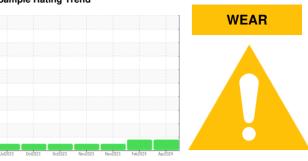


OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id
913063
Component
Diesel Engine
Fluid

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

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

Valve wear is indicated.

Contamination

There is no indication of any contamination in the oil.

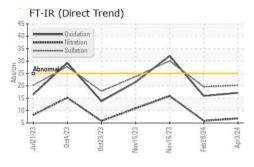
Fluid Condition

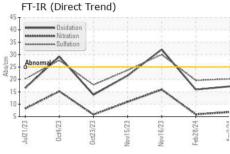
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

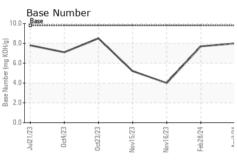
Sample Date Client Info 03 Apr 2024 28 Feb 2024 16 Nov 2023 17268 Machine Age hrs Client Info 20287 16572 17268 17268 Oil Age hrs Client Info 600 600 17268 Oil Changed Client Info Changed Not Changed Changed Changed ABNORMAL ABNORMAL ABNORMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 history2 Mater WC Method So.2 NEG	N SHP 15W40 (- GAL)	Jul2023	Oct2023 Oct2023	Nov2023 Nov2023 Feb2024	Apr2024	
Sample Date Client Info 03 Apr 2024 28 Feb 2024 16 Nov 2023 17268 Machine Age hrs Client Info 20287 16572 17268 17268 Oil Age hrs Client Info 600 600 17268 Oil Changed Client Info Changed Not Changed Changed Changed ABNORMAL ABNORMAL ABNORMAL NORMAL NORMAL CONTAMINATION method Imit/base current history1 history2 history2 Mater WC Method So.2 NEG	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 20287 16572 17268 Dil Age hrs Client Info 600 600 17268 Dil Changed Client Info Changed Not Changed Not Changed Sample Status Medical Collection ABNORMAL ABNORMAL Not Changed Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0104487	GFL0104347	GFL0059281
Machine Age hrs Client Info 20287 16572 17268 Dil Age hrs Client Info 600 600 17268 Dil Changed Client Info Changed Not Changed Not Changed Sample Status Medical Collection ABNORMAL ABNORMAL Not Changed Fuel WC Method >3.0 <1.0	Sample Date		Client Info		03 Apr 2024	28 Feb 2024	16 Nov 2023
Changed Client Info Changed ABNORMAL ABNORMA		hrs	Client Info			16572	17268
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		600	600	17268
CONTAMINATION			Client Info		Changed	Not Changd	Changed
Fuel	Sample Status				_	ABNORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 15 4 73 Chromium ppm ASTM D5185m >20 2 0 3 Nickel ppm ASTM D5185m >5 9 A 8 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 15 4 73 Chromium ppm ASTM D5185m >20 2 0 3 Nickel ppm ASTM D5185m >5 4 9 4 8 <1 Titanium ppm ASTM D5185m >2 <1 0 <1 0 Aluminum ppm ASTM D5185m >2 <1 0 <1 6 Lead ppm ASTM D5185m >2 <1 0 <1 6 Lead ppm ASTM D5185m >330 31 26 3 Tin ppm ASTM D5185m >15 1 0 0 Cadmium ppm ASTM D5185m <15 1 0 0 ADJTIVES method limit/base	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Strickel	ron	ppm	ASTM D5185m	>120	15	4	73
Titanium	Chromium	ppm	ASTM D5185m	>20	2	0	3
Silver	Nickel	ppm	ASTM D5185m	>5	<u> </u>	<u> </u>	<1
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5185m >330 31 26 3 Tin ppm ASTM D5185m >15 1 0 0 Vanadium ppm ASTM D5185m <1	Aluminum	ppm	ASTM D5185m	>20	3	<1	6
Tin	_ead	ppm	ASTM D5185m	>40	<1	0	<1
Name	Copper	ppm	ASTM D5185m	>330	31	26	3
ADDITIVES	Γin	ppm	ASTM D5185m	>15	1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 54 49 65 Manganese ppm ASTM D5185m 0 1 0 <1 Magnesium ppm ASTM D5185m 1010 787 837 1063 Calcium ppm ASTM D5185m 1070 1142 976 1177 Phosphorus ppm ASTM D5185m 1150 875 933 1065 Zinc ppm ASTM D5185m 1270 1121 1066 1347 Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 7 3 15 Sodium ppm ASTM D5185m 25 7 3 15 Sodium ppm ASTM D5185m 25 7 3 15 Soot % *ASTM D7844 >4 0.	Boron	ppm	ASTM D5185m	0	18	12	2
Manganese ppm ASTM D5185m 0 1 0 <1 Magnesium ppm ASTM D5185m 1010 787 837 1063 Calcium ppm ASTM D5185m 1070 1142 976 1177 Phosphorus ppm ASTM D5185m 1150 875 933 1065 Zinc ppm ASTM D5185m 1270 1121 1066 1347 Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m 20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	0	2	0
Magnesium ppm ASTM D5185m 1010 787 837 1063 Calcium ppm ASTM D5185m 1070 1142 976 1177 Phosphorus ppm ASTM D5185m 1150 875 933 1065 Zinc ppm ASTM D5185m 1270 1121 1066 1347 Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 7 3 15 Potassium ppm ASTM D5185m 20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	54	49	65
Calcium ppm ASTM D5185m 1070 1142 976 1177 Phosphorus ppm ASTM D5185m 1150 875 933 1065 Zinc ppm ASTM D5185m 1270 1121 1066 1347 Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >25 7 3 15 Solicon ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION *ASTM D7414 <t< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>1</th><td>0</td><td><1</td></t<>	Manganese	ppm	ASTM D5185m	0	1	0	<1
Phosphorus ppm ASTM D5185m 1150 875 933 1065 Zinc ppm ASTM D5185m 1270 1121 1066 1347 Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base	Magnesium	ppm	ASTM D5185m	1010	787	837	1063
Zinc ppm ASTM D5185m 1270 1121 1066 1347	Calcium	ppm	ASTM D5185m	1070	1142	976	1177
Sulfur ppm ASTM D5185m 2060 2684 2501 2626 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Phosphorus	ppm	ASTM D5185m	1150	875	933	1065
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Zinc	ppm	ASTM D5185m	1270	1121	1066	1347
Silicon ppm ASTM D5185m >25 7 3 15 Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Sulfur	ppm	ASTM D5185m	2060	2684	2501	2626
Sodium ppm ASTM D5185m 25 8 11 Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 0 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Silicon	ppm	ASTM D5185m	>25	7	3	15
INFRA-RED	Sodium	ppm	ASTM D5185m		25	8	11
Soot % % *ASTM D7844 >4 0.3 0.2 1.3 Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Potassium	ppm	ASTM D5185m	>20	4	0	3
Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 6.8 5.9 15.9 Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Soot %	%	*ASTM D7844	>4	0.3	0.2	1.3
Sulfation Abs/.1mm *ASTM D7415 >30 20.2 19.6 30.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.2 15.9 32.1	Nitration	Abs/cm	*ASTM D7624	>20		5.9	
Oxidation	Sulfation						
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.2	15.9	32.1
	Base Number (BN)	mg KOH/g			8.0	7.7	

