

PROBLEM SUMMARY

Sample Rating Trend

WEAR



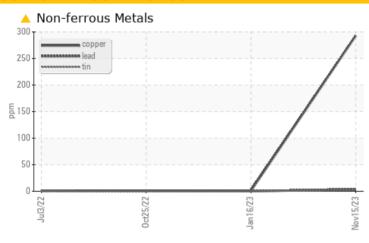


Machine Id **4624M**

Component **Diesel Engine**

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

COMPONENT CONDITION SUMMARY



RECOMMENDATION

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

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL	NORMAL	NORMAL		
Copper	ppm	ASTM D5185m	>330	293	<1	1		

Customer Id: GFL415 Sample No.: GFL0093144 Lab Number: 06010499 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Sean Felton +1 919-379-4092 sfelton@wearcheckusa.com

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

RECOMMENDED ACTIONS

There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

16 Jan 2023 Diag: Don Baldridge

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.



25 Oct 2022 Diag: Aaron Black

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.



03 Jul 2022 Diag: Don Baldridge

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.





OIL ANALYSIS REPORT

Sample Rating Trend **WEAR**



Machine Id 4624M Component **Diesel Engine**

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

DIAGNOSIS

Recommendation

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

Wear

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other component wear rates are normal.

Contamination

There is no indication of any contamination in the

Fluid Condition

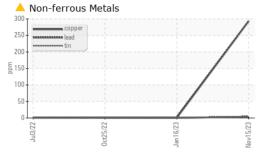
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0093144 GFL0060706 GFL0049345 Sample Date Client Info 18 Nov 2023 16 Jan 2023 25 Oct 2022 Machine Age hrs Client Info 18042 849 845 Oil Changed Client Info Not Changed ABNORMAL NORMAL NORMAL NORMAL CONTAMINATION method Iimit/base current history1 history2 NEG NE	N 3HF 13W40 (α.σ,	Jul202	2 Oct2022	Jan 2023 No	v2023	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info Oil Changed Changed Changed Sample Status CONTAMINATION method limit/base current history1 history2 Fuel WC Method > 0.0 < 1.0 < 1.0 < 1.0 < 1.0 Water WC Method > 0.2 NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS ron ppm ASTM 05185m > 90 54 50 57 Chromium ppm ASTM 05185m > 2 2 2 2 2 Nickel ppm ASTM 05185m > 2 4 1 0 0 0 Titanium ppm ASTM 05185m > 2 4 1 0 0 0 Silver ppm ASTM 05185m > 2 4 1 0 0 0 Silver ppm ASTM 05185m > 2 4 1 0 0 0 Titanium ppm ASTM 05185m > 2 5 9 6 Lead ppm ASTM 05185m > 30 4 0 4 0 < 1 Copper ppm ASTM 05185m > 30 4 0 0 < 1 Copper ppm ASTM 05185m > 30 4 0 0 < 1 Copper ppm ASTM 05185m > 15 2 < 1 1 0 0 0 ADDITIVES Boron ppm ASTM 05185m > 15 2 < 1 1 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 18 2 2 2 Boron ppm ASTM 05185m 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 18 2 2 Boron ppm ASTM 05185m 0 0 0 0 0 0 0 ADDITIVES Boron ppm ASTM 05185m 0 0 18 2 2 Boron ppm ASTM 05185m 0 0 16 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sample Number		Client Info		GFL0093144	GFL0060706	GFL0049345
Dil Age	Sample Date		Client Info		15 Nov 2023	16 Jan 2023	25 Oct 2022
Contained Client Info Not Changed Changed Normal Norm	Machine Age	hrs	Client Info		18339	16441	15792
ABNORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		18042	649	845
CONTAMINATION	Oil Changed		Client Info		Not Changd	Changed	Changed
File	Sample Status				ABNORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 54 50 57 Chromium ppm ASTM D5185m >20 2 2 2 Nickel ppm ASTM D5185m >2 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	uel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >90 54 50 57 Chromium ppm ASTM D5185m >20 2 2 2 2 Vickel ppm ASTM D5185m >2 <1	Nater		WC Method	>0.2	NEG	NEG	NEG
Port	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Silver	ron	ppm	ASTM D5185m	>90	54	50	57
Silver	Chromium	ppm	ASTM D5185m	>20	2	2	2
Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 5 9 6 Lead ppm ASTM D5185m >40 4 0 <1 Copper ppm ASTM D5185m >330 293 <1 1 Fin ppm ASTM D5185m >15 2 <1 <1 Adandium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 18 2 2 Boron ppm ASTM D5185m 0 18 2 2 Boron ppm ASTM D5185m 0 0 0 0 0 Adolybdenum ppm ASTM D5185m 0 18 2 2 2 Barium ppm ASTM D5185m 0 6 <1 <1 1 Magnesium ppm ASTM D5185m 107	Nickel	ppm	ASTM D5185m	>2	<1	0	0
Aluminum ppm ASTM D5185m >20 5 9 6 Astm D5185m >40 4 0 <1 Copper ppm ASTM D5185m >330 ▲ 293 <1 1 In ppm ASTM D5185m >15 2 <1 <1 Cadmium ppm ASTM D5185m >15 2 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Calcium ppm ASTM D5185m 1010 596 879 892 Calcium ppm ASTM D5185m 1070 1548 982 1038 Phosphorus ppm ASTM D5185m 1150 882 927 945 Zinc ppm ASTM D5185m 1270 1164 1127 1190 Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Colatasium ppm ASTM D5185m >25 20 18 21 INFRA-RED method limit/base current history1 history2 Soot % % "ASTM D5185m >20 12.3 14.6 17.5 Sulfation Abs/.1mm "ASTM D7414 >25 23.8 25.0 31.0	Fitanium	ppm	ASTM D5185m	>2	<1	0	0
Lead ppm ASTM D5185m >40 4 0 <1 Copper ppm ASTM D5185m >330 ▲ 293 <1 1 Cin ppm ASTM D5185m >15 2 <1 <1 Zandium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 18 2 2 2 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 2 2 Boron ppm ASTM D5185m 0 0 0 0 0 Adarium ppm ASTM D5185m 0 6 <1 <1 4 Magnesium ppm ASTM D5185m 1010 596 879 892 20 Calcium ppm ASTM D5185m 1070 1548 982 1038 21 Piosphorus	Silver	ppm	ASTM D5185m	>2	0	0	<1
Act	Aluminum	ppm	ASTM D5185m	>20	5	9	6
Academium	ead	ppm	ASTM D5185m	>40	4	0	<1
Acade Acad	Copper		ASTM D5185m	>330	^ 293	<1	1
Anadium	• •		ASTM D5185m	>15		<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 18 2 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 6 <1	/anadium		ASTM D5185m		<1	0	
Soron ppm ASTM D5185m 0 18 2 2 2 2 2 2 3 3 3 3	Cadmium		ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 44 58 58 Manganese ppm ASTM D5185m 0 6 <1 <1 Magnesium ppm ASTM D5185m 1010 596 879 892 Calcium ppm ASTM D5185m 1070 1548 982 1038 Phosphorus ppm ASTM D5185m 1150 852 927 945 Zinc ppm ASTM D5185m 1270 1164 1127 1190 Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 225 20 18 21 Potassium ppm ASTM D5185m 225 7 7 Potassium ppm ASTM D5185m 20 4 1 2 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	0	18	2	2
Manganese ppm ASTM D5185m 0 6 <1 <1 Magnesium ppm ASTM D5185m 1010 596 879 892 Calcium ppm ASTM D5185m 1070 1548 982 1038 Phosphorus ppm ASTM D5185m 1150 852 927 945 Zinc ppm ASTM D5185m 1270 1164 1127 1190 Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 20 18 21 Goldium ppm ASTM D5185m >25 7 7 Potassium ppm ASTM D5185m 25 7 7 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current	Barium	ppm	ASTM D5185m	0	0	0	0
Manganese ppm ASTM D5185m 0 6 <1 <1 Magnesium ppm ASTM D5185m 1010 596 879 892 Calcium ppm ASTM D5185m 1070 1548 982 1038 Phosphorus ppm ASTM D5185m 1150 852 927 945 Zinc ppm ASTM D5185m 1270 1164 1127 1190 Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 20 18 21 Goldium ppm ASTM D5185m >25 7 7 Potassium ppm ASTM D5185m 25 7 7 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current	Molybdenum	ppm	ASTM D5185m	60	44	58	58
Magnesium ppm ASTM D5185m 1010 596 879 892 Calcium ppm ASTM D5185m 1070 1548 982 1038 Phosphorus ppm ASTM D5185m 1150 852 927 945 Zinc ppm ASTM D5185m 1270 1164 1127 1190 Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 20 18 21 Sodium ppm ASTM D5185m >25 7 7 7 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7414 <td></td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>6</th> <td><1</td> <td><1</td>		ppm	ASTM D5185m	0	6	<1	<1
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Sulfur ppm ASTM D5185m 2060 2017 3035 3095 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 20 18 21 Sodium ppm ASTM D5185m 25 7 7 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.8 1.8 2.5 Nitration Abs/cm *ASTM D7624 >20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	•		ASTM D5185m		1164	1127	1190
Solicon ppm ASTM D5185m >25 20 18 21 20 20 25 7 7 20 20 25 7 7 20 20 25 7 7 20 20 20 20 20 20	Sulfur			2060		3035	3095
Sodium ppm ASTM D5185m 25 7 7 Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.8 1.8 2.5 Nitration Abs/cm *ASTM D7624 >20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
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Potassium ppm ASTM D5185m >20 4 1 2 INFRA-RED method limit/base current history1 history2 Goot % % *ASTM D7844 >6 0.8 1.8 2.5 Nitration Abs/cm *ASTM D7624 >20 12.3 14.6 17.5 Gulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	Sodium	ppm	ASTM D5185m		25	7	7
Soot % % *ASTM D7844 > 6 0.8 1.8 2.5 Nitration Abs/cm *ASTM D7624 > 20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7415 > 30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 23.8 25.0 31.0	Potassium		ASTM D5185m	>20	4	1	2
Nitration Abs/cm *ASTM D7624 >20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 12.3 14.6 17.5 Sulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	Soot %	%	*ASTM D7844	>6	0.8	1.8	2.5
Sulfation Abs/.1mm *ASTM D7415 >30 23.7 26.4 31.7 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0	Nitration						
Dxidation Abs/.1mm *ASTM D7414 >25 23.8 25.0 31.0							
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	23.8	25.0	31.0
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	7.3	8.1

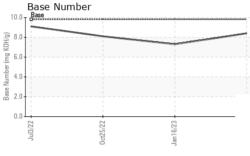
Submitted By: Frank Wolak



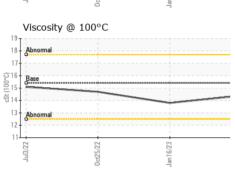
OIL ANALYSIS REPORT

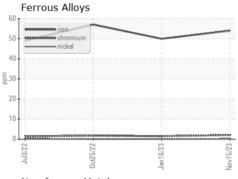


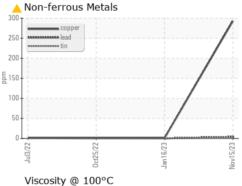
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

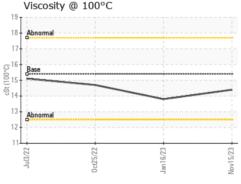


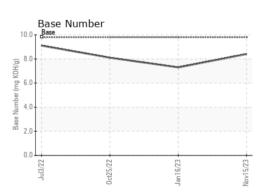
FLUID PROPE	KIIE2	metnoa	ilmit/base	current	nistory i	nistory
Visc @ 100°C	cSt	ASTM D445	15.4	14.4	13.8	14.7
GRAPHS						















Certificate L2367

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

: GFL0093144 : 06010499 : 10749643

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Nov 2023 Diagnosed : 20 Nov 2023 Diagnostician : Sean Felton

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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)