

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

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

Sample Number Client Info GFL0105853 GFL0069845 GFL0059853 Sample Date hrs Client Info 19984 18522 18224 Machine Age hrs Client Info 19984 18522 18224 Oil Age hrs Client Info 19984 600 17474 Oil Changed Client Info Not Changed Changed Changed Changed Sample Number Client Info Not Changed Changed Changed Changed Sample Number WC Method >0.2 NEG NEG NEG NEG Water WC Method >0.2 NEG NEG NEG NEG Weter WC Method Sitt Mostifism >20 0 1 2 Nickel ppm ASTM Distifism >2 0 0 0 Silver ppm ASTM Distifism >2 0 0 0 Nickel ppm ASTM Distifism >2 0 0<	(,	Apr2021	Jul2021 Jan2022	Jul2022 Jun2023	Dec2023	
Sample Date Client Info 20 Dec 2023 03 Jun 2023 25 Jul 2022 Machine Age hrs Client Info 18984 18522 18224 Oil Age hrs Client Info 18984 600 17474 Oil Changed Client Info NorMAL SEVERE NORMAL CONTAMINATION method Imit/base current History1 History1 Water WC Method >0.2 NEG NEG NEG Wear WC Method >0.2 NEG NEG NEG Chromium ppm ASTM 05165m >20 0 1 2 Chromium ppm ASTM 05165m >2 0 0 0 Silver ppm ASTM 05165m >2 0 0 0 Silver ppm ASTM 05165m >2 0 0 0 Copper ppm ASTM 05165m >2 0 0 0 Copper ppm <	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 18984 18522 18224 Oil Age hrs Client Info 19984 600 17474 Oil Changed Client Info Not Changed NeG	Sample Number		Client Info		GFL0105853	GFL0069845	GFL005509
Oil Age hrs Client Info 18984 600 17474 Oil Changed Client Info Not Changed Changed	Sample Date		Client Info		20 Dec 2023	03 Jun 2023	25 Jul 2022
Oil Changed Client Info Not Changed NORMAL Changed SEVERE Changed NORMAL CONTAMINATION method limit/base current history1 history1 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5165m >20 0 1 2 Nickel ppm ASTM D5165m >20 0 0 0 Nickel ppm ASTM D5165m >20 0 0 0 Auminum ppm ASTM D5165m >20 <1	Machine Age	hrs	Client Info		18984	18522	18224
Sample Status NORMAL SEVERE NORMAL CONTAMINATION method limit/base current history1 history1 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Lead ppm ASTM D5185m >20 <1	Oil Age	hrs	Client Info		18984	600	17474
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method imit/base current history1 history1 Iron ppm ASTM D5185m >90 0 38 55 Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Aduminum ppm ASTM D5185m >20 0 0 0 Attminony ppm ASTM D5185m >40 0 0 0 0 Antimony ppm ASTM D5185m 15 0 0 0 0 Antimony ppm ASTM D5185m 0 0 0 0 <td>Oil Changed</td> <td></td> <td>Client Info</td> <td></td> <th>Not Changd</th> <td>Changed</td> <td>Changed</td>	Oil Changed		Client Info		Not Changd	Changed	Changed
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history1 Iron ppm ASTM D5185m >90 0 38 55 Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 -1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 -1 4 5 Tin ppm ASTM D5185m >15 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 5 </td <td>Sample Status</td> <td></td> <td></td> <td></td> <th>NORMAL</th> <td>SEVERE</td> <td>NORMAL</td>	Sample Status				NORMAL	SEVERE	NORMAL
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >90 0 38 55 Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 0 38 55 Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Auminum ppm ASTM D5185m >20 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >90 0 38 55 Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 1 2 Nickel ppm ASTM D5185m >2 <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1	Iron	ppm	ASTM D5185m	>90	0	38	55
Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1	Chromium	ppm	ASTM D5185m	>20	0	1	2
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1	Nickel	ppm	ASTM D5185m	>2	<1	0	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1	Titanium		ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 0 7 Copper ppm ASTM D5185m >330 <1	Silver	ppm			0	0	0
Copper ppm ASTM D5185m >330 <1 4 5 Tin ppm ASTM D5185m >15 0 0 2 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 0 0 0 Maganese ppm ASTM D5185m 0 <1	Aluminum	ppm	ASTM D5185m	>20	<1	2	14
Tin ppm ASTM D5185m >15 0 0 2 Antimony ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	0	0	7
Tin ppm ASTM D5185m >15 0 0 2 Antimony ppm ASTM D5185m 0	Copper	ppm	ASTM D5185m	>330	<1	4	5
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 4 42 6 Boron ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 4 42 6 Manganese ppm ASTM D5185m 0 4 42 1 Magnesium ppm ASTM D5185m 1010 950 559 1207 Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 260 3259 2836 3645 CONTAMINANTS method limit/base current	Tin	ppm	ASTM D5185m	>15	0	0	2
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 0 0 0 0 Magnese ppm ASTM D5185m 0 28 80 0 Magnesium ppm ASTM D5185m 0 <1 4 <1 Magnesium ppm ASTM D5185m 1010 950 559 1207 Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1070 1206 850 1630 Sulfur ppm ASTM D5185m 1270 1290 850 1630 Sodium ppm ASTM D5185m 225	Antimony	ppm	ASTM D5185m				
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 42 6 Barium ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 0 <1 4 <1 Magnesium ppm ASTM D5185m 0 <11 4 <1 Magnesium ppm ASTM D5185m 0 <11 4 <1 Magnesium ppm ASTM D5185m 1010 950 559 1207 Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 225 5 11 10 Sodium ppm ASTM D5185m >20	Vanadium		ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 4 422 6 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 28 80 Manganese ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 28 80 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 59 28 80 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	4	42	6
Maganese ppm ASTM D5185m 0 <1 4 <1 Magnesium ppm ASTM D5185m 1010 950 559 1207 Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1150 1130 684 1265 Zinc ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D5185m >20 0.3 8.7 <1.0	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 950 559 1207 Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1150 1130 684 1265 Zinc ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D5185m >20 0 3 7 Fuel % ASTM D5185m >20 0 3 7 Sodium ppm ASTM D5185m >20 0.3 8.7 <1.0	Molybdenum	ppm	ASTM D5185m	60	59	28	80
Calcium ppm ASTM D5185m 1070 1036 1422 1449 Phosphorus ppm ASTM D5185m 1150 1130 684 1265 Zinc ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 111 10 Sodium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D5185m >20 0 3 7 Sodium ppm ASTM D5185m >20 0.3 7 <1.0	Manganese	ppm	ASTM D5185m	0	<1	4	<1
Phosphorus ppm ASTM D5185m 1150 1130 684 1265 Zinc ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D5185m >20 0 3 7 NFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/.tmm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.tmm *ASTM D7415 >3	Magnesium	ppm	ASTM D5185m	1010	950	559	1207
Zinc ppm ASTM D5185m 1270 1290 850 1630 Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Potassium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D3524 >3.0 0.3 8.7 <1.0	Calcium	ppm	ASTM D5185m	1070	1036	1422	1449
Sulfur ppm ASTM D5185m 2060 3259 2836 3645 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Potassium ppm ASTM D3524 >3.0 0.3 8.7 <1.0	Phosphorus	ppm	ASTM D5185m	1150	1130	684	1265
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m >20 0 3 7 Potassium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D3524 >3.0 0.3 ● 8.7 <1.0	Zinc	ppm	ASTM D5185m	1270	1290	850	1630
Silicon ppm ASTM D5185m >25 5 11 10 Sodium ppm ASTM D5185m 20 0 3 7 Potassium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D3524 >3.0 0.3 8.7 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.tmm *ASTM D7615 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.tmm *ASTM D7414 >25 12.8 22.9 26.9	Sulfur	ppm	ASTM D5185m	2060	3259	2836	3645
Sodium ppm ASTM D5185m 2 4 1 Potassium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D3524 >3.0 0.3 8.7 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.imm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 >25 12.8 22.9 26.9	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 3 7 Fuel % ASTM D3524 >3.0 0.3 € 8.7 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Silicon	ppm	ASTM D5185m	>25	5	11	10
Fuel % ASTM D3524 >3.0 0.3 8.7 <1.0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Sodium	ppm	ASTM D5185m		2	4	1
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Potassium	ppm	ASTM D5185m	>20	0	3	7
Soot % % *ASTM D7844 >6 0 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.1mm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Fuel	%	ASTM D3524	>3.0	0.3	8.7	<1.0
Nitration Abs/cm *ASTM D7624 >20 4.2 10.8 12.7 Sulfation Abs/.1mm *ASTM D7624 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.1 22.3 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Soot %	%	*ASTM D7844	>6	0	0.4	0.4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Nitration	Abs/cm	*ASTM D7624	>20	4.2	10.8	12.7
Oxidation Abs/.1mm *ASTM D7414 >25 12.8 22.9 26.9	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.1	22.3	27.9
-	FLUID DEGRAI	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 9.2 7.3 10.0	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.8	22.9	26.9
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8		7.3	10.0