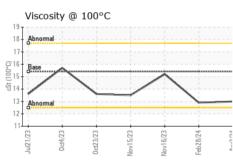


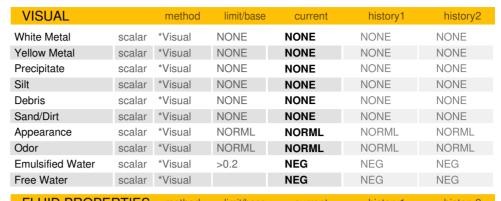
OIL ANALYSIS REPORT





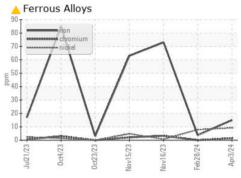


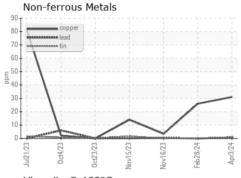


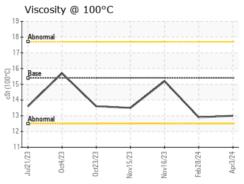


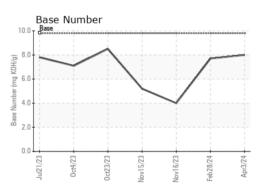
FLUID PROP	EHIIES	method	iiiiii/base	current	riistory i	riistoryz
Visc @ 100°C	cSt	ASTM D445	15.4	13.0	12.9	15.2

GRAPHS













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0104487 Lab Number : 06140954 Unique Number : 10965762

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Test Package : FLEET

Received : 08 Apr 2024 **Tested** Diagnosed

: 08 Apr 2024

: 10 Apr 2024 - Jonathan Hester

GFL Environmental - 410 - Michigan West 39000 Van Born Rd Wayne, MI US 48184

Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

 st - 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: GFL410 [WUSCAR] 06140954 (Generated: 04/10/2024 10:55:24) Rev: 1

Submitted By: seel also GFL468 - Laura Wilson