

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 46111M Component

Diesel Engine

### PETRO CANADA DURON SHP 15W40 (36 QTS)

## 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.

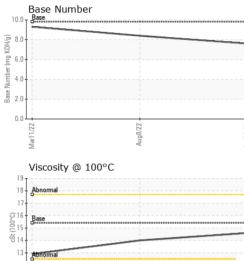
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0084991	GFL0052088	GFL0018434
Sample Date		Client Info		26 Sep 2023	08 Aug 2022	11 Mar 2022
Machine Age	hrs	Client Info		20775	17377	16124
Oil Age	hrs	Client Info		20775	17377	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	40	9	10
Chromium	ppm	ASTM D5185m	>20	2	<1	<1
Nickel	ppm	ASTM D5185m	>2	1	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	6	2	2
Lead	ppm	ASTM D5185m	>40	1	<1	<1
Copper	ppm	ASTM D5185m	>330	1	<1	<1
Tin	ppm	ASTM D5185m	>15	1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
1.0011120						TIISTOLA Z
Boron	ppm	ASTM D5185m	0	3	4	6
	ppm ppm		0			
Boron		ASTM D5185m	0	3	4	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 0	4	6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 61	4 2 62	6 0 55
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 61 <1	4 2 62 <1	6 0 55 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 61 <1 944	4 2 62 <1 928	6 0 55 <1 882
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 61 <1 944 1079	4 2 62 <1 928 1060	6 0 55 <1 882 1024
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	3 0 61 <1 944 1079 1047	4 2 62 <1 928 1060 1060	6 0 55 <1 882 1024 979
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	3 0 61 <1 944 1079 1047 1291	4 2 62 <1 928 1060 1060 1289	6 0 55 <1 882 1024 979 1217
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 0 1010 1070 1150 1270 2060	3 0 61 <1 944 1079 1047 1291 2997	4 2 62 <1 928 1060 1060 1289 3040	6 0 55 <1 882 1024 979 1217 2432
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	3 0 61 <1 944 1079 1047 1291 2997 current	4 2 62 <1 928 1060 1060 1289 3040 history1	6 0 55 <1 882 1024 979 1217 2432 history2
Boron 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 <b>method</b>	0 0 60 1010 1070 1150 1270 2060	3 0 61 <1 944 1079 1047 1291 2997 current 12	4 2 62 <1 928 1060 1060 1289 3040 history1 4	6 0 55 <1 882 1024 979 1217 2432 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	3 0 61 <1 944 1079 1047 1291 2997 current 12 31	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24	6 0 55 <1 882 1024 979 1217 2432 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	3 0 61 <1 944 1079 1047 1291 2997 current 12 31 15	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 24 2	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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	3 0 61 <1 944 1079 1047 1291 2997 current 12 31 15 current	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 2 2 history1	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2 2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	3 0 61 <1 944 1079 1047 1291 2997 <u>current</u> 12 31 15 <u>current</u>	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 2 2 history1 0.1	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2 history2 0.6
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	3 0 61 <1 944 1079 1047 1291 2997 <i>current</i> 12 31 15 <i>current</i> 1.7 1.7 13.1	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 2 2 history1 0.1 8.4	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2 2 history2 0.6 11.4
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> >6 >20	3 0 61 <1 944 1079 1047 1291 2997 <u>current</u> 12 31 15 <u>current</u> 1.7 13.1 24.3	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 2 history1 0.1 8.4 21.6	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2 2 history2 0.6 11.4 22.3
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 D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 20 20 20 20 20 30 20 20 20 20 20 20 20 20 20 20 20 20 20	3 0 61 <1 944 1079 1047 1291 2997 <i>current</i> 12 31 15 <i>current</i> 1.7 13.1 24.3 <i>current</i>	4 2 62 <1 928 1060 1060 1289 3040 history1 4 24 2 history1 0.1 8.4 21.6 history1	6 0 55 <1 882 1024 979 1217 2432 history2 4 3 2 history2 0.6 11.4 22.3 history2



12 11

Mar11/22

# **OIL ANALYSIS REPORT**



	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
Aug8/22 25.02	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Au	Jobor Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	14.6	14.0	12.9
	GRAPHS						
	Ferrous Alloys						
Aug8/22	35 - iron						
Aug	30 - mickel		/				
	25-						
	틆 20 -		/				
	15	/					
	10						
	5			antinum?			
	1/22	Aug8/22 -		6/23 -			
	Mar11/22	Aug		Sep 26/23			
	Non-ferrous Met	als					
	10 copper						
	8 seesessesses lead						
	the second secon						
	6- E						
	ш dd 4-						
	2						
	0		en en et en				
	11/22	Aug8/22		iep26/23			
	Mar			Sep			
	Viscosity @ 100°	с			Base Number		
				10.0	Base		
	18 <b>- Abnormal</b> 17	1		- 8.0			
				6.0 Base Number 4.0 Base 2.0			
	016 Base 15 314			Ē 6.0			
	53 14			§ 4.0			
				ase Nr			
	Abnormal			<u>2.0</u>	-		
	11						
	Mar11/22	Aug8/22 -		Sep26/23	Mar11/22 -	Aug8/22 -	
	Mari	Aug		Sept	Mar	Auç	
Laborator Sample No Lab Numb Unique Num Certificate L2367	b. : GFL0084991 er : 05974678 iber : 10686628	501 Madi Receive Diagnos Diagnos	d :10 ed :11	ry, NC 27513 Oct 2023 Oct 2023 s Davis	GFL Environmental - 410 - Michigan We 39000 Van Born F Wayne, N US 4818 Contact: Belal Dgheis		
	ort, contact Customer Sel	rvice at 1-8	300-237-1369	9.			sh@gflenv.co
- Denotes test methods th							(734)714-23
	specifications are based on				JCGM 106:2012,		(/ 0 /)/ / / 20

Submitted By: Belal Dgheish