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Machine Id

Wear

All component wear rates are normal.

Contamination

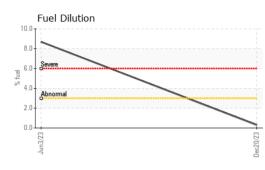
Fuel content negligible. There is no indication of any contamination in the oil.

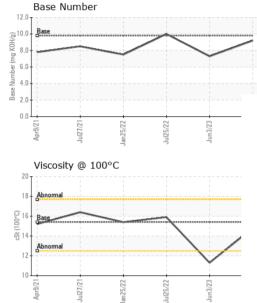
Fluid Condition

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



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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.8	1 1.3	15.9
GRAPHS						



19

18

17

16

12

10

Laboratory Sample No.

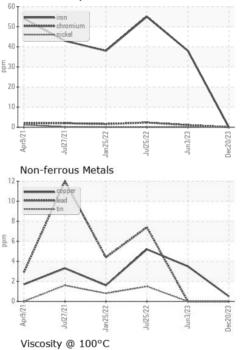
Lab Number

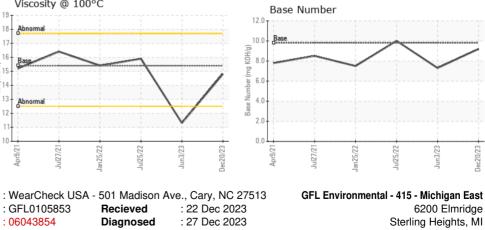
Apr9/21

: GFL0105853

: 06043854

cSt (100°C)









: 10804462 Unique Number Diagnostician : Wes Davis Test Package : FLEET (Additional Tests: PercentFuel) Certificate L2367 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)

Jan25/22

Jul27/21

Jul25/22 -

Recieved

Diagnosed

Jun3/23 -