

OIL ANALYSIS REPORT

Sample Rating Trend







M 4 4 Co

Machine Id
4648M
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

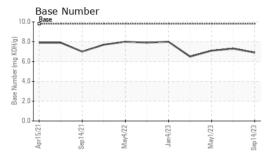
Fluid Condition

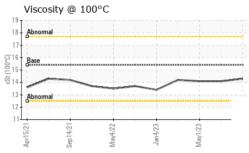
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0091515 GFL0082757 GFL008125 Sample Date Client Info 14 Sep 2023 07 Jul 2023 01 May 202 02 May 20	14 3111 13 14 40 (GAL)	Apr2021	Sep2021 May2022	Jan2023 May2023	Sep 2023	
Client Info	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 15284 14714 14118 14118 1418 1429	Sample Number		Client Info		GFL0091515	GFL0082757	GFL0081286
Dil Age	Sample Date		Client Info		14 Sep 2023	07 Jul 2023	01 May 2023
Client Info	Machine Age	hrs	Client Info		15284	14714	14118
Client Info	Oil Age	hrs	Client Info		600	600	600
CONTAMINATION method minit/base current history1 history2	-		Client Info		Changed	Changed	Changed
WEAR METALS							
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	-uel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >90 21 24 16 Chromium ppm ASTM D5185m >20 <1						NEG	
Pron	•	e e		limit/base			
Chromium							
Strickel							
Silver							
Saliver							
Aluminum		ppm	ASTM D5185m				
December December		ppm					
Copper	Aluminum	ppm	ASTM D5185m	>20	2	2	3
Tin	_ead	ppm	ASTM D5185m	>40	0	<1	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 1 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 62 62 62 60 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1131 1098 1102 Phosphorus ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m	Copper	ppm	ASTM D5185m	>330	<1	1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 1 3 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1	Γin	ppm	ASTM D5185m	>15	<1	0	<1
ADDITIVES	√anadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 62 62 60 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	3	1	3
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 988 876 991 Calcium ppm ASTM D5185m 1070 1131 1098 1102 Phosphorus ppm ASTM D5185m 1150 1056 1002 1024 Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 6 5 Godium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/:mm *ASTM D	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 988 876 991 Calcium ppm ASTM D5185m 1070 1131 1098 1102 Phosphorus ppm ASTM D5185m 1150 1056 1002 1024 Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/cm <t< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>60</td><th>62</th><td>62</td><td>60</td></t<>	Molybdenum	ppm	ASTM D5185m	60	62	62	60
Calcium ppm ASTM D5185m 1070 1131 1098 1102 Phosphorus ppm ASTM D5185m 1150 1056 1002 1024 Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % % *ASTM D5185m >20 2 2 2 Soot % % *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th><1</th> <td><1</td> <td><1</td>	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1056 1002 1024 Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/:1mm *ASTM D7815	Magnesium	ppm	ASTM D5185m	1010	988	876	991
Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m 10 4 4 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1131	1098	1102
Zinc ppm ASTM D5185m 1270 1316 1245 1255 Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m 10 4 4 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	1056	1002	1024
Sulfur ppm ASTM D5185m 2060 3537 3020 3366 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 6 5 Sodium ppm ASTM D5185m 10 4 4 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4			ASTM D5185m	1270	1316	1245	1255
Solition ppm ASTM D5185m >25 5 6 5	Sulfur						
Sodium ppm ASTM D5185m 10 4 4 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Sodium	Silicon	ppm	ASTM D5185m	>25	5	6	5
Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4							
Soot % % *ASTM D7844 >6 0.7 0.8 0.6 Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4				>20			
Nitration Abs/cm *ASTM D7624 >20 10.5 11.3 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4	Soot %	%	*ASTM D7844	>6	0.7	0.8	0.6
Sulfation Abs/.1mm *ASTM D7415 >30 21.0 22.5 18.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.7 18.8 16.4	Vitration	Abs/cm	*ASTM D7624	>20	10.5	11.3	8.8
Oxidation							
	FLUID DEGRA	NOITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.7	18.8	16.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.9	7.3	7.1



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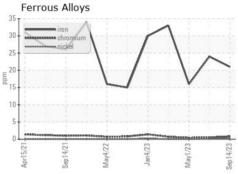


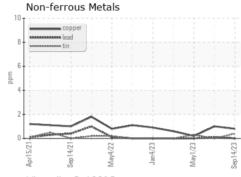


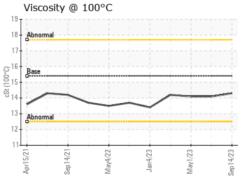
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

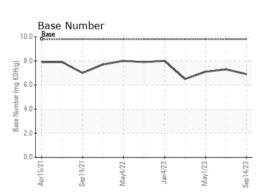
FLUID PROPE	RHES	method	ilmivbase		nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.1	14.1

GRAPHS













Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** Test Package : FLEET

: GFL0091515 : 05956961 : 10658174

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 20 Sep 2023 Diagnosed : 21 Sep 2023 Diagnostician : Wes Davis

GFL Environmental - 465 - Pontiac 888 Baldwin Pontiac, MI

US 48340 Contact: Ricky Matthews rickymathews@gflenv.com T: (586)825-9514

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)

Report Id: GFL465 [WUSCAR] 05956961 (Generated: 09/21/2023 17:51:52) Rev: 1

Submitted By: Ricky Matthews