185m 1070 1112 1163 1121 Phosphorus ppm ASTM D5185m 1150 1038 1052 1051 Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 <1 1 2 <1 Potassium ppm ASTM D5185m >20 <1 1 2 INFRA-RED method	Boron	ppm	ASTM D5185m	0	9	7	8						
Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 922 939 861 Calcium ppm ASTM D5185m 1070 1112 1163 1121 Phosphorus ppm ASTM D5185m 1150 1038 1052 1051 Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 <1 1 2 <1 Potassium ppm ASTM D5185m >20 <1 1 2 <1 INFRA-RED method limit/base current history1 history2 <th colsp<="" td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>0</th><td>0</td><td>0</td></th>	<td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0					
Magnesium ppm ASTM D5185m 1010 922 939 861 Calcium ppm ASTM D5185m 1070 1112 1163 1121 Phosphorus ppm ASTM D5185m 1150 1038 1052 1051 Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m	60	55	55	52						
Calcium ppm ASTM D5185m 1070 1112 1163 1121 Phosphorus ppm ASTM D5185m 1150 1038 1052 1051 Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m 1 2 <1	Manganese	ppm	ASTM D5185m	0	<1	<1	0						
Phosphorus ppm ASTM D5185m 1150 1038 1052 1051 Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m >20 <1	<td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>922</th> <td>939</td> <td>861</td>						Magnesium	ppm	ASTM D5185m	1010	922	939	861
Zinc ppm ASTM D5185m 1270 1245 1253 1180 Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m 1 2 <1	Calcium	ppm	ASTM D5185m	1070	1112	1163	1121						
Sulfur ppm ASTM D5185m 2060 3306 3524 3165 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m 1 2 <1	Phosphorus	ppm	ASTM D5185m	1150	1038	1052	1051						
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m 1 2 <1	Zinc	ppm	ASTM D5185m	1270	1245	1253	1180						
Silicon ppm ASTM D5185m >25 5 4 4 Sodium ppm ASTM D5185m 1 2 <1 Potassium ppm ASTM D5185m >20 <1 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 3.6 2.8 2 Nitration Abs/cm *ASTM D7624 >20 9.7 8.5 7.2 Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Sulfur	ppm	ASTM D5185m	2060	3306	3524	3165						
Sodium ppm ASTM D5185m 1 2 <1 Potassium ppm ASTM D5185m >20 <1	CONTAMINANT	S	method	limit/base	current	history1	history2						
Potassium ppm ASTM D5185m >20 <1 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 3.6 2.8 2 Nitration Abs/cm *ASTM D7624 >20 9.7 8.5 7.2 Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Silicon	ppm	ASTM D5185m	>25	5	4	4						
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 3.6 2.8 2 Nitration Abs/cm *ASTM D7624 >20 9.7 8.5 7.2 Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Sodium	ppm	ASTM D5185m		1	2	<1						
Soot % % *ASTM D7844 >4 3.6 2.8 2 Nitration Abs/cm *ASTM D7624 >20 9.7 8.5 7.2 Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Potassium	ppm	ASTM D5185m	>20	<1	1	2						
Nitration Abs/cm *ASTM D7624 >20 9.7 8.5 7.2 Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	INFRA-RED		method	limit/base	current	history1	history2						
Sulfation Abs/.1mm *ASTM D7415 >30 25.3 23.5 21.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Soot %	%	*ASTM D7844	>4	3.6	2.8	2						
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Nitration	Abs/cm	*ASTM D7624	>20	9.7	8.5	7.2						
Oxidation Abs/.1mm *ASTM D7414 >25 14.8 14.5 13.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	25.3	23.5	21.0						
	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2						
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.8	14.5	13.7						
		mg KOH/g											



OIL ANALYSIS REPORT



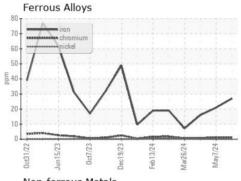


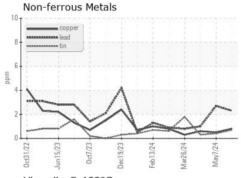


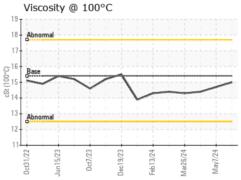
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

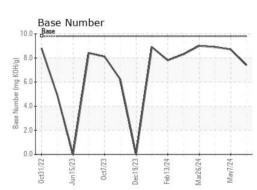
FLUID PROPE	RHES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	15.0	14.7	14.4

GRAPHS













Certificate 12367

Laboratory Sample No. Unique Number : 11058548 Test Package : FLEET

: GFL0093446 Lab Number : 06196425

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

: 03 Jun 2024 : 03 Jun 2024 - Wes Davis

GFL Environmental - 891 - Oklahoma City Hauling

1001 South Rockwell Oklahoma City, OK US 73128

Contact: Andy Smith andrew.smith@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)

T: (405)306-1651