

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

## 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.

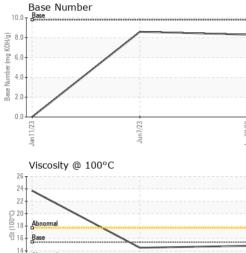
SAMPLE INFORI	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0083989	GFL0083995	GFL0069278
Sample Date		Client Info		29 Jun 2023	07 Jun 2023	11 Jan 2023
Machine Age	hrs	Client Info		10564	10380	9253
Oil Age	hrs	Client Info		600	87	600
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	SEVERE
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 METALS		method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>120	25	16	14
Chromium	ppm	ASTM D5185m		1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	<1	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m		<1	0	2
Lead	ppm	ASTM D5185m	>40	2	2	0
Copper	ppm	ASTM D5185m		1	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history 1	history 2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	4	<1
	ppm ppm		0			
Boron		ASTM D5185m	0	2	4	<1 0 54
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	4	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 62	4 2 68	<1 0 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 62 <1	4 2 68 <1	<1 0 54 0
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 62 <1 949	4 2 68 <1 926	<1 0 54 0 806
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 62 <1 949 1108	4 2 68 <1 926 1113	<1 0 54 0 806 1145
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 62 <1 949 1108 1015	4 2 68 <1 926 1113 1070	<1 0 54 0 806 1145 969
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 62 <1 949 1108 1015 1232	4 2 68 <1 926 1113 1070 1251	<1 0 54 0 806 1145 969 1160
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 62 <1 949 1108 1015 1232 3025	4 2 68 <1 926 1113 1070 1251 3602	<1 0 54 0 806 1145 969 1160 3107
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 62 <1 949 1108 1015 1232 3025 current	4 2 68 <1 926 1113 1070 1251 3602 history 1	<1 0 54 0 806 1145 969 1160 3107 history 2
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 ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060	2 0 62 <1 949 1108 1015 1232 3025 current 3	4 2 68 <1 926 1113 1070 1251 3602 history 1 2	<1 0 54 0 806 1145 969 1160 3107 history 2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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	2 0 62 <1 949 1108 1015 1232 3025 current 3 2	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm 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	2 0 62 <1 949 1108 1015 1232 3025 current 3 2 1	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	2 0 62 <1 949 1108 1015 1232 3025 current 3 2 1 1	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1 2 0 1 history 1 1.8	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5 5
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>	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	2 0 62 <1 949 1108 1015 1232 3025 current 3 2 1 2 1 2 2 1 2.9	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1 1 history 1	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5 5 history 2
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	2 0 62 <1 949 1108 1015 1232 3025 <i>current</i> 3 2 1 <i>current</i> 2.9 9.9	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1 history 1 1.8 7.3	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5 5 history 2 6.3 14.0
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 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 >30	2 0 62 <1 949 1108 1015 1232 3025 <i>current</i> 3 2 1 <i>current</i> 2.9 9.9 25.0 <i>current</i>	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1 history 1 1.8 7.3 21.8 history 1	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5 history 2 6.3 14.0 32.4 history 2
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 2060 225 20 220 20 20 20 20 20 20 20 20 20 20 20	2 0 62 <1 949 1108 1015 1232 3025 current 3 2 1 2 1 <i>current</i> 2.9 9.9 25.0	4 2 68 <1 926 1113 1070 1251 3602 history 1 2 0 1 history 1 1.8 7.3 21.8	<1 0 54 0 806 1145 969 1160 3107 history 2 4 5 5 5 history 2 6.3 14.0 32.4



Abnorma 12 10

Jan11/23

# **OIL ANALYSIS REPORT**



NELABORATORY	Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 408 - Brown   : GFL0083989 Received : 07 Jul 2023 4235   : 05892808 Diagnosed : 10 Jul 2023 BROWN CIT   er : 10548618 Diagnostician : Wes Davis US 4							
		24 22 20 20 3 16 4 4 4 22 20 <b>Abnormal</b> Base 20 20 5 20 5 20 5 20 5 20 5 20 5 20 5	Jun7/23		(0, 8, 0.0 Base Winder 4, 0.0 Base Vinder CC062 CC07 CC	Jan 11/23	Jun723	2050 2010	
		Uiscosity @ 100°	Jun7/23		10.0	Base Number			
		Non-ferrous Meta	Jun723		Jun29/23				
Jun7/23 +		Ferrous Alloys		/					
		Visc @ 100°C GRAPHS	cSt	ASTM D445	15.4	14.8	14.5	<b>2</b> 3.7	
		FLUID PROPE	RTIES	method	limit/base	current	history 1	history 2	
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG	
Jun7/23	Jun29/23	Appearance Odor	scalar scalar	*Visual *Visual	NORML NORML	NORML NORML	NORML NORML	NORML NORML	
2	E1	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
		Precipitate Silt	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE NONE	NONE	
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	

Submitted By: WILLIAM DEOLA