

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id
412046
Component
Diesel Engine
Fluid

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

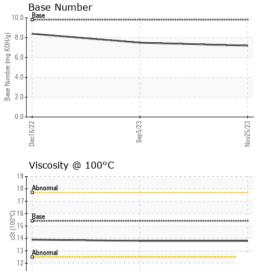
Fluid Condition

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

Sample Number)N 3HP 13W40 (- GAL)	De	2022	Sep 2023 Nov20	23	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 25 Nov 2023 05 Sep 2023 16 Dec 2022 Machine Age hrs Client Info 4217 3604 1839 Oil Age hrs Client Info 613 3604 1839 Oil Changed Client Info Changed Changed NORMAL NORMAL Sample Status Image: Control of Moral Info Changed Changed NORMAL NORMAL CONTAMINATION method Ilmit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185n >120 14 13 8 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05185n >20 <1 <1 <1 <t< td=""><td>Sample Number</td><td></td><td>Client Info</td><td></td><th>GFL0086732</th><td>GFL0071292</td><td>GFL0065038</td></t<>	Sample Number		Client Info		GFL0086732	GFL0071292	GFL0065038
Machine Age hrs Client Info 4217 3604 1839 Oil Age hrs Client Info 613 3604 1839 Oil Changed Client Info Changed Changed Not Changd NORMAL NORMAL NORMAL Sample Status WC Method 3.0 <1.0			Client Info		25 Nov 2023	05 Sep 2023	16 Dec 2022
Oil Changed Sample Status Client Info MoRMAL Changed NORMAL Not Changed No NoRMAL Not Change NEG Not Change NE	Machine Age	hrs	Client Info		4217		1839
Oil Changed Sample Status Client Info Changed NORMAL Changed NORMAL Not Changed NEG Not Clanged NEG Not Clanged Not Clanged Not NorMAL Not Clanged Not Shope NorMal NorMal NorMal NorM	Oil Age	hrs	Client Info		613	3604	1839
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	-		Client Info		Changed	Changed	Not Changd
Fuel	-				_		NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 14 13 8 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >5 5 2 <1 Sliver ppm ASTM D5185m >2 <1 0 0 Sliver ppm ASTM D5185m >2 <1 0 1 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >33 2 5 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Second WC Method NEG NEG NEG	Fuel		WC Method	>3.0	<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 <1 <1 <1 Nickel ppm ASTM D5185m >5 5 2 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	14	13	8
Titanium ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 0 1 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >330 3 2 5 Tin ppm ASTM D5185m >15 1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 <1 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 9 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver ppm ASTM D5185m >2 <1 0 1 Aluminum ppm ASTM D5185m >20 2 0 1 Lead ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >330 3 2 5 Tin ppm ASTM D5185m >15 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <0 0 0 Cadmium ppm ASTM D5185m 0 <1 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 9 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 9 2 Barium	Nickel	ppm	ASTM D5185m	>5	5	2	<1
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead ppm ASTM D5185m >40 <1 <1 0 Copper ppm ASTM D5185m >330 3 2 5 Tin ppm ASTM D5185m >15 1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 <1 0 0 0 ADDITIVES method limit/base current history1 history2 Nistory2 Boron ppm ASTM D5185m 0 <1 0 92 Barium ppm ASTM D5185m 0 <1 0 92 Barium ppm ASTM D5185m 0 <1 0 92 Barium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 <1 <1	Silver	ppm	ASTM D5185m	>2	<1	0	1
Copper ppm ASTM D5185m >330 3 2 5 Tin ppm ASTM D5185m >15 1 <1	Aluminum	ppm	ASTM D5185m	>20	2	0	1
Tin ppm ASTM D5185m >15 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 92 Barium ppm ASTM D5185m 0 8 <1 2 Molybdenum ppm ASTM D5185m 60 64 60 61 Manganese ppm ASTM D5185m 1010 1002 897 934 Calcium ppm ASTM D5185m 1010 1002 897 934 Calcium ppm ASTM D5185m 1070 1133 1036 1081 Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>330	3	2	5
Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	1	<1	<1
Radio	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium ppm ASTM D5185m 0 8 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 64 60 61 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 1002 897 934 Calcium ppm ASTM D5185m 1070 1133 1036 1081 Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4<	Boron	ppm	ASTM D5185m	0	<1	0	92
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 1002 897 934 Calcium ppm ASTM D5185m 1070 1133 1036 1081 Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.5 Sulfation Abs/.1mm *ASTM	Barium	ppm	ASTM D5185m	0	8	<1	2
Magnesium ppm ASTM D5185m 1010 1002 897 934 Calcium ppm ASTM D5185m 1070 1133 1036 1081 Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm "ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION "ASTM D7414	Molybdenum	ppm	ASTM D5185m	60	64	60	61
Calcium ppm ASTM D5185m 1070 1133 1036 1081 Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION limit/	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 954 949 1020 Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>1010</td><th>1002</th><td>897</td><td>934</td></td<>	Magnesium	ppm	ASTM D5185m	1010	1002	897	934
Zinc ppm ASTM D5185m 1270 1261 1183 1211 Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Calcium	ppm	ASTM D5185m	1070	1133	1036	1081
Sulfur ppm ASTM D5185m 2060 2844 2663 3695 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m >20 6 6 5 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Phosphorus	ppm	ASTM D5185m	1150	954	949	1020
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m 0 0 2 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Zinc	ppm	ASTM D5185m	1270	1261	1183	1211
Silicon ppm ASTM D5185m >25 5 3 4 Sodium ppm ASTM D5185m 0 0 2 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Sulfur	ppm	ASTM D5185m	2060	2844	2663	3695
Sodium ppm ASTM D5185m 0 0 2 Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	CONTAMINANTS method limit/base current history1 history2						history2
Potassium ppm ASTM D5185m >20 6 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Silicon	ppm	ASTM D5185m	>25	5	3	4
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Sodium	ppm	ASTM D5185m		0	0	2
Soot % % *ASTM D7844 >4 0.6 0.6 0.3 Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Potassium	ppm	ASTM D5185m	>20	6	6	5
Nitration Abs/cm *ASTM D7624 >20 8.6 8.2 6.5 Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.1 19.6 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Soot %	%	*ASTM D7844	>4	0.6	0.6	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Nitration	Abs/cm	*ASTM D7624	>20	8.6	8.2	6.5
Oxidation Abs/.1mm *ASTM D7414 >25 16.8 15.9 14.3	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.1	19.6	18.5
	FLUID DEGRADATION method limit/base current history1 history2						
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.8	15.9	14.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.2	7.5	8.4



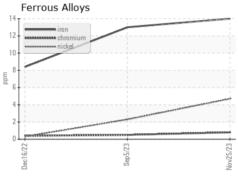
OIL ANALYSIS REPORT

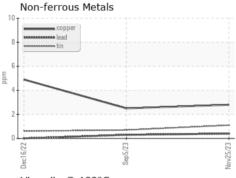


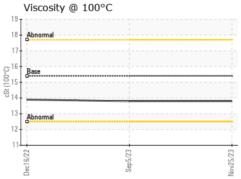
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

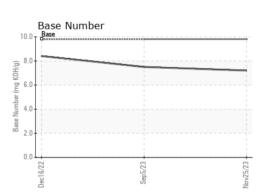
FLUID PROPI	ERIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.8	13.9

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number

: GFL0086732 : 06053448 Unique Number : 10819397 Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 08 Jan 2024 Diagnosed

: 09 Jan 2024 Diagnostician : Wes Davis

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

Muskego, WI US 53150

Contact: Brian Schlomann brian.schlomann@gflenv.com T: (262)510-4586

* - 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)