

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 910088

Fluid

Component Diesel Engine

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a components first oil change.

#### 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.

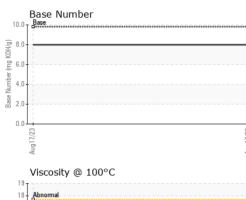
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0084863		
Sample Date		Client Info		17 Aug 2023		
Machine Age	hrs	Client Info		62397		
Oil Age	hrs	Client Info		62397		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0		
Glycol		WC Method		NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	7		
Chromium	ppm	ASTM D5185m	>20	، <1		
Nickel	ppm	ASTM D5185m	>5	0		
Titanium	ppm	ASTM D5185m		۰ <1		
Silver		ASTM D5185m	>2	0		
Aluminum	ppm	ASTM D5185m	>20	0		
Lead	ppm	ASTM D5185m	>20	0		
	ppm					
Copper	ppm	ASTM D5185m	>330	1		
Tin	ppm		>15	<1		
Vanadium	ppm	ASTM D5185m		<1		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
	ppm	method ASTM D5185m	limit/base 0	current 2	history1	history2
Boron	ppm ppm					
Boron Barium		ASTM D5185m	0	2		
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	2 0		
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 60		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 60 <1		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 60 <1 992		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 60 <1 992 1144	  	  
Boron 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 0 60 0 1010 1070 1150	2 0 60 <1 992 1144 1025	  	   
Boron 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	2 0 60 <1 992 1144 1025 1245	   	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 60 <1 992 1144 1025 1245 3578		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 60 <1 992 1144 1025 1245 3578 current		
Boron 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 ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060	2 0 60 <1 992 1144 1025 1245 3578 current 4	     history1	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	2 0 60 <1 992 1144 1025 1245 3578 <u>current</u> 4 12	     history1	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	2 0 60 <1 992 1144 1025 1245 3578 current 4 12 <1 <1	     history1  	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	2 0 60 <1 992 1144 1025 1245 3578 <u>current</u> 4 12 <1 < <u>current</u> 0.3	     history1   history1 	     history2  history2
Boron 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 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	2 0 60 <1 992 1144 1025 1245 3578 current 4 12 <1 <1	     history1   history1	      history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 0 60 <1 992 1144 1025 1245 3578 <i>current</i> 4 12 <1 <i>current</i> 0.3 5.9	      history1   history1  	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 imit/base >4 >20 >30	2 0 60 <1 992 1144 1025 1245 3578 <i>current</i> 4 12 <1 <i>current</i> 0.3 5.9 18.2 <i>current</i>	      history1  history1  history1	       history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 >30	2 0 60 <1 992 1144 1025 1245 3578 <u>current</u> 4 12 <1 current 0.3 5.9 18.2	      history1   history1   history1	      history2  history2  history2



17 () 10.00 15. 14. Base

13 Abnormal 12 11 Aug17/23

# **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		
Aug.17/23		scalar	*Visual	NORML	NORML		
Aug1	Odor	scalar	*Visual	NORML	NORML		
°C	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8		
	GRAPHS						
	Ferrous Alloys						
	<sup>10</sup>						
	8						
	0 - neurosenen nickel						
	6						
	E dd						
	2 -						
				7/23 -			
	Aug 17/23			Aug17/23			
	Non-ferrous Metal	s					
	10 copper						
	8 and an and a second s						
	tin tin						
	6 -						
	ш с 4						
	2-						
	17/23			\ug17/23			
	Aug1			Aug			
	Viscosity @ 100°C	;			Base Number		
	<sup>19</sup>			10	Base		
	18 - Abnormal			- 8			
	17			B/HO			
	016 0015 53 14			Base Number (mg KOH/g)	.0		
	10 12 12 12 12 12 12 12 12 12 12 12 12 12			Jaqua 4	0		
	12			ase Nu			
	13 Abnormal			<sup>66</sup> 2	.0 -		
	11			0	0		
	7/23			Aug17/23			Aug17/23
	Aug17/23			Aug1	Aug17/23		Aug1
Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample report, * - Denotes test methods that	: 05929185 r : 10609132 e : FLEET contact Customer Serve	Received Diagnos Diagnost ice at 1-8	d : 21 / ed : 21 / tician : We	Aug 2023 Aug 2023 s Davis 9.	3 GFL Envir	3900 Contact bdgheis	- Michigan West 00 Van Born Rd Wayne, MI US 48184 : Belal Dgheish sh@gflenv.com (734)714-2340
* - Denotes test methods that Statements of conformity to spe					(JCGM 106:2012)	T:	(734)714-2340 F:

Submitted By: Belal Dgheish

Page 2 of 2