

OIL ANALYSIS REPORT

Sample Rating Trend





Area
166
Machine Id
413052
Component
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

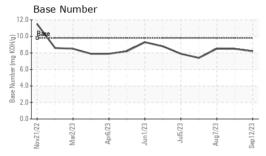
Fluid Condition

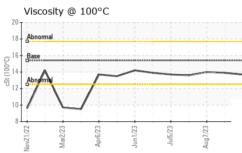
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0087889 GFL0087859 GFL008785 Sample Date Client Info 12 Sep 2023 23 Aug 2023 07	14 3111 13 14 40 (GAL)	Nov2022 1	Mar2023 Apr2023	Jun2023 Jul2023 Aug2023	Sep2023	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 1919 1785 1661 Dil Age hrs Client Info 600 600 200 Dil Changed Client Info Not Changd Not Changd Not Changd Not Changd Not Changd NORMAL Sample Status method Imitibase current history1 history1 history1 Fuel WC Method >3.0 <1.0	Sample Number		Client Info		GFL0087889	GFL0087859	GFL0087830
Machine Age	Sample Date		Client Info		12 Sep 2023	23 Aug 2023	07 Aug 2023
Dil Age	Machine Age	hrs	Client Info		-	_	1661
Contact Cont		hrs	Client Info		600	600	200
CONTAMINATION method minit/base current history1 history2 history3 history3 history3 history4 history4 history4 history5 histo	-		Client Info		Not Changd	Not Changd	Not Changd
WEAR METALS	-					Ü	_
Fuel	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 9 6 4 Chromium ppm ASTM D5185m >20 <1				7 0.0			
Chromium	•	S		limit/hase			
Chromium							
Nickel							
Description							
Saliver							
Aluminum							
December December							
Copper					-		
Tin							
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 2 <1 2 Barium ppm ASTM D5185m 0 2 0 0 Wolybdenum ppm ASTM D5185m 0 2 0 0 Wanganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1085 1106 1078 Phosphorus ppm ASTM D5185m 1270 1260 1344 1301 Zinc ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 5 <t< td=""><td>• •</td><td>ppm</td><td></td><td>>330</td><th>-</th><td>23</td><td></td></t<>	• •	ppm		>330	-	23	
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 2 <1		ppm		>15			
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 65 61 59 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	2	<1	2
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 953 1018 1019 Calcium ppm ASTM D5185m 1070 1085 1106 1078 Phosphorus ppm ASTM D5185m 1150 1039 1062 1019 Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m >20 5 3 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history1 Soot % %	Barium	ppm	ASTM D5185m	0	2	0	0
Magnesium ppm ASTM D5185m 1010 953 1018 1019 Calcium ppm ASTM D5185m 1070 1085 1106 1078 Phosphorus ppm ASTM D5185m 1150 1039 1062 1019 Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m >20 5 3 3 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D	Molybdenum	ppm	ASTM D5185m	60	65	61	59
Calcium ppm ASTM D5185m 1070 1085 1106 1078 Phosphorus ppm ASTM D5185m 1150 1039 1062 1019 Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m >20 5 3 3 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1039 1062 1019 Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method lim	Magnesium	ppm	ASTM D5185m	1010	953	1018	1019
Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414	Calcium	ppm	ASTM D5185m	1070	1085	1106	1078
Zinc ppm ASTM D5185m 1270 1260 1344 1301 Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414	Phosphorus	ppm	ASTM D5185m	1150	1039	1062	1019
Sulfur ppm ASTM D5185m 2060 3211 3701 3680 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 6 5 4 Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8			ASTM D5185m	1270	1260	1344	1301
Solition ppm ASTM D5185m >25 6 5 4	Sulfur		ASTM D5185m	2060	3211	3701	
Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 3 4 2 Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8	Silicon	ppm	ASTM D5185m	>25	6	5	4
Potassium ppm ASTM D5185m >20 5 3 3 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8							
Soot % % *ASTM D7844 >4 0.3 0.2 0.1 Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8				>20		3	
Nitration Abs/cm *ASTM D7624 >20 7.2 6.5 5.4 Sulfation Abs/.1mm *ASTM D7615 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current bistory history history Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8	Soot %	%	*ASTM D7844	>4	0.3	0.2	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 19.7 19.0 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.2 14.6 13.8	Vitration	Abs/cm	*ASTM D7624	>20	7.2	6.5	5.4
Oxidation							
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.2	14.6	13.8
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.2	8.5	8.5



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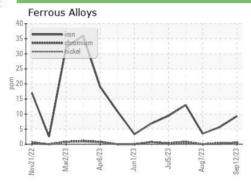


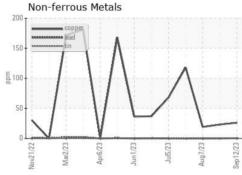


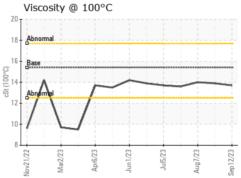
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

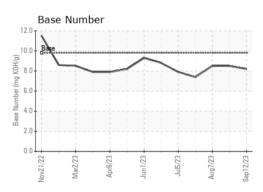
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.9	14.0	

GRAPHS













Certificate L2367

Laboratory Sample No.

Lab Number Unique Number : 10654977 Test Package : FLEET

: GFL0087889 : 05953764

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 18 Sep 2023 Diagnosed : 19 Sep 2023 Diagnostician : Wes Davis

GFL Environmental - 166 - Phenix City

18 Old Brickyard Rd Phenix City, AL US 36869

Contact: DEAN PEACE JR dean.peace@gflenv.com

* - 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:

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