

OIL ANALYSIS REPORT

(MC10944) 929033

Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (--- GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

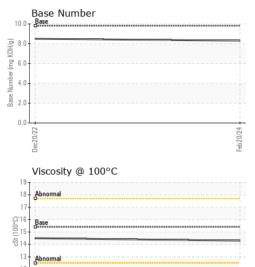
Fluid Condition

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

Cample Number Client Info Cample Date Client Info Changed Client Info Changed Changed Client Info Changed Chan	iAL)			Dec2022	Feb2024		
Client Info Q0 Feb 2024 20 Dec 2022	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0069918	GFL0059614	
Dil Age	Sample Date		Client Info		20 Feb 2024	20 Dec 2022	
Contamped Client Info Changed NoRMAL N	Machine Age	hrs	Client Info		0	13991	
CONTAMINATION method limit/base current history1 history2 history2 water WC Method >3.0 <1.0 <1.0	Oil Age	hrs	Client Info		600	600	
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Changed	Changed	
Water	Sample Status				NORMAL	NORMAL	
Water WC Method >0.2 NEG NEG	CONTAMINAT	ION	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 >90 39 46 Chromium ppm ASTM D5185m >4 1 2 Nickel ppm ASTM D5185m >4 0 0 Silver ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >2 0 0 Aluminum ppm ASTM D5185m >15 2 0 Aluminum ppm ASTM D5185m >55 1 18 Lead ppm ASTM D5185m >4 0 1 Copper ppm ASTM D5185m <1	Water		WC Method	>0.2	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METAL	_S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	39	46	
Description	Chromium	ppm	ASTM D5185m	>4	1	2	
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	
Lead	Silver	ppm	ASTM D5185m	>2	0	0	
Copper	Aluminum	ppm	ASTM D5185m	>15	2	0	
Tin	Lead	ppm	ASTM D5185m	>50	<1	<1	
Vanadium ppm ASTM D5185m <1 0 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 60 62 2 Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 1055 32 Calcicium ppm ASTM D5185m 1070 1170 2239 Phosphorus ppm ASTM D5185m 1270 1304 980 Zinc ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current	Copper	ppm	ASTM D5185m	>55	1	18	
ADDITIVES	Γin	ppm	ASTM D5185m	>4	0	1	
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	
Boron	Cadmium	ppm	ASTM D5185m		0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 62 2 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	1	0	
Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 1010 1055 32 Calcium ppm ASTM D5185m 1070 1170 2239 Phosphorus ppm ASTM D5185m 1150 1086 811 Zinc ppm ASTM D5185m 1270 1304 980 Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m >20 1 2 Potassium ppm ASTM D5185m >20 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>0</td> <td>0</td> <td></td>	Barium	ppm	ASTM D5185m	0	0	0	
Magnesium ppm ASTM D5185m 1010 1055 32 Calcium ppm ASTM D5185m 1070 1170 2239 Phosphorus ppm ASTM D5185m 1150 1086 811 Zinc ppm ASTM D5185m 1270 1304 980 Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1	Molybdenum	ppm	ASTM D5185m	60	62	2	
Calcium ppm ASTM D5185m 1070 1170 2239 Phosphorus ppm ASTM D5185m 1150 1086 811 Zinc ppm ASTM D5185m 1270 1304 980 Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1	Manganese	ppm	ASTM D5185m	0	<1	<1	
Phosphorus ppm ASTM D5185m 1150 1086 811 Zinc ppm ASTM D5185m 1270 1304 980 Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1	Magnesium	ppm	ASTM D5185m	1010	1055	32	
Zinc ppm ASTM D5185m 1270 1304 980 Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1 Potassium ppm ASTM D5185m >20 1 2 INFRA-RED method limit/base current history1 history2 Soot % 'ASTM D7844 >6 1.2 2.9 Nitration Abs/cm 'ASTM D7624 >20 7.9 13.0 Sulfation Abs/.1mm 'ASTM D7415 >30 21.2 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm 'ASTM D7414 >25 15.6 25.3	Calcium	ppm	ASTM D5185m	1070	1170	2239	
Sulfur ppm ASTM D5185m 2060 3277 3041 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1	Phosphorus	ppm	ASTM D5185m	1150	1086	811	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 7 Sodium ppm ASTM D5185m 6 <1	Zinc	ppm	ASTM D5185m	1270	1304	980	
Solition ppm ASTM D5185m >15 5 7	Sulfur	ppm	ASTM D5185m	2060	3277	3041	
Sodium ppm ASTM D5185m 6	CONTAMINAN	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 1.2 2.9 Nitration Abs/cm *ASTM D7624 >20 7.9 13.0 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 25.3	Silicon	ppm	ASTM D5185m	>15	5	7	
INFRA-RED	Sodium	ppm	ASTM D5185m		6	<1	
Soot % % *ASTM D7844 >6 1.2 2.9 Nitration Abs/cm *ASTM D7624 >20 7.9 13.0 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 25.3	Potassium	ppm	ASTM D5185m	>20	1	2	
Nitration Abs/cm *ASTM D7624 >20 7.9 13.0 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 25.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.2 27.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 25.3	Soot %	%	*ASTM D7844	>6	1.2	2.9	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 25.3	Nitration	Abs/cm	*ASTM D7624	>20	7.9	13.0	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	27.9	
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.3 8.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.6	25.3	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	8.5	



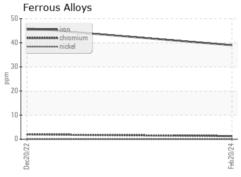
OIL ANALYSIS REPORT



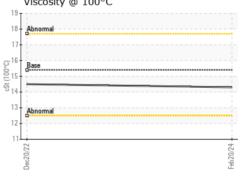
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance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

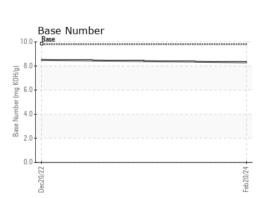
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.5	

GRAPHS



Non-ferrous Metals	
18 Copper 1	
peel sessesses 69q	
12	
E 10 10 10 10 10 10 10 10 10 10 10 10 10	
6+	
4	
2	
0 22	24
Dec20/22	Feb20/24
Viscosity @ 100°C	LE .







Sample No.

: GFL0069918 Lab Number : 06108370 Unique Number: 10911867 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Mar 2024 **Tested** : 07 Mar 2024 Diagnosed

: 07 Mar 2024 - Wes Davis

GFL Environmental - 902 - Chilton HC

428 High St Chilton, WI US 53014 Contact: Keith Mueller

keith.mueller@gflenv.com T: (920)374-1404

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)