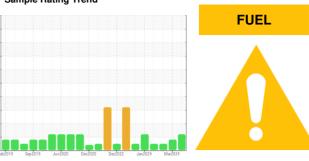


OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id **723033-303003**

Diesel Engine

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

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

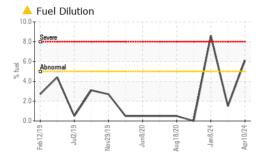
▲ Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

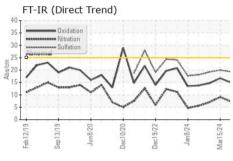
Sample Number Client Info GFL0114155 GFL0114152 22 1225 21421 21295 OUT AMINATION CCOINTAMINATION CCOINTAMINATION Mol Info Not Changd Not	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 10 Apr 2024 15 Mar 2024 22 Feb 2024 Machine Age hrs Client Info 21552 21421 21295		IVIATION		IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII			
Machine Age hrs Client Info 21552 21421 21295 Dil Age hrs Client Info 21320 21189 232 Dil Changed Client Info Not Changd NOT Changd </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Dil Age		lawa			-		
Dil Changed Client Info Not Changed ABNORMAL							
ABNORMAL ABNORMAL	-	nrs					
CONTAMINATION method limit/base current history1 history2 Water WC Method Vo.2 NEG NEG NEG Silycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >80 19 43 28 Chromium ppm ASTM D5185m >5 1 3 2 Vickel ppm ASTM D5185m >5 1 3 2 Silver ppm ASTM D5185m >30 0 0 0 Aluminum ppm ASTM D5185m >30 1 3 3 Lead ppm ASTM D5185m >30 2 3 1 Copper ppm ASTM D5185m >5 <1			Client Info			Ü	_
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WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >80 19 43 28 Chromium ppm ASTM D5185m >5 1 3 2 Nickel ppm ASTM D5185m >0 <1	Nater		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>80	19	43	28
Description	Chromium	ppm	ASTM D5185m	>5	1	3	2
Saliver	Nickel	ppm	ASTM D5185m	>2	0	<1	0
Silver	Titanium		ASTM D5185m		0	<1	0
Aluminum ppm ASTM D5185m >30 1 3 3 1 Lead ppm ASTM D5185m >30 2 3 1 Loopper ppm ASTM D5185m >150 31 173 10 Fin ppm ASTM D5185m >5 -1 2 1 2 1 Vanadium ppm ASTM D5185m >0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 0 4 0 Barium ppm ASTM D5185m 0 0 1 0 0 0 Barium ppm ASTM D5185m 0 0 1 0 0 0 Barium ppm ASTM D5185m 0 0 1 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 1 1 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 1 1 0 0 1 1 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 1 1 0 0 1 1 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>30	1	3	3
Description	_ead	ppm	ASTM D5185m	>30	2	3	1
Property Property	Copper		ASTM D5185m	>150	31	▲ 173	10
Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1 5 Barium ppm ASTM D5185m 0 0 4 0 Molybdenum ppm ASTM D5185m 0 0 4 0 Manganese ppm ASTM D5185m 0 <1 2 2 Magnesium ppm ASTM D5185m 1010 852 885 966 Calcium ppm ASTM D5185m 1070 1001 1059 1131 Phosphorus ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 <	• •		ASTM D5185m	>5	<1	2	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 <1	/anadium		ASTM D5185m		<1	<1	0
Soron ppm ASTM D5185m 0 0 0 4 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 54 56 63 Manganese ppm ASTM D5185m 0 <1 2 2 Magnesium ppm ASTM D5185m 1010 852 885 966 Calcium ppm ASTM D5185m 1070 1001 1059 1131 Phosphorus ppm ASTM D5185m 1150 949 960 11119 Zinc ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 18 3 Fuel % ASTM D584m	Boron	ppm	ASTM D5185m	0	0	<1	5
Manganese ppm ASTM D5185m 0 <1 2 2 Magnesium ppm ASTM D5185m 1010 852 885 966 Calcium ppm ASTM D5185m 1070 1001 1059 1131 Phosphorus ppm ASTM D5185m 1150 949 960 1119 Zinc ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Bodium ppm ASTM D5185m >20 5 13 14 Godium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m	Barium	ppm	ASTM D5185m	0	0	4	0
Magnesium ppm ASTM D5185m 1010 852 885 966 Calcium ppm ASTM D5185m 1070 1001 1059 1131 Phosphorus ppm ASTM D5185m 1150 949 960 1119 Zinc ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D544 >3 </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <td>54</td> <td>56</td> <td>63</td>	Molybdenum	ppm	ASTM D5185m	60	54	56	63
Calcium ppm ASTM D5185m 1070 1001 1059 1131 Phosphorus ppm ASTM D5185m 1150 949 960 1119 Zinc ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m >20 16 18 3 Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 1 1.0 Soot % % *ASTM D7844 >3 </td <td>Manganese</td> <td>nnm</td> <td>ACTM DE105m</td> <td>0</td> <td><1</td> <td>2</td> <td>2</td>	Manganese	nnm	ACTM DE105m	0	<1	2	2
Phosphorus ppm ASTM D5185m 1150 949 960 1119 Zinc ppm ASTM D5185m 1270 1135 1166 1331 Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m >20 16 18 3 Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D5185m >20 16 18 3 Fuel % ASTM D3524 >5 ▲ 6.1 <1.0		ppiii	HOTIVI DOTODIII	•	~ ~ ~	_	_
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Sulfur ppm ASTM D5185m 2060 3193 3143 3255 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m 8 9 6 Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D3524 >5 ▲ 6.1 <1.0	•	ppm	ASTM D5185m	1010	852	885	966
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 13 14 Sodium ppm ASTM D5185m 8 9 6 Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D3524 >5 ▲ 6.1 <1.0	Calcium	ppm	ASTM D5185m ASTM D5185m	1010 1070	852 1001	885 1059	966 1131
Soliticon ppm ASTM D5185m >20 5 13 14	Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150	852 1001 949	885 1059 960	966 1131 1119
Sodium ppm ASTM D5185m 8 9 6 Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D3524 >5 ▲ 6.1 <1.0	Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270	852 1001 949 1135	885 1059 960 1166	966 1131 1119 1331
Potassium ppm ASTM D5185m >20 16 18 3 Fuel % ASTM D3524 >5 ▲ 6.1 <1.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.6 0.4 Vitration Abs/cm *ASTM D7624 >20 7.3 9.1 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.0 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 16.7 14.7	Calcium Phosphorus Zinc Gulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060	852 1001 949 1135 3193	885 1059 960 1166 3143	966 1131 1119 1331 3255
Fuel % ASTM D3524 >5	Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1010 1070 1150 1270 2060 limit/base	852 1001 949 1135 3193 current	885 1059 960 1166 3143 history1	966 1131 1119 1331 3255 history2
INFRA-RED	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1010 1070 1150 1270 2060 limit/base	852 1001 949 1135 3193 current	885 1059 960 1166 3143 history1	966 1131 1119 1331 3255 history2
Soot % % *ASTM D7844 >3 0.4 0.6 0.4 Nitration Abs/cm *ASTM D7624 >20 7.3 9.1 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.0 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 16.7 14.7	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >20	852 1001 949 1135 3193 current 5	885 1059 960 1166 3143 history1 13	966 1131 1119 1331 3255 history2 14 6
Nitration Abs/cm *ASTM D7624 >20 7.3 9.1 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.0 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 16.7 14.7	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m METHOD METHOD ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >20	852 1001 949 1135 3193 current 5 8 16	885 1059 960 1166 3143 history1 13 9	966 1131 1119 1331 3255 history2 14 6
Nitration Abs/cm *ASTM D7624 >20 7.3 9.1 7.0 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.0 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 16.7 14.7	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	1010 1070 1150 1270 2060 limit/base >20 >20	852 1001 949 1135 3193 current 5 8 16 \$\triangle\$ 6.1	885 1059 960 1166 3143 history1 13 9 18 <1.0	966 1131 1119 1331 3255 history2 14 6 3 <1.0
Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.0 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.0 16.7 14.7	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm NTS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524	1010 1070 1150 1270 2060 limit/base >20 >5 limit/base	852 1001 949 1135 3193 current 5 8 16 • 6.1	885 1059 960 1166 3143 history1 13 9 18 <1.0	966 1131 1119 1331 3255 history2 14 6 3 <1.0 history2
Oxidation	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm strs ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D3524	1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3	852 1001 949 1135 3193 current 5 8 16 ▲ 6.1 current 0.4	885 1059 960 1166 3143 history1 13 9 18 <1.0 history1	966 1131 1119 1331 3255 history2 14 6 3 <1.0 history2 0.4
	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm strictless and strictless are str	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20	852 1001 949 1135 3193	885 1059 960 1166 3143 history1 13 9 18 <1.0 history1 0.6 9.1	966 1131 1119 1331 3255 history2 14 6 3 <1.0 history2 0.4 7.0
	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >3	852 1001 949 1135 3193 current 5 8 16 ▲ 6.1 current 0.4 7.3 19.3	885 1059 960 1166 3143 history1 13 9 18 <1.0 history1 0.6 9.1 20.0	966 1131 1119 1331 3255 history2 14 6 3 <1.0 history2 0.4 7.0 19.2
	Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m METHOD ASTM D5185m METHOD ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 METHOD *ASTM D7844 *ASTM D7624 *ASTM D7415 METHOD	1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >3 limit/base	852 1001 949 1135 3193	885 1059 960 1166 3143 history1 13 9 18 <1.0 history1 0.6 9.1 20.0 history1	966 1131 1119 1331 3255 history2 14 6 3 <1.0 history2 0.4 7.0 19.2 history2

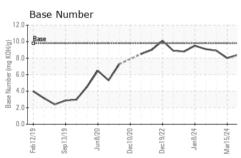


OIL ANALYSIS REPORT



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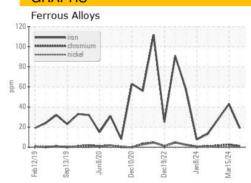


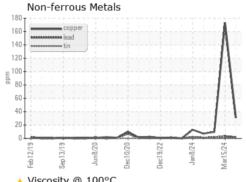


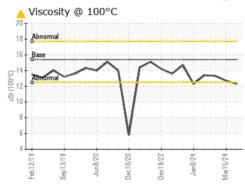
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

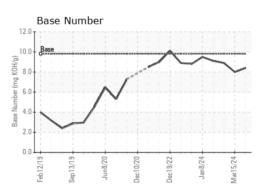
FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.3	12.7	13.3

GRAPHS













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0114183 Lab Number : 06150954 $\textbf{Unique Number} \quad : 10981032$

Received : 16 Apr 2024 **Tested** Diagnosed

: 22 Apr 2024 : 22 Apr 2024 - Wes Davis Test Package: FLEET (Additional Tests: FuelDilution, PercentFuel)

22820 S State Route 291

US 64701 Contact: SARA PATRICK spatrick@gflenv.com

Harrisonville, MO

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)

GFL Environmental - 837 - Harrison TS

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