

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend





## Component

#### **Diesel Engine** Fluid

PETRO CANADA DURON SHP 15W40 (--- LT

### 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

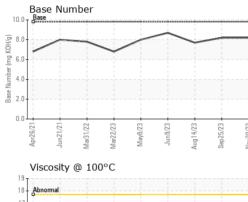
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

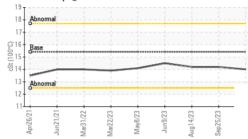
SAMPLE INFORMAT		.TR)									
	ION method	limit/base	current	history1	history2						
Sample Number	Client Info		GFL0101369	GFL0086600	GFL0086571						
Sample Date	Client Info		20 Nov 2023	25 Sep 2023	14 Aug 2023						
Machine Age hrs	Client Info		9793	9371	9056						
Oil Age hrs	Client Info		0	0	9056						
Oil Changed	Client Info		Changed	Changed	Changed						
Sample Status			NORMAL	NORMAL	NORMAL						
CONTAMINATION	method	limit/base	current	history1	history2						
Fuel	WC Method	>5	<1.0	<1.0	<1.0						
Water	WC Method	>0.2	NEG	NEG	NEG						
Glycol	WC Method		NEG	NEG	NEG						
WEAR METALS	method	limit/base	current	history1	history2						
Iron pp	m ASTM D5185m	>100	5	5	9						
Chromium pp	m ASTM D5185m	>20	<1	0	<1						
Nickel pp	m ASTM D5185m	>4	<1	0	0						
Titanium pp	m ASTM D5185m		0	0	0						
Silver pp	m ASTM D5185m	>3	0	0	0						
Aluminum pp	m ASTM D5185m	>20	1	2	<1						
Lead pp	m ASTM D5185m	>40	0	<1	1						
Copper pp	m ASTM D5185m	>330	2	<1	2						
Tin pp	m ASTM D5185m	>15	<1	<1	<1						
Vanadium pp	m ASTM D5185m		0	0	<1						
Cadmium pp	m ASTM D5185m		0	0	0						
ADDITIVES	method	limit/base	current	history1	history2						
Boron pp	m ASTM D5185m	0	<1	<1	<1						
Barium pp	m ASTM D5185m	0	0	0	0						
Molybdenum pp	m ASTM D5185m	60	59	62	62						
Manganaga	m ASTM D5185m	0									
Manganese pp	ASTIVI DOTODII	0	<1	<1	<1						
Magnesium pp			<1 984	<1 1052	<1 1020						
0	m ASTM D5185m	1010									
Magnesium pp	ASTM D5185m       m     ASTM D5185m       m     ASTM D5185m       m     ASTM D5185m	1010 1070 1150	984	1052	1020 1083 1028						
Magnesium pp Calcium pp	m ASTM D5185m m ASTM D5185m m ASTM D5185m	1010 1070 1150	984 1068	1052 1116	1020 1083						
Magnesium ppi Calcium ppi Phosphorus ppi	m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m	1010 1070 1150 1270	984 1068 1025	1052 1116 1055	1020 1083 1028						
Magnesium ppr Calcium ppr Phosphorus ppr Zinc ppr	m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m	1010 1070 1150 1270	984 1068 1025 1269 3039	1052 1116 1055 1335	1020 1083 1028 1261						
Magnesium ppr Calcium ppr Phosphorus ppr Zinc ppr Sulfur ppr	m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m	1010 1070 1150 1270 2060 limit/base	984 1068 1025 1269 3039	1052 1116 1055 1335 3225	1020 1083 1028 1261 3206						
Magnesium ppr Calcium ppr Phosphorus ppr Zinc ppr Sulfur ppr CONTAMINANTS	m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m m ASTM D5185m method m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	984 1068 1025 1269 3039 current	1052 1116 1055 1335 3225 history1	1020 1083 1028 1261 3206 history2						
MagnesiumpprCalciumpprPhosphoruspprZincpprSulfurpprCONTAMINANTSSiliconppr	m ASTM D5185m m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	984 1068 1025 1269 3039 current 5	1052 1116 1055 1335 3225 history1 3	1020 1083 1028 1261 3206 history2 4						
Magnesium ppr   Calcium ppr   Phosphorus ppr   Zinc ppr   Sulfur ppr   CONTAMINANTS   Silicon ppr   Sodium ppr	m ASTM D5185m m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	984 1068 1025 1269 3039 current 5 4	1052 1116 1055 1335 3225 history1 3 4	1020 1083 1028 1261 3206 history2 4 6						
MagnesiumppCalciumppPhosphorusppZincppSulfurppCONTAMINANTSSiliconppSodiumppPotassiumpp	m ASTM D5185m m ASTM D5185m	1010 1070 1150 2060 limit/base >25 >20 limit/base	984 1068 1025 1269 3039 current 5 4 2	1052 1116 1055 1335 3225 history1 3 4 0	1020 1083 1028 1261 3206 history2 4 6 0						
MagnesiumpprCalciumpprPhosphoruspprZincpprSulfurpprCONTAMINANTSSiliconpprSodiumpprPotassiumpprINFRA-REDSoot %	m ASTM D5185m m ASTM D5185m	1010 1070 1150 2060 limit/base >25 >20 limit/base >3	984 1068 1025 1269 3039 current 5 4 2 2 current	1052 1116 1055 1335 3225 history1 3 4 0 history1	1020 1083 1028 1261 3206 history2 4 6 0 vistory2						
MagnesiumpprCalciumpprCalciumpprPhosphoruspprZincpprSulfurpprCONTAMINANTSSiliconpprSodiumpprPotassiumpprINFRA-REDSoot %%NitrationAbs	m ASTM D5185m m ASTM D5185m	1010 1070 1150 2060 limit/base >25 >20 limit/base >3 >20	984 1068 1025 1269 3039 <u>current</u> 5 4 2 2 <u>current</u> 0.5	1052 1116 1055 1335 3225 history1 3 4 0 history1 0.5	1020 1083 1028 1261 3206 history2 4 6 0 0 history2 0.6						
Magnesium ppr   Calcium ppr   Phosphorus ppr   Zinc ppr   Sulfur ppr   CONTAMINANTS   Silicon ppr   Sodium ppr   Potassium ppr   INFRA-RED   Soot % %   Nitration Abs	m ASTM D5185m m ASTM D5185m *ASTM D7844 s/cm *ASTM D7844	1010 1070 1150 2060 limit/base >25 >20 limit/base >3 >20	984 1068 1025 1269 3039 <u>current</u> 5 4 2 <u>current</u> 0.5 7.8 19.7	1052 1116 1055 1335 3225 history1 3 4 0 history1 0.5 7.7	1020 1083 1028 1261 3206 history2 4 6 0 0 history2 0.6 8.6						
Magnesium   ppr     Calcium   ppr     Calcium   ppr     Phosphorus   ppr     Zinc   ppr     Zinc   ppr     Sulfur   ppr     CONTAMINANTS   Silicon     Silicon   ppr     Potassium   ppr     INFRA-RED   Soot %     Nitration   Abs/     FLUID DEGRADAT   Abs/	m ASTM D5185m m ASTM D5185m *ASTM D7844 s/cm *ASTM D7844	1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base	984 1068 1025 1269 3039 <u>current</u> 5 4 2 <u>current</u> 0.5 7.8 19.7	1052 1116 1055 1335 3225 <u>history1</u> 3 4 0 <u>history1</u> 0.5 7.7 19.9	1020 1083 1028 1261 3206 history2 4 6 0 0 history2 0.6 8.6 21.0						

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	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		
Aug14/23 . Sep25/23 . Nov20/23 .	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
Aug 14/23 Sep 25/23 Nov20/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
	Free Water	scalar	*Visual		NEG	NEG	NEG		
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2		
	Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.2	14.2		
	GRAPHS								
	Ferrous Alloys								
Aug 14/23 -	25 - iron								
Aug14/23 Sep25/23	20								
	<u>ة</u> 15								
	10		~						
	5		/						
	0								
		3/23	1/23	)/23					
	Apr26/21 Jun21/21 Mar31/22 Mar22/23	May8/23	Jun9/23 Aug14/23 Sep25/23	Nov20/23					
	Non-ferrous Metal	s		_					
	100 T X								
	80 - copper								
	****** tin								
	60								
	40								
	20								
		_							
	23 23 0	/23 -	/23 ·	/23					
	Apr26/21 Jun21/21 Mar31/22 Mar22/23	May8/23	Jun9/23 Aug14/23 Sep25/23	Nov20/23					
	Viscosity @ 100°C				Base Number				
	19 18 - Abnormal		10.0			Base			
	17								
	C <sup>16</sup> Bare			KOH					
	(2) 16 Base 15 3 14			Base Number (mg KOH/g)					
	<sup>73</sup> 14		<u> </u>		0				
	13 - Abnormal			ase N					
	12-			<sup>6</sup> 2.	D				
				0.					
	Apr26/21 Jun21/21 Mar31/22 Mar22/23	May8/23	Aug14/23 . Sep25/23 .	Nov20/23	Apr26/21 Jun21/21 Mar31/22	Mar22/23 May8/23 Jun9/23	Aug 14/23 Sep 25/23 Nov20/23		
	Api Jun Mari	PW	Aug Aug Sep	Nov	Ap. Jun Mari	Mar Ma	Aug Sep.		
Laboratory	: WearCheck USA - 5				3 GFL Envi		Richmond Hauling		
Sample No.		Received		Nov 2023		118	300 Lewis Road		
Lab Number		Diagnose		Nov 2023			Chester, VA		
Unique Number	: 10753954 <b>[</b> : FLEET	Diagnost		es Davis		US 23831 Contact: Jimmy Maves			



Test Package : FLEET Certificate L2367 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)

Submitted By: TECHNICIAN ACCOUNT

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