

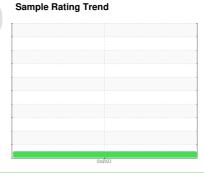
OIL ANALYSIS REPORT



424082 - SW4406

Component **Diesel Engine**

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





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Metal levels are typical for a components first oil change.

Contamination

There is no indication of any contamination in the

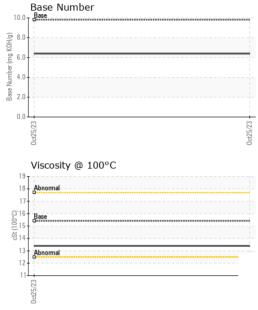
Fluid Condition

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

Sample Number Client Info GFL0093314	N SHP 15W40 (GAL)			Oct2023		
Sample Date Client Info 25 Oct 2023	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 25 Oct 2023	Sample Number		Client Info		GFL0093314		
Oil Age hrs Client Info 21213	Sample Date		Client Info		25 Oct 2023		
Oil Age hrs Client Info 21213	Machine Age	hrs	Client Info		21213		
Contamped Client Info Changed Client Info NORMAL CONTAMINATION Method Imit/base Current history1 history2 Fuel WC Method NEG Corrent Mistory2 Corrent Mistory3 Mistory2 Corrent Mistory4 Mistory4 M		hrs	Client Info		21213		
CONTAMINATION method limit/base current history1 history2			Client Info		Changed		
WEAR METALS	Sample Status						
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron	Fuel		WC Method	>3.0	<1.0		
Irron	Glycol		WC Method		NEG		
Chromium	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	18		
Titanium	Chromium	ppm	ASTM D5185m	>20	<1		
Silver	Nickel	ppm	ASTM D5185m	>5	<1		
Silver	Titanium		ASTM D5185m	>2	<1		
Aluminum	Silver	ppm	ASTM D5185m	>2	0		
Lead	Aluminum		ASTM D5185m	>20	5		
Copper ppm ASTM D5185m >330 10 Tin ppm ASTM D5185m >15 2 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 Barium ppm ASTM D5185m 0 19 Molybdenum ppm ASTM D5185m 0 -1 Manganese ppm ASTM D5185m 0 -1 Magnesium ppm ASTM D5185m 1010 752 Calcium ppm ASTM D5185m 1070 1089 Phosphorus ppm ASTM D5185m 1270 1024 <	Lead		ASTM D5185m	>40			
Tin	Copper		ASTM D5185m	>330	10		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 Barium ppm ASTM D5185m 0 19 Molybdenum ppm ASTM D5185m 0 56 Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1070 1089 Calcium ppm ASTM D5185m 1150 821 Phosphorus ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current histor							
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 Barium ppm ASTM D5185m 0 19 Molybdenum ppm ASTM D5185m 0 56 Manganese ppm ASTM D5185m 0 <1				7.0			
Boron ppm ASTM D5185m 0 6 Barium ppm ASTM D5185m 0 19	Cadmium				-		
Barium ppm ASTM D5185m 0 19 Molybdenum ppm ASTM D5185m 60 56 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 Manganese ppm ASTM D5185m 0 <1 Magnesium ppm ASTM D5185m 1010 752 Calcium ppm ASTM D5185m 1070 1089 Phosphorus ppm ASTM D5185m 1150 821 Zinc ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 6 Sodium ppm ASTM D5185m 7 Potassium ppm ASTM D5185m 20 3 INFRA-RED method limit/base curre	Boron	ppm	ASTM D5185m	0	6		
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Magnesium ppm ASTM D5185m 1010 752 Calcium ppm ASTM D5185m 1070 1089 Phosphorus ppm ASTM D5185m 1150 821 Zinc ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 Sulfur ppm ASTM D5185m 2060 3174 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 3 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7414 </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <td>56</td> <td></td> <td></td>	Molybdenum	ppm	ASTM D5185m	60	56		
Magnesium ppm ASTM D5185m 1010 752 Calcium ppm ASTM D5185m 1070 1089 Phosphorus ppm ASTM D5185m 1150 821 Zinc ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m >20 3 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7414 <td>Manganese</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td><1</td> <td></td> <td></td>	Manganese	ppm	ASTM D5185m	0	<1		
Phosphorus ppm ASTM D5185m 1150 821 Zinc ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m 7 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION *ASTM D7414 >25 </td <td>-</td> <td></td> <td></td> <td>1010</td> <td>752</td> <td></td> <td></td>	-			1010	752		
Phosphorus ppm ASTM D5185m 1150 821 Zinc ppm ASTM D5185m 1270 1024 Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m 7 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION *ASTM D7414 >25 </td <td>Calcium</td> <td></td> <td>ASTM D5185m</td> <td>1070</td> <td>1089</td> <td></td> <td></td>	Calcium		ASTM D5185m	1070	1089		
Zinc	Phosphorus						
Sulfur ppm ASTM D5185m 2060 3174 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m 7 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Soot % % *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	•		ASTM D5185m		1024		
Silicon ppm ASTM D5185m >25 6 Sodium ppm ASTM D5185m 7 Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3			ASTM D5185m				
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Potassium ppm ASTM D5185m >20 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	Silicon	ppm	ASTM D5185m	>25	6		
INFRA-RED	Sodium	ppm	ASTM D5185m		7		
Soot % *ASTM D7844 >4 0.4 Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	Potassium	ppm	ASTM D5185m	>20	3		
Nitration Abs/cm *ASTM D7624 >20 9.0 Sulfation *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	Soot %	%	*ASTM D7844	>4	0.4		
Sulfation Abs/.1mm *ASTM D7415 >30 20.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.3	Nitration	Abs/cm	*ASTM D7624	>20	9.0		
Oxidation	Sulfation						
	FLUID DEGRA	AOITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.3		
	Base Number (BN)	mg KOH/g			6.4		



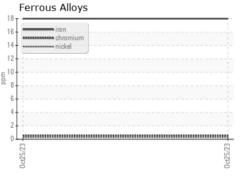
OIL ANALYSIS REPORT



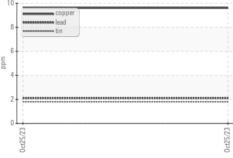
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
	DTIEO	ام مالم مما	li.ee i4/le e e e		المرسمة ما	histow.O

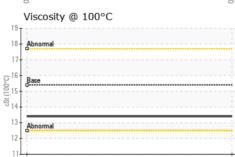
FLUID FROF	ENTIES	memou			HISTOLAL	HISTOLYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.4		

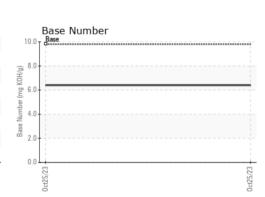
GRAPHS



Non-ferrous Metals











Laboratory Sample No. Lab Number Unique Number : 10722332 Test Package : FLEET

: GFL0093314 : 05993972

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 31 Oct 2023 Diagnosed : 31 Oct 2023 Diagnostician : Wes Davis

GFL Environmental - 865 - East Mount Hauling 7213 East Mount Houston Road Houston, TX

US 77050 Contact: Jose Gonzalez

jgonzalez2@gflenv.com T:

* - 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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