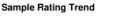


PROBLEM SUMMARY



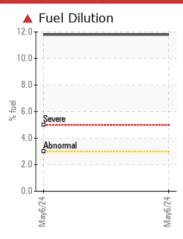


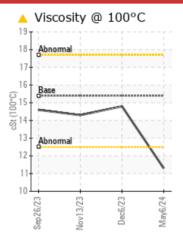


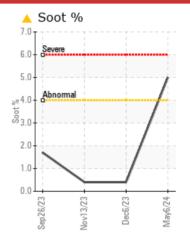
Machine Id
912103
Component
Diesel Engine
Fluid

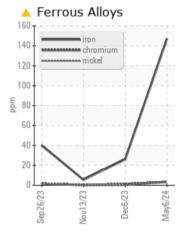
PETRO CANADA DURON SHP 15W40 (9 GAL)

COMPONENT CONDITION SUMMARY









RECOMMENDATION

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

PROBLEMATION	C TEST	RESULT	S			
Sample Status				SEVERE	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>120	<u> </u>	26	6
Fuel	%	ASTM D3524	>3.0	11.8	<1.0	<1.0
Soot %	%	*ASTM D7844	>4	<u>^</u> 5	0.4	0.4
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	△ 0.0	8.8	9.0
Visc @ 100°C	cSt	ASTM D445	15.4	<u>▲</u> 11.3	14.8	14.3

Customer Id: GFL405 Sample No.: GFL0115087 Lab Number: 06193395 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDE	D ACTIONS			
Action	Status	Date	Done By	Description
Change Fluid			?	Oil and filter change at the time of sampling has been noted.
Change Filter			?	Oil and filter change at the time of sampling has been noted.
Resample			?	We recommend an early resample to monitor this condition.
Alert			?	NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.
Check Combustion			?	We advise that you check for faulty combustion, plugged air filters, or aftercoolers.
Check Fuel/injector System			?	We advise that you check the fuel injection system.

HISTORICAL DIAGNOSIS

06 Dec 2023 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



NORMAL



13 Nov 2023 Diag: Wes Davis
Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



26 Sep 2023 Diag: Wes Davis



Resample at the next service interval to monitor. Metal levels are typical for a components first oil change. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.





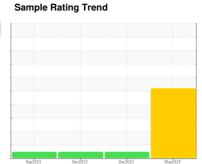
OIL ANALYSIS REPORT

ORT



Machine Id
912103
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (9 GAL)





DIAGNOSIS

Recommendation

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We advise that you check the fuel injection system. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear

Cylinder, crank, or cam shaft wear is indicated.

▲ Contamination

There is an abnormal amount of solids and carbon present in the oil. There is a high amount of fuel present in the oil.

