

## **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.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

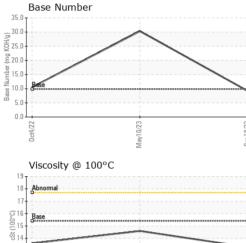
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0091538	GFL0081265	GFL0057009
Sample Date		Client Info		18 Sep 2023	10 May 2023	04 Oct 2022
Machine Age	hrs	Client Info		13347	13346	0
Oil Age	hrs	Client Info		600	600	0
Oil Changed		Client Info		N/A	Not Changd	N/A
Sample Status				NORMAL	SEVERE	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>80	2	35	0
Chromium	ppm	ASTM D5185m	>5	0	1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	1	<1	0
Lead	ppm	ASTM D5185m	>30	0	<1	0
Copper	ppm	ASTM D5185m	>150	<1	20	<1
Tin	ppm	ASTM D5185m	>5	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
			11		1.1.1.4	h la tana 0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	4	history1 97	nistory2 7
	ppm ppm					
Boron		ASTM D5185m	0	4 0 55	97	7 <1 60
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 0	97 0 325 <1	7 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 55 0 895	97 0 325 <1 871	7 <1 60 0 904
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 55 0 895 1048	97 0 325 <1 871 998	7 <1 60 0 904 1103
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	4 0 55 0 895 1048 957	97 0 325 <1 871 998 975	7 <1 60 0 904 1103 1071
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	4 0 55 0 895 1048 957 1169	97 0 325 <1 871 998 975 1181	7 <1 60 0 904 1103 1071 1239
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	4 0 55 0 895 1048 957	97 0 325 <1 871 998 975	7 <1 60 0 904 1103 1071
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	4 0 55 0 895 1048 957 1169	97 0 325 <1 871 998 975 1181	7 <1 60 0 904 1103 1071 1239
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 55 0 895 1048 957 1169 3514	97 0 325 <1 871 998 975 1181 3441	7 <1 60 0 904 1103 1071 1239 3595
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	4 0 55 0 895 1048 957 1169 3514 current	97 0 325 <1 871 998 975 1181 3441 history1	7 <1 60 0 904 1103 1071 1239 3595 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> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	4 0 555 0 895 1048 957 1169 3514 <i>current</i> 3	97 0 325 <1 871 998 975 1181 3441 history1 € 64	7 <1 60 0 904 1103 1071 1239 3595 history2 1
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 <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >20	4 0 55 0 895 1048 957 1169 3514 <u>current</u> 3 4	97 0 325 <1 871 998 975 1181 3441 history1 ● 64 ▲ 3983	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0
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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >20	4 0 55 0 895 1048 957 1169 3514 current 3 4 2	97 0 325 <1 871 998 975 1181 3441 history1 ● 64 ▲ 3983 ▲ 30	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1
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> >20	4 0 55 0 895 1048 957 1169 3514 <i>current</i> 3 4 2	97 0 325 <1 871 998 975 1181 3441 • history1 • 64 ▲ 3983 ▲ 30 history1	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1 N 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 TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >20	4 0 55 0 895 1048 957 1169 3514 <i>current</i> 3 4 2 <i>current</i> 0.1	97 0 325 <1 871 998 975 1181 3441 • history1 • 64 ▲ 3983 ▲ 3983 ▲ 30 • history1 1.2	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1 history2 0.1
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> >20 <i>limit/base</i> >3 >20	4 0 55 0 895 1048 957 1169 3514 <i>current</i> 3 4 2 <i>current</i> 0.1 4.4	97 0 325 <1 871 998 975 1181 3441 history1 64 ▲ 3983 ▲ 30 history1 1.2 1.2	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1 0 1 history2 0.1 5.9
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> >20 <b>imit/base</b> >3 >20 >3 >20	4 0 55 0 895 1048 957 1169 3514 <i>current</i> 3 4 2 <i>current</i> 0.1 4.4 16.8	97 0 325 <1 871 998 975 1181 3441	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1 history2 0.1 5.9 18.7
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 D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	4 0 55 0 895 1048 957 1169 3514 <i>current</i> 3 4 2 <i>current</i> 0.1 4.4 16.8 <i>current</i>	97 0 325 <1 871 998 975 1181 3441	7 <1 60 0 904 1103 1071 1239 3595 history2 1 0 1 history2 0.1 5.9 18.7 history2



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# **OIL ANALYSIS REPORT**



	VISUAL		method				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
May10/23 Sep18/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May	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	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.3	14.6	13.6
	GRAPHS						
	Ferrous Alloys						
23	30 - iron	$\wedge$					
May 10/23	25						
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				60			
	Non-ferrous Meta			0			
	Non-ferrous Meta			0			
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	20 copper						
	20 15						
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	20 15 Ead 10 5 0	als					
	20 15			Sep18/23			
	Viscosity @ 100°	estimation of the second secon			Base Number		
	Viscosity @ 100°	estimation of the second secon			Base Number	-	
	Viscosity @ 100°	estimation of the second secon		Claires 35.0 30.0	I		
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	Viscosity @ 100°	estimation of the second secon		Claires 35.0 30.0	I		
	20 15 16 10 5 0 10 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10	estimation of the second secon		Claires 35.0 30.0	I		
	20 15 16 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10	estimation of the second secon		520g1dag 35.0	Betse		
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	20 15 16 10 5 0 10 15 10 5 0 10 10 10 10 10 10 10 10 10	c		35.0 30.0 ())HOX Bur 20.0 ()HOX BUR	getee		
	20 15 16 10 5 0 15 0 15 16 10 5 0 15 15 16 10 10 10 10 10 10 10 10 10 10	estimation of the second secon		5.00 5.00	Betse	May10/23	
Laboratory	Viscosity @ 100° Viscosity @ 100° Construction of the second of the se	C 501 Madia		250 200 200 200 200 200 200 200	Det4/22		
Sample No.	Viscosity @ 100° Viscosity @ 100° Control of the second se	C 501 Madia Received	d : 22 \$	Sep 2023	Det4/22	May 10/23	888 Baldw
Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100° Construction Constructi	C 501 Madia Received Diagnos	d : 22 : ed : 22 :	235.0 30.0 PHOY DE20.0 PHOY DE	Det4/22	May 10/23	888 Baldw Pontiac,
Sample No. Lab Number Unique Number	Viscosity @ 100° Viscosity @ 100°	C 501 Madia Received	d : 22 : ed : 22 :	Sep 2023	Det4/22	Environmental	888 Baldw Pontiac, US 483
Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100° WearCheck USA - : GFL0091538 : 05958310 r : 10659523 = : FLEET	C 501 Madia Received Diagnos	d : 22 ; ed : 22 ; tician : We	25.0 30.0 PHOY DE 20.0 PHOY DE	Det4/22	Environmental Contact: 1	888 Baldw Pontiac,

Submitted By: Ricky Matthews

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