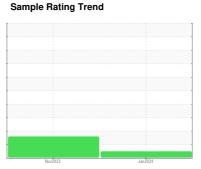


OIL ANALYSIS REPORT



Machine Id 414053 Component **Diesel Engine**

PETRO CANADA DURON GEO LD 15W40 (60 QTS)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the

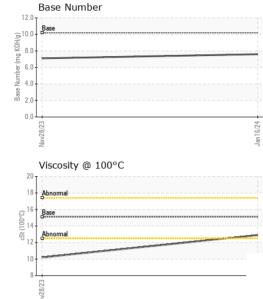
Fluid Condition

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 GFL0092689 GFL0092671 Sample Date Client Info 16 Jan 2024 28 Nov 2023 Machine Age hrs Client Info 710 742 Oil Age hrs Client Info 710 742 Oil Changed Client Info Changed Changed Sample Status WC Method NCRMAL ABNORMAL CONTAMINATION method Imitibase current history2 Fuel WC Method >0.2 NEG NEG Water WC Method N.2 NEG NEG Riycol WC Method NEG NEG WEAR METALS method limit/base current history2 Iron ppm ASTM D5185m >20 <1 40 Nickel ppm ASTM D5185m >20 <1 <1 Rivery	GEO LD 15W40 (6	60 QTS)		Nov2023	Jan 2024		
Sample Date Client Info 16 Jan 2024 28 Nov 2023	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 742 742 Oil Age hrs Client Info 710 742 Oil Age hrs Client Info 710 742 Oil Age hrs Client Info Changed Changed Sample Status NoRMAL ABNORMAL CONTAMINATION method Imitibase current history1 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0092689	GFL0092671	
Dil Age	Sample Date		Client Info		16 Jan 2024	28 Nov 2023	
Contained Client Info Changed Changed	Machine Age	hrs	Client Info		742	742	
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		710	742	
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Changed	Changed	
Fuel	Sample Status				NORMAL	ABNORMAL	
Water WC Method Solution NEG NEG	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	0.4	
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Strickel	ron	ppm	ASTM D5185m	>120	12	40	
Nickel	Chromium		ASTM D5185m		<1	2	
Silver	Nickel		ASTM D5185m	>5	2	7	
Silver	Titanium	ppm	ASTM D5185m	>2	0	<1	
Lead ppm ASTM D5185m >40 2 0	Silver		ASTM D5185m	>2	1	<1	
Copper ppm ASTM D5185m >330 142 209 Fin ppm ASTM D5185m >15 0 4 Vanadium ppm ASTM D5185m 0 0 Cadmium ppm ASTM D5185m 0 0 Cadmium ppm ASTM D5185m 50 8 86 Barium ppm ASTM D5185m 50 0 0 Barium ppm ASTM D5185m 50 63 104 Molybdenum ppm ASTM D5185m 50 63 104 Manganese ppm ASTM D5185m 0 <1	Aluminum	ppm	ASTM D5185m	>20	7	26	
Tin	_ead	ppm	ASTM D5185m	>40	2	0	
Vanadium ppm ASTM D5185m 0 0	Copper	ppm	ASTM D5185m	>330	142	209	
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 8 86 Barium ppm ASTM D5185m 5 0 0 Molybdenum ppm ASTM D5185m 50 63 104 Manganese ppm ASTM D5185m 50 63 104 Manganesium ppm ASTM D5185m 560 931 723 Calcium ppm ASTM D5185m 1510 1181 1285 Phosphorus ppm ASTM D5185m 780 1054 682 Zinc ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <	Γin	ppm	ASTM D5185m	>15	0	4	
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 50 8 86 Barium ppm ASTM D5185m 5 0 0 0 Molybdenum ppm ASTM D5185m 50 63 104 Manganese ppm ASTM D5185m 0 <1 4 Magnesium ppm ASTM D5185m 560 931 723 Calcium ppm ASTM D5185m 1510 1181 1285 Phosphorus ppm ASTM D5185m 780 1054 682 Phosphorus ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 △ 66 Bodium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % 'ASTM D7844 >4 0.3 0.4 INFRA-RED method limit/base current history1 history2 Sulfation Abs/tmm 'ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/1mm 'ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/1mm 'ASTM D7415 >25 14.9 22.8	Vanadium	ppm	ASTM D5185m		0	0	
Boron ppm ASTM D5185m 50 8 86	Cadmium	ppm	ASTM D5185m		0	0	
Barium ppm ASTM D5185m 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 63 104 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	50	8	86	
Manganese ppm ASTM D5185m 0 <1 4 Magnesium ppm ASTM D5185m 560 931 723 Calcium ppm ASTM D5185m 1510 1181 1285 Phosphorus ppm ASTM D5185m 780 1054 682 Zinc ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m >20 67 Potassium ppm ASTM D5185m >20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3	Barium	ppm	ASTM D5185m	5	0	0	
Magnesium ppm ASTM D5185m 560 931 723 Calcium ppm ASTM D5185m 1510 1181 1285 Phosphorus ppm ASTM D5185m 780 1054 682 Zinc ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m 3 5 Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7414 >25 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>50</td> <td>63</td> <td>104</td> <td></td>	Molybdenum	ppm	ASTM D5185m	50	63	104	
Calcium ppm ASTM D5185m 1510 1181 1285 Phosphorus ppm ASTM D5185m 780 1054 682 Zinc ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m >20 20 67 Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method li	Manganese	ppm	ASTM D5185m	0	<1	4	
Phosphorus ppm ASTM D5185m 780 1054 682 Zinc ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m 3 5 Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base	Magnesium	ppm	ASTM D5185m	560	931	723	
Zinc ppm ASTM D5185m 870 1215 829 Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m 3 5 Potassium ppm ASTM D5185m >20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1510</td> <td>1181</td> <td>1285</td> <td></td>	Calcium	ppm	ASTM D5185m	1510	1181	1285	
Sulfur ppm ASTM D5185m 2040 3314 2145 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 66 Sodium ppm ASTM D5185m 3 5 Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Sulfation Abs/.1mm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Phosphorus	ppm	ASTM D5185m	780	1054	682	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9	Zinc	ppm	ASTM D5185m	870	1215	829	
Solition ppm ASTM D5185m >25 9	Sulfur	ppm	ASTM D5185m	2040	3314	2145	
Sodium ppm ASTM D5185m 3 5 Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot %	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 20 67 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Silicon	ppm	ASTM D5185m	>25	9	△ 66	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Sodium	ppm	ASTM D5185m		3	5	
Soot % *ASTM D7844 >4 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Potassium	ppm	ASTM D5185m	>20	20	67	
Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 7.8 11.2 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Soot %	%	*ASTM D7844	>4	0.3	0.4	
Sulfation Abs/.1mm *ASTM D7415 >30 19.3 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 22.8	Vitration	Abs/cm	*ASTM D7624	>20		11.2	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30		24.0	
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.9	22.8	
	Base Number (BN)	mg KOH/g	ASTM D2896	10.2	7.6	7.1	



