

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Component Diesel Engine Fluid

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

SAMPLE INFORMATION method

DIAGNOSIS
Recommendation

Resample at the next service interval to monitor.

Machine Id **1117M** 

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

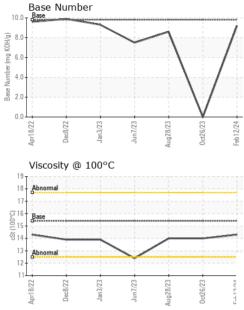
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		methou	iiiiii/base	current	TIISTOLA	TIStoryz
Sample Number		Client Info		GFL0101069	GFL0092776	GFL0080757
Sample Date		Client Info		12 Feb 2024	26 Oct 2023	28 Aug 2023
Machine Age	hrs	Client Info		0	11721	10764
Oil Age	hrs	Client Info		0	11721	10764
Oil Changed		Client Info		N/A	N/A	Not Changd
Sample Status				NORMAL	SEVERE	NORMAL
•						
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.3	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	9	method	limit/base	current	history1	history2
					· · · · ·	
Iron	ppm	ASTM D5185m	>200	3	5	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum	ppm	ASTM D5185m	>30	1	1	4
Lead	ppm	ASTM D5185m	>30	<1	0	0
Copper	ppm	ASTM D5185m	>30	2	3	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	<1	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	4	3	4
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	4 0	3	4
Barium	ppm	ASTM D5185m	0 60	0	4	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 59	4 75	0 64
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 59 <1	4 75 0	0 64 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 59 <1 908	4 75 0 1060	0 64 <1 1074
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 59 <1 908 1010	4 75 0 1060 1250	0 64 <1 1074 1148
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 59 <1 908 1010 999	4 75 0 1060 1250 1107	0 64 <1 1074 1148 1071
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270	0 59 <1 908 1010 999 1138	4 75 0 1060 1250 1107 1372	0 64 <1 1074 1148 1071 1313
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 59 <1 908 1010 999 1138 3536	4 75 0 1060 1250 1107 1372 3528	0 64 <1 1074 1148 1071 1313 3784 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 59 <1 908 1010 999 1138 3536 current 8	4 75 0 1060 1250 1107 1372 3528 history1	0 64 <1 1074 1148 1071 1313 3784
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	0 59 <1 908 1010 999 1138 3536 current	4 75 0 1060 1250 1107 1372 3528 history1 6	0 64 <1 1074 1148 1071 1313 3784 history2 5
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Iimit/base >30	0 59 <1 908 1010 999 1138 3536 current 8 0 1	4 75 0 1060 1250 1107 1372 3528 history1 6 0	0 64 <1 1074 1148 1071 1313 3784 history2 5 1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	0 59 <1 908 1010 999 1138 3536 current 8 0 1 1	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 kistory1	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 1 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 <i>limit/base</i> >30	0 59 <1 908 1010 999 1138 3536 current 8 0 1 1 current 0.1	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 2 history1 € 8.2	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 1 <1 <1 history2 0.2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 >20 <b>imit/base</b> >33	0 59 <1 908 1010 999 1138 3536 current 8 0 1 1	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 2 history1 € 8.2 48.0	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 4 <1 kistory2 0.2 6.0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 imit/base >30 20 imit/base >3 20 >3 20	0 59 <1 908 1010 999 1138 3536 <u>current</u> 8 0 1 1 <u>current</u> 0.1 4.4 17.3	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 2 history1 ♦ 8.2 48.0 71.1	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 <1 <1 history2 0.2 6.0 17.2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 220 <b>Imit/base</b> >3 >20 >30 3	0 59 <1 908 1010 999 1138 3536 <u>current</u> 8 0 1 1 <u>current</u> 0.1 4.4	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 history1 € 8.2 48.0 71.1 history1	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 1 <1 + history2 0.2 6.0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415	0 60 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 20 <b>Imit/base</b> >3 >20 <b>Imit/base</b> >30	0 59 <1 908 1010 999 1138 3536 current 8 0 1 1 current 0.1 4.4 17.3 current 12.7	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 bistory1 € 8.2 48.0 71.1 history1 history1 119.8	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 <1 <1 kistory2 0.2 6.0 17.2 history2 12.6
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 60 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 220 <b>Imit/base</b> >3 >20 >30 3	0 59 <1 908 1010 999 1138 3536 current 8 0 1 1 current 0.1 4.4 17.3 current	4 75 0 1060 1250 1107 1372 3528 history1 6 0 2 history1 € 8.2 48.0 71.1 history1	0 64 <1 1074 1148 1071 1313 3784 history2 5 1 <1 <1 history2 0.2 6.0 17.2 history2



# **OIL ANALYSIS REPORT**

VISUAL



*****	VISUAL		methoa	limit/base	current	nistory i	nistory2
1	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$\langle \rangle$	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
$\langle \rangle$	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
$\langle \rangle$	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
4ug28/23 - 0ct26/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Aug28/23 0ct26/23	Appearance 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		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		14.3	14.0	14.0
	GRAPHS						
	Ferrous Alloys						
23	18 16	Λ					
Aug28/23 0ct26/23	14 - nickel	/					
A )	12	/					
		$\langle \rangle$					
	4						
	2						
			C) C)				
	Apr18/22 Dec8/22 Jan3/23	Jun7/23	Aug28/23 Oct26/23	Feb 12/24			
			Aug	a l			
	Non-ferrous Meta	ls					
	copper						
	8 - necessarie lead						
	6						
	E C						
	4						
	2	$\checkmark$					
	0		**************************************	AND DE CONTRACT			
	Apr18/22 Dec8/22 Jan3/23	Jun7/23	Aug28/23 Oct26/23	Feb12/24			
			Aug. Oct	Feb			
	Viscosity @ 100°C	2			Base Numb	er	
	19 18 Abaamad			10.0			
	18 Abnormal					$\searrow$	1
	17			(0,10) 6.0- 9.0.9 gase Number (mg KOH())			
	Concernent and the second seco			Ē 6.0-			
	E 15			mber (			( ) = /
		/		4.0- as			$\setminus$ /
	13 Abnormal	$\checkmark$		<sup>66</sup> 2.0-			· · · / · ·
	12						V
	23	- 23	723	-0.0	22	123-	
	Apr18/22 Dec8/22 Jan3/23	Jun7/23	Aug28/23 Oct26/23	Feb12/24	Apr18/22 Dec8/22	Jan3/23 Jun7/23	ug <i>co/c3</i> 0ct26/23
		-	A D	LL.		- <	4 U
Laborator	· : WearCheck USA - 50	)1 Madiso	n Ave., Cary	, NC 27513	(	GFL Environmen	ntal - 455 - Fli
Sample N	. : GFL0101069	Recei	ived : 15	Feb 2024 Feb 2024			51 W. Bristol F
	er : 06090813	Teste		Flint Township, M			
Lab Numb	10000000	Diear	es L)avis	US 4850			
Lab Numb Unique Num	er : 10883666	Diagn	iosed . 19	Feb 2024 - We	CO DUVIO	October 1	
Lab Numb Unique Num Test Packa	er :10883666 ge :FLEET ort, contact Customer Serv	-					IARK WOMB

Submitted By: MARK WOMBLE