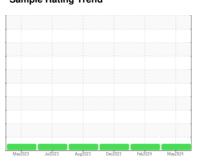


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id **427181 - SW4721**

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

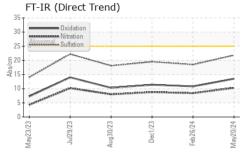
Fluid Condition

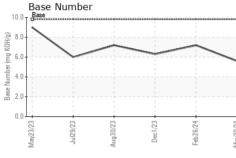
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

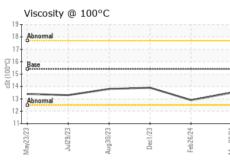
SAMPLE INFORMATION method limit/base current history1 GFL01094066 Sample Number Cilent Info 20 May 2024 26 Feb 2024 01 Dec 2023 379309 01 Age mls Cilent Info 384883 23689 379309 01 Age mls Cilent Info 384883 23689 379309 01 Age mls Cilent Info Changed N/A Not Changd NORMAL NORMAL	AAL)		May2023	Juizuza Augzuza	9 Decz023 Fe02024	May2U24		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Machine Age mls Client Info 384883 382772 379309 Oil Age mls Client Info 384883 23689 379309 Oil Changed Client Info Changed N/A Not Changd Sample Status Ned NoRMAL NORMAL NORMAL CONTAMINATION method limit/base current history Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG Ilycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history nistory2 WEAR METALS method limit/base current history nistory2 WEAR METALS method limit/base current history1 nistory2 WEAR METALS method limit/base current history1 nistory2 WEAR METALS method limit/base	Sample Number		Client Info		GFL0105474	GFL0112120	GFL0094066	
Oil Age mls Client Info Changed Changed N/A 379309 Oil Changed Sample Status Client Info Changed N/A No Changd No Changed N/A No Changd No Changed N/A No Changd No Changed N/A No Changed No Chang	Sample Date		Client Info		20 May 2024	26 Feb 2024	01 Dec 2023	
Oil Changed Sample Status Client Info MoRMAL Changed NORMAL N/A NORMAL Not Changd NORMAL CONTAMINATION method limit/base current history1 history2 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 16 13 7 Chromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >20 0 <1 0 Silver ppm ASTM D5185m >3 <1 0 <1 Lead ppm ASTM D5185m >40 4 1 <1 Copper ppm ASTM D5185m >330 <1 <1 <1	Machine Age	mls	Client Info		-	382772	379309	
Oil Changed Sample Status Client Info Changed NORMAL N/A Not Changd NORMAL 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 WEAR METALS method limit/base current history2 Iron ppm ASTM D5185m >100 16 13 7 Chromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >20 0 <1 0 Silver ppm ASTM D5185m >3 <1 0 <1 Lead ppm ASTM D5185m >20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 <th>Oil Age</th> <th>mls</th> <th>Client Info</th> <th></th> <th>384883</th> <th>23689</th> <th>379309</th>	Oil Age	mls	Client Info		384883	23689	379309	
Sample Status	-		Client Info		Changed	N/A	Not Changd	
Fuel					_	NORMAL	Ŭ	
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >10.0 16 13 7 Chromium ppm ASTM D5185m >20 0 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2	
WEAR METALS	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 <1 0 Nickel ppm ASTM D5185m >4 <1	WEAR METAL	.S	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>100	16	13	7	
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	0	
Silver	Nickel	ppm	ASTM D5185m	>4	<1	<1	<1	
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0	
Lead ppm ASTM D5185m >40 4 1 <1	Silver	ppm	ASTM D5185m	>3	<1	0	0	
Copper ppm ASTM D5185m >330 <1	Aluminum	ppm	ASTM D5185m	>20	2	2	2	
Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	4	1	<1	
Vanadium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>330	<1	<1	<1	
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	<1	0	
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 <1 <1 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 53 58 44 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 10 17 12 Calcium ppm ASTM D5185m 1070 2640 2483 2480 Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m <th>Vanadium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th><1</th> <th>0</th>	Vanadium	ppm	ASTM D5185m		0	<1	0	
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0	
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 53 58 44 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 10 17 12 Calcium ppm ASTM D5185m 1070 2640 2483 2480 Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 60 53 58 44 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	<1	<1	<1	
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 10 17 12 Calcium ppm ASTM D5185m 1070 2640 2483 2480 Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium ppm ASTM D5185m 1010 10 17 12 Calcium ppm ASTM D5185m 1070 2640 2483 2480 Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % "ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm "ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm "ASTM D7414	Molybdenum	ppm	ASTM D5185m	60	53	58	44	
Calcium ppm ASTM D5185m 1070 2640 2483 2480 Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION *ASTM D7414	Manganese	ppm	ASTM D5185m	0	<1	<1	<1	
Phosphorus ppm ASTM D5185m 1150 1136 1129 1073 Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method	Magnesium	ppm	ASTM D5185m	1010	10	17	12	
Zinc ppm ASTM D5185m 1270 1375 1322 1279 Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <td< th=""><th>Calcium</th><th>ppm</th><th>ASTM D5185m</th><th>1070</th><th>2640</th><th>2483</th><th>2480</th></td<>	Calcium	ppm	ASTM D5185m	1070	2640	2483	2480	
Sulfur ppm ASTM D5185m 2060 3781 3345 3175 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m >20 3 5 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Phosphorus	ppm	ASTM D5185m	1150	1136	1129	1073	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m 3 5 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Zinc	ppm	ASTM D5185m	1270	1375	1322	1279	
Silicon ppm ASTM D5185m >25 9 8 8 Sodium ppm ASTM D5185m 3 5 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Sulfur	ppm	ASTM D5185m	2060	3781	3345	3175	
Sodium ppm ASTM D5185m 3 5 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	CONTAMINANTS method limit/base current history1 history2							
Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Silicon	ppm	ASTM D5185m	>25	9	8	8	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Sodium	ppm	ASTM D5185m		3	5	2	
Soot % % *ASTM D7844 >3 0.3 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Potassium	ppm	ASTM D5185m	>20	2	2	2	
Nitration Abs/cm *ASTM D7624 >20 10.3 8.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Soot %	%	*ASTM D7844	>3	0.3	0.2	0.2	
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 19.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4	Nitration	Abs/cm	*ASTM D7624	>20	10.3	8.4	8.8	
Oxidation Abs/.1mm *ASTM D7414 >25 13.5 10.8 11.4								
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	10.8	11.4	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	5.6	7.2	6.3	

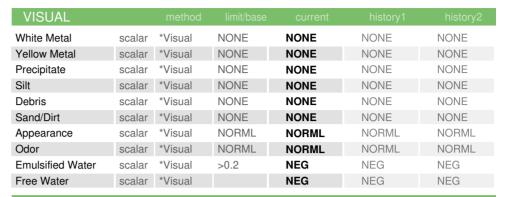


OIL ANALYSIS REPORT



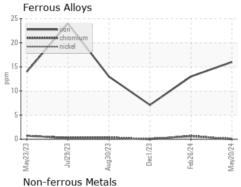


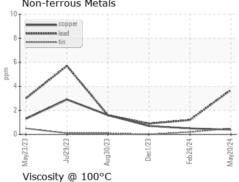


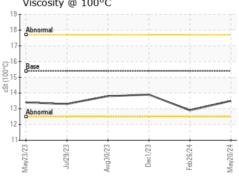


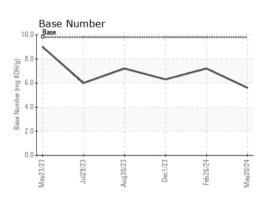
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	12.9	13.9

GRAPHS













Certificate 12367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number : 06190226 Unique Number : 11046978

Test Package : FLEET

: GFL0105474

Received : 24 May 2024 **Tested** : 29 May 2024 Diagnosed

: 29 May 2024 - Sean Felton

GFL Environmental - 983 - Sugar Land Hauling

16011 West Belfort Street Sugar Land, TX US 77498

Contact: Adrian Martinez adrianmartinez@gflenv.com

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: