

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 412017 Component

Diesel Engine

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

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.

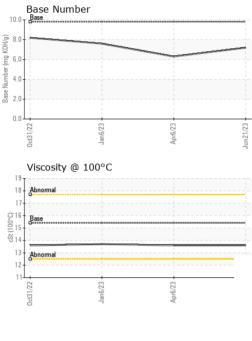
### Fluid Condition

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

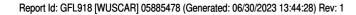
SAMPLE INFORI	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0084538	GFL0078797	GFL0071456
Sample Date		Client Info		21 Jun 2023	06 Apr 2023	06 Jan 2023
Machine Age	hrs	Client Info		4539	4003	3420
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>120	11	12	12
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	3	<1	1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	6	2	<1
Lead	ppm	ASTM D5185m	>40	4	0	<1
Copper	ppm	ASTM D5185m	>330	3	1	1
Tin	ppm	ASTM D5185m	>15	2	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
		and the second	limit/base		In the transmission	biotom 0
ADDITIVES		method	iimit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	0	2	nistory i 0	0
	ppm ppm					
Boron		ASTM D5185m	0	2	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 65	0 1 60	0 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 65 2	0 1 60 <1	0 0 60 <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	2 0 65 2 1057	0 1 60 <1 958	0 0 60 <1 934
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	2 0 65 2 1057 1143	0 1 60 <1 958 1026	0 0 60 <1 934 1103
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 65 2 1057 1143 1057	0 1 60 <1 958 1026 960	0 0 60 <1 934 1103 942
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 65 2 1057 1143 1057 1329	0 1 60 <1 958 1026 960 1219	0 0 60 <1 934 1103 942 1230
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 65 2 1057 1143 1057 1329 3439	0 1 60 <1 958 1026 960 1219 2970	0 0 60 <1 934 1103 942 1230 3156
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	0 0 60 1010 1070 1150 1270 2060	2 0 65 2 1057 1143 1057 1329 3439 current	0 1 60 <1 958 1026 960 1219 2970 history 1	0 0 60 <1 934 1103 942 1230 3156 history 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 65 2 1057 1143 1057 1329 3439 current 4	0 1 60 <1 958 1026 960 1219 2970 history 1 3	0 0 60 <1 934 1103 942 1230 3156 history 2 3
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	2 0 65 2 1057 1143 1057 1329 3439 <u>current</u> 4 4	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 3
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	2 0 65 2 1057 1143 1057 1329 3439 current 4 4 4	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 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>Imit/base</b> >25	2 0 65 2 1057 1143 1057 1329 3439 current 4 4 4 4 4 4	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1 history 1	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 2 history 2
Boron 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 0 65 2 1057 1143 1057 1329 3439 current 4 4 4 4 4 0.4	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1 history 1 0.4	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 2 history 2 0.4
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 65 2 1057 1143 1057 1329 3439 <u>current</u> 4 4 4 4 0.4 8.2	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1 history 1 0.4 8.0	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 3 2 history 2 0.4 8.5
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 2060 225 20 220 220 20 1imit/base 24 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 65 2 1057 1143 1057 1329 3439 <u>current</u> 4 4 4 4 4 4 5 <u>current</u> 0.4 8.2 20.3	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1 history 1 0.4 8.0 17.9	0 0 60 <1 934 1103 942 1230 3156 <b>history 2</b> 3 3 2 <b>history 2</b> 0.4 8.5 19.3
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 1imit/base 24 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 65 2 1057 1143 1057 1329 3439 <i>current</i> 4 4 4 4 4 0.4 8.2 20.3	0 1 60 <1 958 1026 960 1219 2970 history 1 3 2 1 history 1 0.4 8.0 17.9 history 1	0 0 60 <1 934 1103 942 1230 3156 history 2 3 3 2 history 2 0.4 8.5 19.3 history 2



# **OIL ANALYSIS REPORT**



Iaaaaaaaaaaaa	-	VISUAL		method	limit/base	current	history 1	history 2	
		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	
Apr6/23	Jun21/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Aı	Jun	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	ERTIES	method	limit/base	current	history 1	history 2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.6	13.7	
		GRAPHS							
		Ferrous Alloys							
3/23 -		12 - iron							
Apr6/23		10 -							
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	Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 91							
	Sample No.	: GFL0084538 Received : 28 Jun 2023						Industrial Driv	
NAR	Lab Number	: 05885478	Diagnos		Jun 2023			Hartland, V	
		10525001	Dia arrest 1						
	Unique Number		Diagnost	ician : we	s Davis		Contac		
TING LABORATORY	Unique Number Test Package	: 10535961 : FLEET contact Customer Serv						t: David McCa all@gflenv.co	



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Contact/Location: David McCall - GFL918