

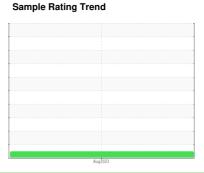
OIL ANALYSIS REPORT



420091-4003

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

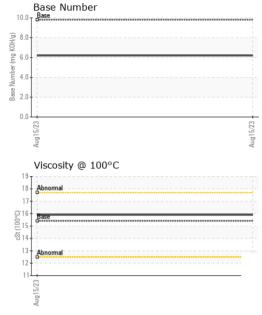
Fluid Condition

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

SAMPLE INFORMATION method	N 30P 13W40 (-	GAL)			Aug2023		
Sample Date Client Info 15 Aug 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 227543	Sample Number		Client Info		GFL0089451		
Oil Age mls Client Info 227543	Sample Date		Client Info		15 Aug 2023		
Oil Age mls Client Info 227543	Machine Age	mls	Client Info		227543		
Contact Client Info Changed Client Info NORMAL CONTAMINATION Method Imit/base Current history1 history2 Fuel WC Method NEG Contact Method Method NEG Contact Method Metho	Oil Age	mls	Client Info		227543		
CONTAMINATION method imit/base current history1 history2	-		Client Info		Changed		
Fuel					NORMAL		
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 6 Chromium ppm ASTM D5185m >5 <1	Fuel		WC Method	>5	<1.0		
Iron	Glycol		WC Method		NEG		
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>80	6		
Titanium	Chromium	ppm	ASTM D5185m	>5	<1		
Silver	Nickel	ppm	ASTM D5185m	>2	0		
Aluminum	Titanium	ppm	ASTM D5185m		0		
Aluminum	Silver	ppm	ASTM D5185m	>3	0		
Copper ppm ASTM D5185m >150 5 Tin ppm ASTM D5185m >5 <1	Aluminum	ppm	ASTM D5185m	>30	2		
Copper ppm ASTM D5185m >150 5 Tin ppm ASTM D5185m >5 <1	Lead		ASTM D5185m	>30	<1		
Tin	Copper		ASTM D5185m	>150	5		
Vanadium ppm ASTM D5185m <1 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 45 Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1010 16 Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history							
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 45 Manganese ppm ASTM D5185m 0 <1							
Boron							
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 45 Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1010 16 Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 5 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base	Boron	ppm	ASTM D5185m	0	0		
Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1010 16 Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 5 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844	Barium	ppm	ASTM D5185m	0	0		
Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1010 16 Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 5 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844	Molybdenum	ppm	ASTM D5185m	60	45		
Magnesium ppm ASTM D5185m 1010 16 Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 5 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7414 <td></td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td><1</td> <td></td> <td></td>		ppm	ASTM D5185m	0	<1		
Calcium ppm ASTM D5185m 1070 2370 Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 Nitration Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION *ASTM D7414 <t< td=""><td>-</td><td></td><td>ASTM D5185m</td><td>1010</td><td>16</td><td></td><td></td></t<>	-		ASTM D5185m	1010	16		
Phosphorus ppm ASTM D5185m 1150 1072 Zinc ppm ASTM D5185m 1270 1298 Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION *ASTM D7414	Calcium		ASTM D5185m	1070	2370		
Zinc	Phosphorus		ASTM D5185m	1150	1072		
Sulfur ppm ASTM D5185m 2060 3467 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m >20 0 Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 Sulfation Abs/.1mm *ASTM D7624 >20 7.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	•						
Silicon ppm ASTM D5185m >20 5 Sodium ppm ASTM D5185m <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	-						
Sodium	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	Silicon	ppm	ASTM D5185m	>20	5		
INFRA-RED	Sodium	ppm	ASTM D5185m		<1		
Soot % % *ASTM D7844 >3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	Potassium	ppm	ASTM D5185m	>20	0		
Nitration Abs/cm *ASTM D7624 >20 7.4 Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	Soot %	%	*ASTM D7844	>3	0.4		
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 10.2	Nitration	Abs/cm	*ASTM D7624	>20	7.4		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9		
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	10.2		
	Base Number (BN)	mg KOH/q		9.8	6.2		



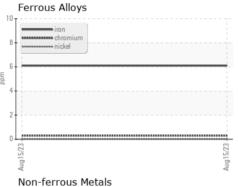
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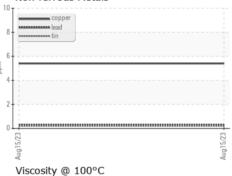


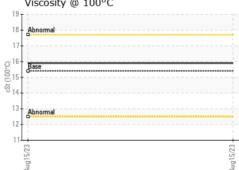
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
	DTIEO	اء مالم مما	lineit/lenen		hinton d	history O

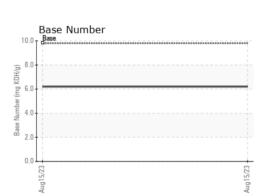
FLUID FROFI	LULIES	method			HISTOLAL	HISTORY
Visc @ 100°C	cSt	ASTM D445	15.4	15.9		

GRAPHS











Certificate L2367

Laboratory Sample No. Lab Number

: GFL0089451 : 05931441 Unique Number : 10616712 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 22 Aug 2023

Diagnosed : 24 Aug 2023 Diagnostician : Don Baldridge

GFL Environmental - 983 - Sugar Land Hauling 16011 West Belfort Street Sugar Land, TX US 77498 Contact: Gino Griego

ggriego@gflenv.com T:

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)

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