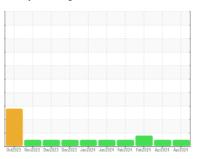


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id 914030 Component

Component

Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

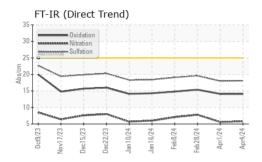
Fluid Condition

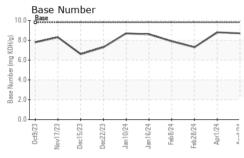
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

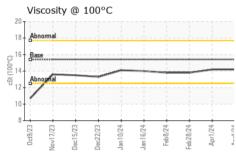
SAMPLE INFORMATION method limit/bass current history1 history2	āAL)		Oct2023 Nov2	023 Dec2023 Dec2023 Jan2	024 Jan 2024 Feb 2024 Feb 2024 Apr2	024 Apr2024		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Date Client Info 04 Apr 2024 01 Apr 2024 28 Feb 2024 Machine Age hrs Client Info 1879 1879 1624 Oil Age hrs Client Info 132 138 464 Oil Changed Client Info Not Changd	Sample Number		Client Info		GFL0109346	GFL0109242	GFL0109252	
Machine Age hrs Client Info 1879 1879 1624 Oil Age hrs Client Info 132 138 464 Oil Changed Client Info Not Changd Not Changd			Client Info		04 Apr 2024	01 Apr 2024	28 Feb 2024	
Oil Changed Sample Status Client Info Not Changd NORMAL Not Changd NORMAL Not Changd ABNORMAL CONTAMINATION method limit/base current history? Fuel WC Method >5.5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 6 6 21 Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >20 0 0 <1 Silver ppm ASTM D5185m >20 2 <1 2 2 Lead ppm ASTM D5185m >40 0 0 0 <1 0 <1 0 <1 0 <1 0 <1		hrs	Client Info		-	1879	1624	
Sample Status		hrs	Client Info		132	138	464	
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 6 6 21 Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >4 <1 1 7 Silver ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >330 4 4 37 Tin ppm ASTM D5185m >330 4 4 37 Tin </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Not Changd</th> <th>Not Changd</th> <th>Not Changd</th>	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd	
Fuel	Sample Status				NORMAL	NORMAL	ABNORMAL	
Water Glycol WC Method Glycol >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 6 6 21 Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >4 <1 1 7 Silver ppm ASTM D5185m >4 <1 1 7 Silver ppm ASTM D5185m >40 0 0 0 Silver ppm ASTM D5185m >40 0 0 0 Silver ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >15 0 0 0 1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m <t< th=""><th>CONTAMINAT</th><th>ION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	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 >100 6 6 21 Chromium ppm ASTM D5185m >20 0 0 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0	
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2	
Nickel ppm ASTM D5185m >4 <1 1 ↑ Titanium ppm ASTM D5185m 8 9 20 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1	Iron	ppm	ASTM D5185m	>100	6	6	21	
Titanium ppm ASTM D5185m 8 9 20 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1	Chromium	ppm	ASTM D5185m	>20	0	0	<1	
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 4 4 37 Tin ppm ASTM D5185m 0 0 <1 0 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 <t< td=""><td>Nickel</td><td>ppm</td><td>ASTM D5185m</td><td>>4</td><th><1</th><td>1</td><td><u>^</u> 7</td></t<>	Nickel	ppm	ASTM D5185m	>4	<1	1	<u>^</u> 7	
Aluminum ppm ASTM D5185m >20 2 <1 2 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 4 4 37 Tin ppm ASTM D5185m 0 0 <1	Titanium	ppm	ASTM D5185m		8	9	20	
Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >330 4 4 37 Tin ppm ASTM D5185m >15 0 0 <1 0 Vanadium ppm ASTM D5185m 0 0 <1 0 Cadmium ppm ASTM D5185m 0 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 <1 1 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM	Silver	ppm	ASTM D5185m	>3	0	0	0	
Copper ppm ASTM D5185m >330 4 4 37 Tin ppm ASTM D5185m >15 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	2	<1	2	
Tin ppm ASTM D5185m >15 0 0 <1 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 9 9 14 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942	Lead	ppm			0	0	0	
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 9 14 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 1025 969 910 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>330</td><th>4</th><td>4</td><td>37</td></t<>	Copper	ppm	ASTM D5185m	>330	4	4	37	
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 9 9 14 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 1 Magnesium ppm ASTM D5185m 1010 1025 969 910 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 <th col<="" td=""><td>Tin</td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><th>0</th><td>0</td><td><1</td></th>	<td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <th>0</th> <td>0</td> <td><1</td>	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0	
Boron ppm ASTM D5185m 0 9 9 14 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 56 54 Manganese ppm ASTM D5185m 0 0 0 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0	
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 56 54 Manganese ppm ASTM D5185m 0 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 60 55 56 54 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m 1010 1025 969 910 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >3<	Boron	ppm					14	
Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 1010 1025 969 910 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7845 <t< td=""><td>Barium</td><td>ppm</td><td></td><td></td><th>-</th><td></td><td>-</td></t<>	Barium	ppm			-		-	
Magnesium ppm ASTM D5185m 1010 1025 969 910 Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m >20 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm "ASTM D7414	,	ppm						
Calcium ppm ASTM D5185m 1070 1242 1198 1229 Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m >20 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION meth	-	ppm	ASTM D5185m		-			
Phosphorus ppm ASTM D5185m 1150 1154 1071 1066 Zinc ppm ASTM D5185m 1270 1371 1325 1324 Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 5.8 5.6 7.8 Nitration Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	<u> </u>	ppm						
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Sulfur ppm ASTM D5185m 2060 4264 3942 3365 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4	·							
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Silicon ppm ASTM D5185m >25 5 3 7 Sodium ppm ASTM D5185m 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4			ASTM D5185m	2060	4264	3942	3365	
Sodium ppm ASTM D5185m 2 2 4 Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4		ITS	method	limit/base	current	history1	history2	
Potassium ppm ASTM D5185m >20 2 1 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4		ppm		>25	5		7	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4		ppm	ASTM D5185m		2	2	4	
Soot % % *ASTM D7844 >3 0.2 0.2 0.5 Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4	Potassium	ppm	ASTM D5185m	>20	2	1	5	
Nitration Abs/cm *ASTM D7624 >20 5.8 5.6 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.0 19.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4	Soot %	%	*ASTM D7844	>3	0.2		0.5	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.1 14.1 15.4		Abs/cm	*ASTM D7624	>20	5.8	5.6	7.8	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.1	18.0	19.6	
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2	
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.7 8.8 7.3	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	14.1	15.4	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.7	8.8	7.3	

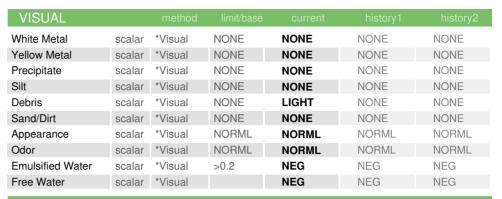


OIL ANALYSIS REPORT



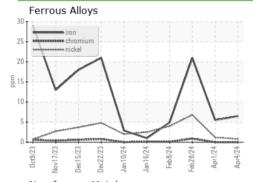


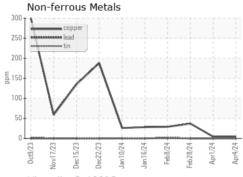


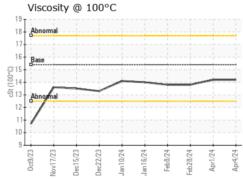


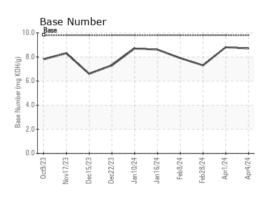
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.2	13.8

GRAPHS













Certificate 12367

Test Package : FLEET

Laboratory Sample No. : GFL0109346 Lab Number : 06139705 Unique Number : 10964513

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Apr 2024 **Tested** : 06 Apr 2024

Diagnosed : 06 Apr 2024 - Wes Davis

GFL Environmental - 891 - Oklahoma City Hauling

1001 South Rockwell Oklahoma City, OK US 73128

Contact: Andy Smith andrew.smith@gflenv.com T: (405)306-1651

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: GFL891 [WUSCAR] 06139705 (Generated: 04/06/2024 04:37:32) Rev: 1

Submitted By: Andy Smith