

OIL ANALYSIS REPORT

Sample Rating Trend







729039-361620

Component **Diesel Engine**

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

DIAGNOSIS Recommendation

Resample at the next service interval to monitor. (
Customer Sample Comment: OIL SAMPLE)

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

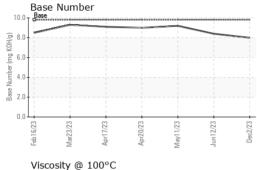
Fluid Condition

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

Sample Date	N SHP 15W40 (- GAL)	Feb 2023	Mar2023 Apr2023	Apr2023 May2023 Jun2023	Dec2023	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 271191 271191 24110	Sample Number		Client Info		GFL0092069	GFL0084689	GFL0078110
Oil Age	Sample Date		Client Info		02 Dec 2023	12 Jun 2023	11 May 2023
Colient Info	Machine Age	mls	Client Info		271191	271191	24110
CONTAMINATION method limit/base current history1 history2	Oil Age	mls	Client Info		267675	0	0
CONTAMINATION	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 37 52 30 Chromium ppm ASTM D5185m >5 <1 2 1 Nickel ppm ASTM D5185m >2 <1 2 2 Nickel ppm ASTM D5185m >2 <1 2 2 Nickel ppm ASTM D5185m >30 4 9 5 Silver ppm ASTM D5185m >30 0 2 <1 Cadad ppm ASTM D5185m >30 0 2 <1 <1 Vanadium ppm ASTM D5185m >5 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 2 5 2	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 37 52 30 Chromium ppm ASTM D5185m >5 <1	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
Nickel	Iron	ppm	ASTM D5185m	>80	37	52	30
Nickel	Chromium		ASTM D5185m	>5	<1	2	1
Description	Nickel	ppm	ASTM D5185m	>2	<1	2	2
Aluminum	Titanium	ppm	ASTM D5185m		0	0	0
Lead	Silver	ppm	ASTM D5185m	>3	0	<1	0
Copper ppm ASTM D5185m >150 2 2 2 Tin ppm ASTM D5185m >5 0 <1	Aluminum	ppm	ASTM D5185m	>30	4	9	5
Copper	Lead	ppm	ASTM D5185m	>30	0	2	<1
Standard	Copper		ASTM D5185m	>150	2	2	2
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 5 2 Barium ppm ASTM D5185m 0 2 0 0 Molybdenum ppm ASTM D5185m 0 60 64 60 62 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 907 989 914 Calcium ppm ASTM D5185m 1070 1213 1166 1082 Phosphorus ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current h		ppm	ASTM D5185m	>5	0	<1	<1
ADDITIVES	Vanadium		ASTM D5185m		0	<1	0
Barium	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 64 60 62 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 907 989 914 Calcium ppm ASTM D5185m 1070 1213 1166 1082 Phosphorus ppm ASTM D5185m 1150 989 1027 1009 Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m >20 3 8 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	0	2	5	2
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 907 989 914 Calcium ppm ASTM D5185m 1070 1213 1166 1082 Phosphorus ppm ASTM D5185m 1150 989 1027 1009 Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	2	0	0
Magnesium ppm ASTM D5185m 1010 907 989 914 Calcium ppm ASTM D5185m 1070 1213 1166 1082 Phosphorus ppm ASTM D5185m 1150 989 1027 1009 Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 8 7 5 Solicon ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	64	60	62
Calcium ppm ASTM D5185m 1070 1213 1166 1082 Phosphorus ppm ASTM D5185m 1150 989 1027 1009 Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m >20 3 8 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method </td <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td><1</td> <td><1</td>	Manganese	ppm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 1150 989 1027 1009 Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <th>907</th> <td>989</td> <td>914</td>	Magnesium	ppm	ASTM D5185m	1010	907	989	914
Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1213	1166	1082
Zinc ppm ASTM D5185m 1270 1216 1327 1232 Sulfur ppm ASTM D5185m 2060 2837 3609 2978 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	989	1027	1009
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2		ppm	ASTM D5185m	1270	1216	1327	1232
Silicon ppm ASTM D5185m >20 8 7 5 Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	Sulfur	ppm	ASTM D5185m	2060	2837	3609	2978
Sodium ppm ASTM D5185m 7 9 7 Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 8 7 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	Silicon	ppm	ASTM D5185m	>20	8	7	5
INFRA-RED	Sodium		ASTM D5185m		7	9	7
Soot % % *ASTM D7844 >3 0.8 2 1.3 Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	Potassium	ppm	ASTM D5185m	>20	3	8	7
Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 10.6 13.2 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	Soot %	%	*ASTM D7844	>3	0.8	2	1.3
Sulfation Abs/.1mm *ASTM D7415 >30 23.2 27.4 23.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.5 25.4 20.2	Nitration						
Oxidation		Abs/.1mm					
	FLUID DEGRA	NOITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.5	25.4	20.2
	Base Number (BN)	mg KOH/g			8.0	8.4	9.2



OIL ANALYSIS REPORT

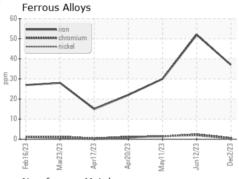


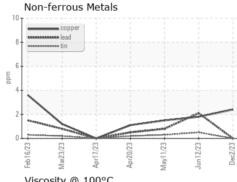
Feb 16	Mar23	Apr17	Apr20	May11	Jun12	Dec2
Vi	scosity @	100°C				
19 T						
18 - Al	onormal					
17-						
©16- R	ase					
D-0015	IIIIIIIIIIIIIIII					
₹ 14 · · ·						
13 - At	onormal					
12 -						
11		_	-	_		_
16/23	23/23	17/23	20/23	11/23	12/23	

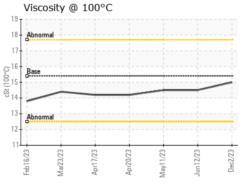
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

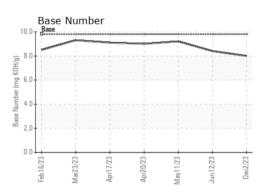
FLUID PROPE	EKIIES	method	ilmivbase		nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	15.0	14.5	14.5

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10770096 Test Package : FLEET

: GFL0092069 : 06025596

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Dec 2023 Diagnosed : 07 Dec 2023

Diagnostician : Sean Felton

GFL Environmental - 856 - Houston South

8515 Highway 6 South Houston, TX US 77083

Contact: Apolinar Zacarias pzacariascano@gflenv.com T:

* - 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)

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