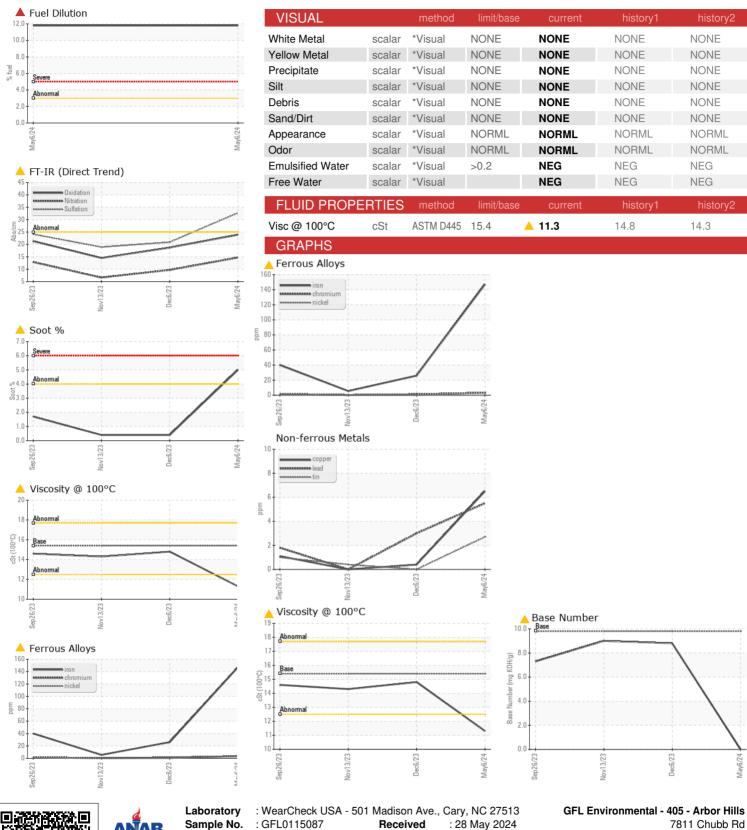
Fluid Condition

The BN level is low. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

Sample Number Client Info GFL0115087 of Maxim Page GFL0059159 of PL005925 of Maxim Page GFL005925 of Maxim Page Changed Ch	ON SHP 15W40 (
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0115087	GFL0059159	GFL0059256
Oil Age hrs Client Info 600 7356 7356 Oil Changed Status Client Info Changed Changed Changed Changed Changed Changed Changed NoRMAL NORMAL NORMAL Changed Changed Changed Changed Changed Changed Changed NoRMAL NORMAL NORMAL Sample Status WC Method >0.2 NEG	Sample Date		Client Info		06 May 2024	06 Dec 2023	13 Nov 2023
Client Info	Machine Age	hrs	Client Info		8523	7356	7356
Sever Normal N	Oil Age	hrs	Client Info		600	7356	7356
CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >120 147 26 6 Chromium ppm ASTM D5185m >20 3 1 <1	Oil Changed		Client Info		Changed	Changed	Changed
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 147 26 6 Chromium ppm ASTM D5185m >20 3 1 <1 Nickel ppm ASTM D5185m >5 3 0 0 Silver ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >20 10 3 2 Lead ppm ASTM D5185m >20 6 3 0 Copper ppm ASTM D5185m >15 3 0 <1 0 Caladium ppm ASTM D5185m 0 0 0	Sample Status				SEVERE	NORMAL	NORMAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 ▲ 147 26 6 Chromium ppm ASTM D5185m >20 3 1 <1	Water		WC Method	>0.2	NEG	NEG	NEG
ASTM D5185m SPECIAL PRIME SPECIAL PRIME	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 3 1 <1 Nickel ppm ASTM D5185m >5 3 0 0 Titanium ppm ASTM D5185m >2 <1	WEAR METAL	S	method	limit/base	current	history1	history2
ASTM D5185m >5 3 0 0 0	ron	ppm	ASTM D5185m	>120	<u> </u>	26	6
Property Property	Chromium	ppm	ASTM D5185m	>20	3	1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	3	0	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead ppm ASTM D5185m >40 6 3 0 Copper ppm ASTM D5185m >330 6 <1 0 Tin ppm ASTM D5185m >15 3 0 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 <1 1 2 Boron ppm ASTM D5185m 0 <1 1 2 Boron ppm ASTM D5185m 0 <1 1 2 Boron ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 3 <1 <1 Magnesium ppm ASTM D5185m 0 3 <1 <1 <1 Zinc ppm ASTM D5185m 1010 826 1060 953 Zinc ppm ASTM D5185m 1270 1105 1	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper ppm ASTM D5185m >330 6 <1 0 Fin ppm ASTM D5185m >15 3 0 <1	Aluminum	ppm	ASTM D5185m	>20	10	3	2
Trin	_ead	ppm	ASTM D5185m	>40	6	3	0
Trin	Copper	ppm	ASTM D5185m	>330	6	<1	0
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 <1 1 2 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 52 57 57 Manganese ppm ASTM D5185m 0 3 <1 <1 Magnesium ppm ASTM D5185m 1070 951 1132 1058 Phosphorus ppm ASTM D5185m 1270 1105 1322 1290 Zinc ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23		ppm	ASTM D5185m	>15	3	0	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	/anadium		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 52 57 57 Manganese ppm ASTM D5185m 0 3 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 52 57 57 Manganese ppm ASTM D5185m 0 3 <1 <1 Magnesium ppm ASTM D5185m 1010 826 1060 953 Calcium ppm ASTM D5185m 1070 951 1132 1058 Phosphorus ppm ASTM D5185m 1150 864 1107 1070 Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 Fuel % ASTM D7844	Boron	ppm	ASTM D5185m	0	<1	1	2
Manganese ppm ASTM D5185m 0 3 <1 <1 Magnesium ppm ASTM D5185m 1010 826 1060 953 Calcium ppm ASTM D5185m 1070 951 1132 1058 Phosphorus ppm ASTM D5185m 1150 864 1107 1070 Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 INFRA-RED method limit/base	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 826 1060 953 Calcium ppm ASTM D5185m 1070 951 1132 1058 Phosphorus ppm ASTM D5185m 1150 864 1107 1070 Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D544 >4	Molybdenum	ppm	ASTM D5185m	60	52	57	57
Calcium ppm ASTM D5185m 1070 951 1132 1058 Phosphorus ppm ASTM D5185m 1150 864 1107 1070 Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 5 0.4 0.4 Nitration Abs/cm *ASTM D7415 >3	Manganese	ppm	ASTM D5185m	0	3	<1	<1
Phosphorus ppm ASTM D5185m 1150 864 1107 1070 Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 11.8 <1.0	Magnesium	ppm	ASTM D5185m	1010	826	1060	953
Zinc ppm ASTM D5185m 1270 1105 1322 1290 Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 11.8 <1.0	Calcium	10 10 100					
Sulfur ppm ASTM D5185m 2060 2153 3154 3150 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m 13 3 2 Potassium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D7844 >4 ▲ 5 0.4 0.4 Nitration Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9		ppm	ASTM D5185m	1070	951	1132	1058
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m 13 3 2 Potassium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 ▲ 11.8 <1.0	Phosphorus						
Silicon ppm ASTM D5185m >25 23 7 4 Sodium ppm ASTM D5185m 13 3 2 Potassium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 11.8 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 5 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5		ppm	ASTM D5185m	1150	864	1107	1070
Sodium ppm ASTM D5185m 13 3 2 Potassium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 ▲ 11.8 <1.0	Zinc	ppm	ASTM D5185m ASTM D5185m	1150 1270	864 1105	1107 1322	1070 1290
Potassium ppm ASTM D5185m >20 7 1 0 Fuel % ASTM D3524 >3.0 ▲ 11.8 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 ▲ 5 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060	864 1105 2153	1107 1322 3154	1070 1290
Fuel % ASTM D3524 >3.0 ▲ 11.8 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 ▲ 5 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	1150 1270 2060 limit/base	864 1105 2153 current	1107 1322 3154 history1	1070 1290 3150 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 ▲ 5 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1150 1270 2060 limit/base	864 1105 2153 current 23	1107 1322 3154 history1	1070 1290 3150 history2
Soot % % *ASTM D7844 >4 ▲ 5 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ITS ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	1150 1270 2060 limit/base >25	864 1105 2153 current 23 13	1107 1322 3154 history1 7	1070 1290 3150 history2 4 2
Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	1150 1270 2060 limit/base >25 >20	864 1105 2153 current 23 13	1107 1322 3154 history1 7 3	1070 1290 3150 history2 4 2
Nitration Abs/cm *ASTM D7624 >20 14.7 9.7 6.6 Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	1150 1270 2060 limit/base >25 >20 >3.0	864 1105 2153 current 23 13 7	1107 1322 3154 history1 7 3 1 <1.0	1070 1290 3150 history2 4 2
Sulfation Abs/.1mm *ASTM D7415 >30 32.7 20.9 18.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ITS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	1150 1270 2060 limit/base >25 >20 >3.0 limit/base	864 1105 2153 current 23 13 7 11.8 current	1107 1322 3154 history1 7 3 1 <1.0	1070 1290 3150 history2 4 2 0 <1.0
Oxidation Abs/.1mm *ASTM D7414 >25 23.9 18.7 14.5	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ITS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4	864 1105 2153 current 23 13 7 ▲ 11.8 current	1107 1322 3154 history1 7 3 1 <1.0 history1	1070 1290 3150 history2 4 2 0 <1.0 history2
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm lTS ppm ppm ppm ppm % Abs/cm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624	1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20	864 1105 2153 current 23 13 7 ▲ 11.8 current 4 5 14.7	1107 1322 3154 history1 7 3 1 <1.0 history1 0.4 9.7	1070 1290 3150 history2 4 2 0 <1.0 history2 0.4 6.6
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D76145	1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20 >30	864 1105 2153 current 23 13 7 ▲ 11.8 current 4 5 14.7 32.7	1107 1322 3154 history1 7 3 1 <1.0 history1 0.4 9.7 20.9	1070 1290 3150 history2 4 2 0 <1.0 history2 0.4 6.6
	Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm pc % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	1150 1270 2060 limit/base >25 >20 >3.0 limit/base >4 >20 >30 limit/base	864 1105 2153 current 23 13 7 ▲ 11.8 current ▲ 5 14.7 32.7 current	1107 1322 3154 history1 7 3 1 <1.0 history1 0.4 9.7 20.9 history1	1070 1290 3150 history2 4 2 0 <1.0 history2 0.4 6.6 18.9



OIL ANALYSIS REPORT





Certificate 12367

Sample No.

: GFL0115087 Lab Number : 06193395 Unique Number : 11050147

Received **Tested**

: 31 May 2024 Diagnosed Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel)

: 31 May 2024 - Don Baldridge

US 48168 Contact: Anthony Hopkins ahopkins@gflenv.com T:

To discuss this sample report, contact Customer Service at 1-800-237-1369. 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: GFL405 [WUSCAR] 06193395 (Generated: 05/31/2024 18:02:31) Rev: 1

F:

NORTHVILLE, MI