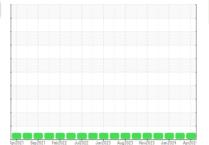


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 911018-1377

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (46 QTS)

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.

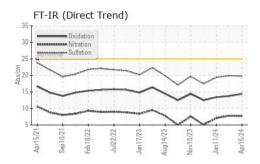
Fluid Condition

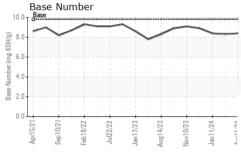
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

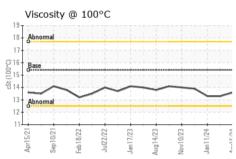
Sample Date Client Info 15 Apr 2024 31 Jan 2024 11 Jan 2024 Machine Age hrs Client Info 9767 9195 9083 9093 9083 9083 9083 9093 9083 9093 9083 9093 9	x13)		4piz0zi oepz	021 P802022 JUI2022	Janizuza Augzuza Iluvzuza Jan	2024 Apriloz	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 9767 9195 9083 Dil Age hrs Client Info 580 601 489 Dil Changed Client Info Changed Changed Not Changed Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method Imitibase current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG Ricg NEG NEG NEG NEG NEG NEG WEAR METALS method limitbase current history1 history1 Biron ppm ASTM D5185m >10 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Sample Number		Client Info		GFL0110329	GFL0110351	GFL0102771
Dil Age	Sample Date		Client Info		15 Apr 2024	31 Jan 2024	11 Jan 2024
Contained Client Info Changed NoRMAL N	Machine Age	hrs	Client Info		9767	9195	9083
NORMAL NORMAL NORMAL CONTAMINATION method imilibase current history1 history2	Oil Age	hrs	Client Info		580	601	489
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Gilycol WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 11 13 9 Chromium ppm ASTM D5185m >20 <1 1 <1 <1 Nickel ppm ASTM D5185m >4 <1 <1 0 0 Silver ppm ASTM D5185m >4 <1 <1 0 0 Silver ppm ASTM D5185m >40 0 <1 0 0 Silver ppm ASTM D5185m >40 0 <1 0 0 Copper ppm ASTM D5185m >33 0 <1 <1 <1 0 Copper ppm ASTM D5185m >30 <1 <1 <1 0 <1 <1 <1 0 <1 <1 <1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
NEG NEG NEG NEG NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	11	13	9
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 <1 <1 <1 <1 <1 O Vanadium ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	3	<1	1
Namedium	Lead	ppm	ASTM D5185m	>40	0	<1	0
Vanadium ppm ASTM D5185m <1 0 <1 Cadmium ppm ASTM D5185m <1 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 5 5 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 <1 0 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 905 907 897 Calcium ppm ASTM D5185m 1070 1064 976 1083 Phosphorus ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>330	<1	<1	<1
ADDITIVES	Tin	ppm	ASTM D5185m	>15	<1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	<1
Boron ppm ASTM D5185m 0 2 5 5 5	Cadmium	ppm	ASTM D5185m		<1	<1	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 58 59 60 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 905 907 897 Calcium ppm ASTM D5185m 1070 1064 976 1083 Phosphorus ppm ASTM D5185m 1150 977 894 1004 Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7824 >20 <	Boron	ppm	ASTM D5185m	0	2	5	5
Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 905 907 897 Calcium ppm ASTM D5185m 1070 1064 976 1083 Phosphorus ppm ASTM D5185m 1150 977 894 1004 Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	<1	0	0
Magnesium ppm ASTM D5185m 1010 905 907 897 Calcium ppm ASTM D5185m 1070 1064 976 1083 Phosphorus ppm ASTM D5185m 1150 977 894 1004 Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/.1mm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D741	Molybdenum	ppm	ASTM D5185m	60	58	59	60
Calcium ppm ASTM D5185m 1070 1064 976 1083 Phosphorus ppm ASTM D5185m 1150 977 894 1004 Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus ppm ASTM D5185m 1150 977 894 1004 Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m 20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Magnesium	ppm	ASTM D5185m	1010	905	907	897
Zinc ppm ASTM D5185m 1270 1219 1181 1195 Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m 20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Calcium	ppm	ASTM D5185m	1070	1064	976	1083
Sulfur ppm ASTM D5185m 2060 3118 2744 2979 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m 4 0 2 Potassium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Phosphorus	ppm		1150	977	894	1004
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m 4 0 2 Potassium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Zinc	ppm	ASTM D5185m	1270	1219	1181	1195
Silicon ppm ASTM D5185m >25 3 3 3 Sodium ppm ASTM D5185m 4 0 2 Potassium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Sulfur	ppm	ASTM D5185m	2060	3118	2744	2979
Sodium ppm ASTM D5185m 4 0 2 Potassium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 6 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Silicon	ppm	ASTM D5185m	>25	3	3	3
INFRA-RED	Sodium	ppm	ASTM D5185m		4	0	2
Soot % % *ASTM D7844 >3 0.9 1.1 0.9 Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Potassium	ppm	ASTM D5185m	>20	3	6	3
Nitration Abs/cm *ASTM D7624 >20 7.7 7.8 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.8 19.9 19.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Soot %	%	*ASTM D7844	>3	0.9	1.1	0.9
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.4 13.8 13.4	Nitration	Abs/cm	*ASTM D7624	>20	7.7	7.8	7.1
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.8	19.9	19.4
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.4 8.3 8.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.4	13.8	13.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	8.3	8.4



OIL ANALYSIS REPORT



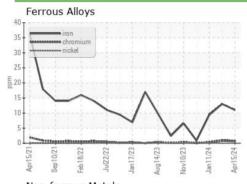


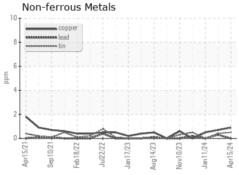


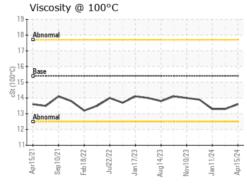
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

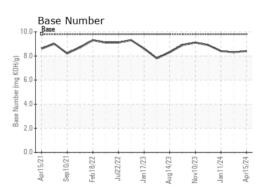
FLUID PROF	PERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.3	13.3

GRAPHS













Certificate 12367

Laboratory Sample No.

: GFL0110329 Lab Number : 06156624 Unique Number : 10992047

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received : 22 Apr 2024 **Tested** : 23 Apr 2024 Diagnosed : 23 Apr 2024 - Wes Davis

160 Hughes Dr Traverse City, MI US 49686

GFL Environmental - 622 - Traverse City Hauling

Contact: GARY BREWER

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)

T:

F: