

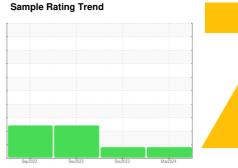
OIL ANALYSIS REPORT



Machine Id 923016 Component

Diesel Engine

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





DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

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.

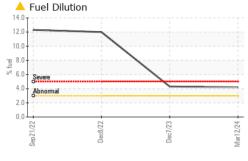
Fluid Condition

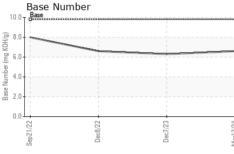
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

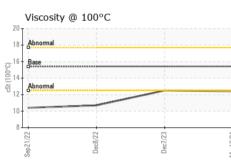
Sample Date Client Info 12 Mar 2024 07 Dec 2023 08 Dec 2022 Machine Age hrs Client Info 21974 21435 19089 Oil Age hrs Client Info 539 21435 19089 Oil Changed Client Info Changed Changed Not Changd	N SHP 15W40 (- GAL)	Sep 202	2 Dec2022	Dec2023 M	ar2024	
Sample Date Client Info 12 Mar 2024 07 Dec 2023 08 Dec 2022 Machine Age hrs Client Info 21974 21435 19089 2014 21435 19089 2014 21435 19089 2016 Changed Client Info Changed Changed Changed Changed Changed Changed ABNORMAL ABNORMAL ABNORMAL SEVERE CONTAMINATION method limit/base current history1 history2 Mater WC Method NEG	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 21974 21435 19089 19089 19080 190	Sample Number		Client Info		GFL0113989	GFL0080364	GFL0065042
Dil Age	Sample Date		Client Info		12 Mar 2024	07 Dec 2023	08 Dec 2022
Client Info	Machine Age	hrs	Client Info		21974	21435	19089
ABNORMAL	Oil Age	hrs	Client Info		539	21435	19089
CONTAMINATION method limit/base current history1 history2 Water WC Method Vo.2 NEG NEG NEG Glycol WC Method Imit/base Current history1 history2 WEAR METALS method limit/base current history1 history2 fron ppm ASTM D5185m >120 18 12 20 Chromium ppm ASTM D5185m >20 0 <1	Oil Changed		Client Info		Changed	Changed	Not Changd
Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 18 12 20 Chromium ppm ASTM D5185m >20 0 <1 1 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 13 9 19 Lead ppm ASTM D5185m >40 0 <1 <1 C1 Copper ppm ASTM D5185m >330 1 2 4 Tin ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0	Sample Status				ABNORMAL	ABNORMAL	SEVERE
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 fron ppm ASTM D5185m >120 18 12 20 Chromium ppm ASTM D5185m >20 0 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >120 18 12 20 Chromium ppm ASTM D5185m >20 0 <1	Nater		WC Method	>0.2	NEG	NEG	NEG
Pop	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Sickel	ron	ppm	ASTM D5185m	>120	18	12	20
Description	Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	0	<1	1
Aluminum ppm ASTM D5185m >20 13 9 19 Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 1 2 4 Copper ppm ASTM D5185m >15 0 <1 <1 Cadmium ppm ASTM D5185m >15 0 <1 <1 Cadmium ppm ASTM D5185m >15 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 1 4 Cadmium ppm ASTM D5185m 0 0 0 1 4 Cadmium ppm ASTM D5185m 0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 0 Calcium ppm ASTM D5185m 1010 947 951 806 Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1150 975 979 843 Calcium ppm ASTM D5185m 1270 1217 1213 1060 Calcium ppm ASTM D5185m 1270 1217 1213 1060 Calcium ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Cadmium ppm ASTM D5185m >25 4 6 4 Coltassium ppm ASTM D5185m >20 0 7 0 Calcium ppm ASTM D5185m >20 0 7 0 0 Calcium ppm ASTM D5185m >	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 1 2 4 Cin ppm ASTM D5185m >15 0 <1 <1 Vanadium ppm ASTM D5185m 0 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 1 4 Barium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 <1 4 Magnesium ppm ASTM D5185m 1010 947 951 806 Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1270 1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>20	13	9	19
Tin	_ead	ppm	ASTM D5185m	>40	0	<1	<1
Anadium 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 0 1 4 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 947 951 806 20 20 20 1031 932 20 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>330</td><td>1</td><td>2</td><td>4</td></t<>	Copper	ppm	ASTM D5185m	>330	1	2	4
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 1 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 55 60 50 Magnesium ppm ASTM D5185m 0 0 <1	Γin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 1 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 <1	/anadium	ppm	ASTM D5185m		0	<1	0
Soron ppm ASTM D5185m 0 0 0 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 55 60 50 Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 947 951 806 Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1150 975 979 843 Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Goldium ppm ASTM D5185m >25 4 6 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 4.2 4.3 12.0 INFRA-RED method limit/	Boron	ppm	ASTM D5185m	0	0	1	4
Manganese ppm ASTM D5185m 0 0 <1 <1 Magnesium ppm ASTM D5185m 1010 947 951 806 Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1150 975 979 843 Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Goldium ppm ASTM D5185m 3 35 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D5185m >20 0 7 0 Fuel % ASTM D5185m >20 <t< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 947 951 806 Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1150 975 979 843 Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D5844 >4	Molybdenum	ppm	ASTM D5185m	60	55	60	50
Calcium ppm ASTM D5185m 1070 1056 1031 932 Phosphorus ppm ASTM D5185m 1150 975 979 843 Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 4.2 4.3 12.0 INFRA-RED method limit/base current history1 history2 Goot % % *ASTM D7844 >4 0.3 0.3 1 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION *ASTM D7414	Manganese	ppm	ASTM D5185m	0	0	<1	<1
Phosphorus ppm ASTM D5185m 1150 975 979 843 Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D5185m >3.0 4.2 4.3 4 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <td>947</td> <td>951</td> <td>806</td>	Magnesium	ppm	ASTM D5185m	1010	947	951	806
Zinc ppm ASTM D5185m 1270 1217 1213 1060 Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m 3 35 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D5185m >3.0 4.2 4.3 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3	Calcium	ppm	ASTM D5185m	1070	1056	1031	932
Sulfur ppm ASTM D5185m 2060 3512 3101 2881 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m 3 35 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 4.2 4.3 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 1 Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	975	979	843
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 6 4 Sodium ppm ASTM D5185m 3 35 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 4.2 4.3 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 1 Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	Zinc	ppm	ASTM D5185m	1270	1217	1213	1060
Solition ppm ASTM D5185m >25 4 6 4	Sulfur	ppm	ASTM D5185m	2060	3512	3101	2881
Sodium ppm ASTM D5185m 3 35 4 Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 ▲ 4.2 ▲ 4.3 ▲ 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 1 Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 7 0 Fuel % ASTM D3524 >3.0 ▲ 4.2 ▲ 4.3 ▲ 12.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.3 0.3 1 Vitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	Silicon	ppm	ASTM D5185m	>25	4	6	4
Fuel % ASTM D3524 >3.0	Sodium	ppm	ASTM D5185m		3	35	4
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	0	7	0
Soot % % *ASTM D7844 >4 0.3 0.3 1 Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	-uel	%	ASTM D3524	>3.0	△ 4.2	▲ 4.3	▲ 12.0
Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 10.2 9.8 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	Soot %	%	*ASTM D7844	>4	0.3	0.3	1
Sulfation Abs/.1mm *ASTM D7415 >30 18.7 19.7 19.3 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 15.8 17.9 13.9	Nitration	Abs/cm	*ASTM D7624	>20			9.4
Oxidation							
	Sanation						
		OATION	method	limit/base	current	history1	history2
	FLUID DEGRAI						

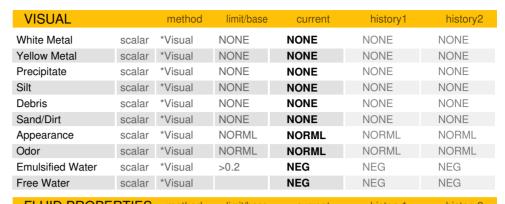


OIL ANALYSIS REPORT



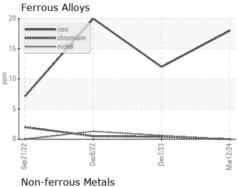


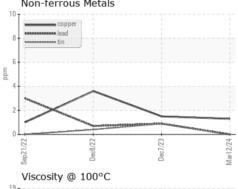


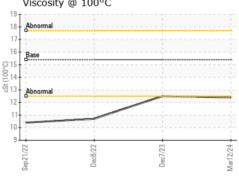


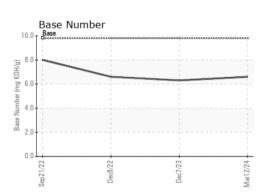
FLUID FROF	LHILS	method	IIIIII/Dase	Current	HISTORY	HISTOLYZ
Visc @ 100°C	cSt	ASTM D445	15.4	12.4	12.5	1 0.7

GRAPHS











Laboratory Sample No. Lab Number : 06120526

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0113989

Received **Tested** Unique Number: 10929359

Diagnosed

: 20 Mar 2024 : 20 Mar 2024 - Wes Davis

GFL Environmental - 932 - Muskego HC W144 S6400 College Ct.

Muskego, WI US 53150

Test Package: FLEET (Additional Tests: PercentFuel) Contact: Brian Schlomann To discuss this sample report, contact Customer Service at 1-800-237-1369. brian.schlomann@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (262)510-4586

: 18 Mar 2024

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)