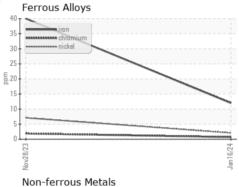
OIL ANALYSIS REPORT

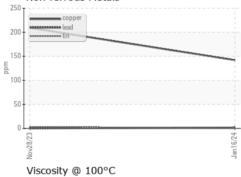


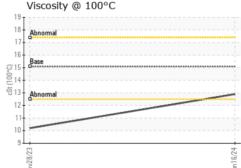
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	
Odor	scalar	*Visual	NORML	NORML	NORML	
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	

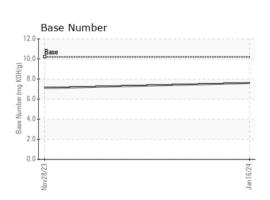
FLUID PROPI	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.1	12.9	10.2	

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10834861

: GFL0092689 : 06063479

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 17 Jan 2024

Diagnosed : 19 Jan 2024 Diagnostician : Wes Davis

Test Package : FLEET 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)

Contact: WALTER SKOKOWSKI walter.skokowski@gflenv.com

GFL Environmental - 005 - Wilson/Tri-East(CNG)

T:

2810 Contentnea Road S

F:

Wilson, NC

US 27893-8501

Report Id: GFL005 [WUSCAR] 06063479 (Generated: 01/19/2024 16:34:30) Rev: 1