

OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id **813039**

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

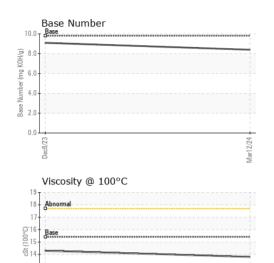
Fluid Condition

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

Cample Date	iAL)			Dec2023	Mar2024		
Client Info	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600 600	Sample Number		Client Info		GFL0108991	GFL0096889	
Oil Age	Sample Date		Client Info		12 Mar 2024	08 Dec 2023	
Colient Info Changed Colient Info Changed NORMAL Colient Colient Changed Colient Changed Chang	Machine Age	hrs	Client Info		0	0	
CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		600	600	
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Changed	Changed	
Fuel	Sample Status				NORMAL	NORMAL	
Water Glycol WC Method WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 11 4 Chromium ppm ASTM D5185m >5 <1	CONTAMINATION	NC	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 11 4 Chromium ppm ASTM D5185m >5 <1	Water		WC Method	>0.2	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	
Chromium ppm ASTM D5185m >5 <1 <1	WEAR METALS	;	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>75	11	4	
Titanium	Chromium	ppm	ASTM D5185m	>5	<1	<1	
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	<1	
Lead	Silver	ppm	ASTM D5185m	>2			
Copper ppm ASTM D5185m >100 2 <1 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>15	4	2	
Tin	Lead	ppm	ASTM D5185m	>25			
Vanadium ppm ASTM D5185m 0 0 Cadmium ppm ASTM D5185m 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 5 2 Barium ppm ASTM D5185m 0 0 12 Molybdenum ppm ASTM D5185m 0 57 61 Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 935 964 Calcium ppm ASTM D5185m 1070 1035 1059 Phosphorus ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 <td>Copper</td> <td>ppm</td> <td></td> <td>>100</td> <td>2</td> <td><1</td> <td></td>	Copper	ppm		>100	2	<1	
ADDITIVES	Tin			>4			
ADDITIVES		ppm					
Boron ppm ASTM D5185m 0 0 12		ppm	ASTM D5185m		0	<1	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 57 61 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	5	2	
Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 935 964 Calcium ppm ASTM D5185m 1070 1035 1059 Phosphorus ppm ASTM D5185m 1150 997 1012 Zinc ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >20 6 5 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Barium	ppm	ASTM D5185m	0	0	12	
Magnesium ppm ASTM D5185m 1010 935 964 Calcium ppm ASTM D5185m 1070 1035 1059 Phosphorus ppm ASTM D5185m 1150 997 1012 Zinc ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >25 3 3 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm			57	61	
Calcium ppm ASTM D5185m 1070 1035 1059 Phosphorus ppm ASTM D5185m 1150 997 1012 Zinc ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >20 6 5 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION *ASTM D	-	ppm	ASTM D5185m	0			
Phosphorus ppm ASTM D5185m 1150 997 1012 Zinc ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >25 3 3 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method	Magnesium	ppm	ASTM D5185m	1010			
Zinc ppm ASTM D5185m 1270 1198 1227 Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >20 6 5 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <	Calcium	ppm					
Sulfur ppm ASTM D5185m 2060 2997 3294 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % "ASTM D7844 >6 0.3 0.1 Nitration Abs/cm "ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm "ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm "ASTM D7414 >25 15.9 13.9							
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m 1 0 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	-						
Silicon ppm ASTM D5185m >25 3 3 Sodium ppm ASTM D5185m 1 0 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9			ASTM D5185m	2060	2997	3294	
Sodium ppm ASTM D5185m 1 0 Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	CONTAMINANT	S		limit/base			history2
Potassium ppm ASTM D5185m >20 6 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	Silicon	ppm		>25	3		
INFRA-RED		ppm					
Soot % % *ASTM D7844 >6 0.3 0.1 Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	Potassium	ppm	ASTM D5185m	>20	6		
Nitration Abs/cm *ASTM D7624 >20 8.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.1 18.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 13.9	Soot %	%	*ASTM D7844	>6	0.3	0.1	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm 'ASTM D7414 >25 15.9 13.9	Nitration	Abs/cm	*ASTM D7624	>20	8.2	5.8	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	18.0	
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.4 9.1	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.9	13.9	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	9.1	



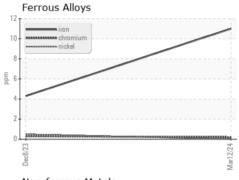
OIL ANALYSIS REPORT

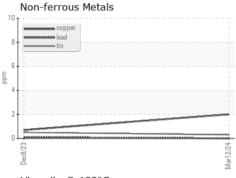


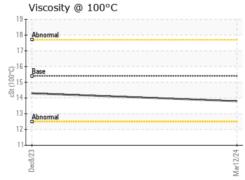
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	
Odor	scalar	*Visual	NORML	NORML	NORML	
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	

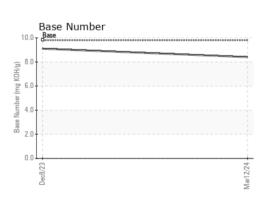
FLUID PROPI	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.3	

GRAPHS











Certificate L2367

Laboratory Sample No. Lab Number : 06120007

Test Package : FLEET

: GFL0108991 Unique Number : 10928840

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received **Tested**

Diagnosed

: 15 Mar 2024 : 18 Mar 2024

: 18 Mar 2024 - Wes Davis

GFL Environmental - 401 - Fort Wayne Hauling

4429 ALLEN MARTIN DR FORT WAYNE, IN US 46806

Contact: Zachory Roehm zroehm@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)

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F: