

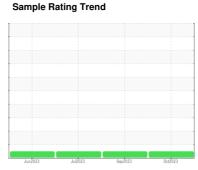
OIL ANALYSIS REPORT



{UNASSIGNED} Machine Id 933041

Component **Natural Gas Engine**

PETRO CANADA DURON SHP 15W40 (8 GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil

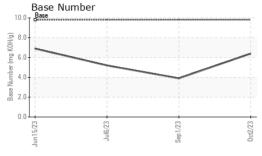
Fluid Condition

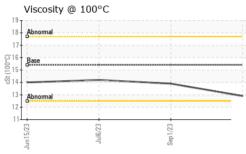
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method minit/base current history2 history2	311 3111 131140 (0	Juni2023 Juli2023 Sep2023 0-2023					
Sample Date Client Info 92 Oct 2023 01 Sep 2023 06 Jul 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 979 716 391 Oil Age hrs Client Info 263 716 391 Oil Changed Client Info Not Changed Changen MoRMAL NoRMAL NORMAL Sample Status Image: Client Info NoRMAL NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 18 70 63 Chromium ppm ASTM D5185m >2 <1 1 1 Nickel ppm ASTM D5185m >2 <1 2 1 Silver ppm ASTM D5185m >3 0 <1 2 Aluminum ppm ASTM D5185m >3 15 18 Tin ppm ASTM D5185m >3 15 18 Tin ppm ASTM D5185m <1 <1 1 Vanadium	Sample Number		Client Info		GFL0094360	GFL0091367	GFL0086127
Oil Age hrs Client Info 263 716 391 Oil Changed Client Info Not Changed Act The Changed	Sample Date		Client Info		02 Oct 2023	01 Sep 2023	06 Jul 2023
Oil Changed Sample Status Client Info Not Changed NORMAL Changed NORMAL Not Changed	Machine Age	hrs	Client Info		979	716	391
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		263	716	391
WEAR METALS	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Iron	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	18	70	63
Titanium ppm ASTM D5185m 0 <1	Chromium		ASTM D5185m	>4	<1	1	1
Silver	Nickel	ppm	ASTM D5185m	>2	<1	2	1
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	<1
Copper ppm ASTM D5185m >35 3 15 18 Tin ppm ASTM D5185m >4 <1 1 1 Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 Boron ppm ASTM D5185m 0 5 8 18 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 0 0 2 Manganese ppm ASTM D5185m 0 2 11 13 Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m >+100 6 28 35	Aluminum	ppm	ASTM D5185m	>9	5	20	20
Tin ppm ASTM D5185m >4 <1	Lead	ppm	ASTM D5185m	>30	<1	2	1
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>35	3	15	18
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 8 18 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 65 56 52 Manganese ppm ASTM D5185m 0 2 11 13 Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100	Tin	ppm	ASTM D5185m	>4	<1	1	1
Boron	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron ppm ASTM D5185m 0 5 8 18 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 65 56 52 Manganese ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/b	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 65 56 52 Manganese ppm ASTM D5185m 0 2 11 13 Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m 20	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 65 56 52 Manganese ppm ASTM D5185m 0 2 11 13 Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >>10 5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limi	Boron	ppm	ASTM D5185m	0			
Manganese ppm ASTM D5185m 0 2 11 13 Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7845 >3		ppm			-		
Magnesium ppm ASTM D5185m 1010 914 803 785 Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m > 5 5 4 Potassium ppm ASTM D5185m > 20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415	,	ppm					
Calcium ppm ASTM D5185m 1070 1191 1086 990 Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method <th>-</th> <th>ppm</th> <th></th> <th></th> <th></th> <th></th> <th></th>	-	ppm					
Phosphorus ppm ASTM D5185m 1150 979 740 715 Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base	•	• • •					
Zinc ppm ASTM D5185m 1270 1240 985 929 Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/.mm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4		ppm					
Sulfur ppm ASTM D5185m 2060 2851 2727 2831 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m > 5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	•						
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4							
Silicon ppm ASTM D5185m >+100 6 28 35 Sodium ppm ASTM D5185m 5 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4			ASTM D5185m	2060	2851	2/2/	2831
Sodium ppm ASTM D5185m 5 4 Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4		TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 15 66 58 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	Silicon	ppm	ASTM D5185m	>+100			
INFRA-RED	Sodium	ppm	ASTM D5185m		5		
Soot % % *ASTM D7844 0 0 0.1 Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	Potassium	ppm	ASTM D5185m	>20	15	66	58
Nitration Abs/cm *ASTM D7624 >20 7.3 10.5 11.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.3 22.0 21.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	Soot %	%	*ASTM D7844		0	0	0.1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.9 19.7 20.4	Nitration	Abs/cm	*ASTM D7624	>20	7.3	10.5	11.4
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.3	22.0	21.8
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 6.4 3.9 5.2							
	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.9	19.7	20.4



OIL ANALYSIS REPORT

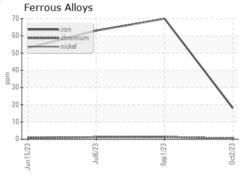


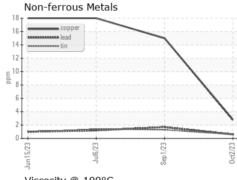


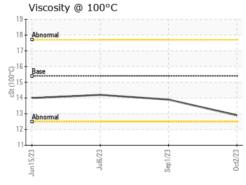
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

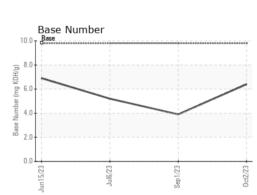
FLUID PROPI	EHILO	method			riistory i	nistoryz
Visc @ 100°C	cSt	ASTM D445	15.4	12.9	13.9	14.2

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10675120 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0094360 : 05968569

Received : 04 Oct 2023 Diagnosed : 04 Oct 2023 Diagnostician : Wes Davis

GFL Environmental - 010 - Stockbridge

1280 Rum Creek Parkway Stockbridge, GA US 30281

Contact: JOSHUA TINKER joshuatinker@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: