

## **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.

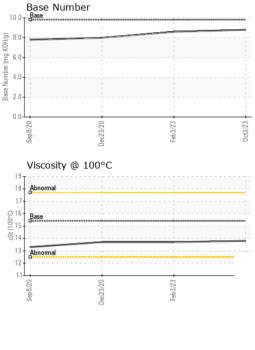
#### Fluid Condition

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	history1	history2
Sample Number		Client Info		GFL0090096	GFL0069457	GFL0014098
Sample Date		Client Info		03 Oct 2023	03 Feb 2023	23 Dec 2020
Machine Age	hrs	Client Info		36900	2144	0
Oil Age	hrs	Client Info		600	0	0
Oil Changed		Client Info		Changed	Changed	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	>120	3	9	9
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	6
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	14	2
Lead	ppm	ASTM D5185m	>40	0	<1	1
Copper	ppm	ASTM D5185m	>330	1	<1	<1
Tin	ppm	ASTM D5185m	>15	0	<1	0
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
Boron	nnm					
	ppm	ASTM D5185m	0	10	0	15
Barium	ppm	ASTM D5185m ASTM D5185m	0	10 0	0	15 0
				-		
Barium	ppm	ASTM D5185m	0	0	0	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 56	0 62	0 50
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 56 <1	0 62 <1	0 50 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 56 <1 922	0 62 <1 976	0 50 <1 843
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 56 <1 922 1098	0 62 <1 976 1081	0 50 <1 843 1066
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 60 0 1010 1070 1150	0 56 <1 922 1098 1002	0 62 <1 976 1081 1029	0 50 <1 843 1066 1060
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	0 60 0 1010 1070 1150 1270	0 56 <1 922 1098 1002 1237	0 62 <1 976 1081 1029 1313	0 50 <1 843 1066 1060 1164
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 60 0 1010 1070 1150 1270 2060	0 56 <1 922 1098 1002 1237 3144	0 62 <1 976 1081 1029 1313 3749	0 50 <1 843 1066 1060 1164 2496
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 60 0 1010 1070 1150 1270 2060	0 56 <1 922 1098 1002 1237 3144 current	0 62 <1 976 1081 1029 1313 3749 history1	0 50 <1 843 1066 1060 1164 2496 history2
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	0 60 0 1010 1070 1150 1270 2060 Imit/base >25	0 56 <1 922 1098 1002 1237 3144 current 3	0 62 <1 976 1081 1029 1313 3749 history1 2	0 50 <1 843 1066 1060 1164 2496 <b>history2</b> 4
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	0 60 0 1010 1070 1150 1270 2060 Imit/base >25	0 56 <1 922 1098 1002 1237 3144 current 3 <1	0 62 <1 976 1081 1029 1313 3749 history1 2 3	0 50 <1 843 1066 1060 1164 2496 history2 4 3
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20	0 50 <1 843 1066 1060 1164 2496 history2 4 3 13
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20	0 56 <1 922 1098 1002 1237 3144 current 3 <1 0 current	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1	0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2
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 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i>	0 56 <1 922 1098 1002 1237 3144 current 3 <1 0 current 0.1	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3	0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2 0.9
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 60 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >20	0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.3	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2	0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 history2 0.9 8.8
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 60 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >20 <b>imit/base</b> >4 >20 >30	0 56 <1 922 1098 1002 1237 3144 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.3 17.4	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2 18.8	0 50 <1 843 1066 1060 1164 2496 history2 4 3 13 13 history2 0.9 8.8 20.3
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	ASTM D5185m ASTM D7844 *ASTM D7624	0 60 1010 1070 1150 1270 2060 <b>Imit/base</b> >25 -20 <b>Imit/base</b> >20 >30 	0 56 <1 922 1098 1002 1237 3144 <i>current</i> 3 <1 0 <i>current</i> 0.1 5.3 17.4 <i>current</i>	0 62 <1 976 1081 1029 1313 3749 history1 2 3 20 history1 0.3 7.2 18.8 history1	0 50 <1 843 1066 1060 1164 2496 <b>history2</b> 4 3 13 <b>history2</b> 0.9 8.8 20.3 <b>history2</b>



# **OIL ANALYSIS REPORT**



			VISUAL		method	limit/base	current	history1	history2
			Vhite Metal	scalar	*Visual	NONE	NONE	NONE	NONE
			ellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
			recipitate	scalar	*Visual	NONE	NONE	NONE	NONE
23		ilt	scalar	*Visual	NONE	NONE	NONE	NONE	
		ebris	scalar	*Visual	NONE	NONE	NONE	NONE	
		and/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Feb3/23		ppearance	scalar	*Visual	NORML	NORML	NORML	NORML	
			)dor	scalar	*Visual	NORML	NORML	NORML	NORML
			mulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			ree Water	scalar	*Visual		NEG	NEG	NEG
			FLUID PROPI		method	limit/base	current	history1	history2
		_		cSt	ASTM D445	15.4	13.8	13.7	13.7
			GRAPHS Ferrous Alloys						
		<sup>18</sup> T	×						
Feb 3/23 •		16	iron chromium						
Fer		14 12	nickel						
		e <sup>10</sup>							
		6 4							
		2							
		0		CONTRACTOR OF STREET					
			Sep8/20 Jec23/20		Feb3/23	0ct3/23			
					ш.	0			
		<sup>10</sup> т	Non-ferrous Meta	ais					
			copper						
		8-	tin						
		_ 6-							
		bbm							
		1							
		2-	State State State State State State State						
		0	0	and a ball a ball a ball a ball	S.	200 C			
			Sep8/20 Jec23/20		Feb3/23	0ct3/23			
			Viscosity @ 100°	С			Base Number		
		19 18	Abnormal			10.0			
		17-							
		16				KOH			
		- 10 T	Base			B 6.0			
		0.0015							
		(100°C) (100°C				- 2			
		(2-001) 15- 14- 13-	Abnormal			0.6 Base Number (mg KOH/d)			
			Abnormal			2.0			
		13 - 12 - 11 -			5	2.0		00	2
		13 - 12 - 11 -			eb.3/23	2.0		sc23/20	
		13 - 12 - 11 -	Sep 8.20		Feb3/23	2.0		Dec23/20 Ee413/23	
d	Laboratory	13 12 11	VearCheck USA -		son Ave., Ca	ry, NC 27513	Sep 8/20	ronmental - 030 - Co	nway Myrtle Bea
NAB	Sample No.	13 12 11 : V : C	VearCheck USA - GFL0090096	Received	son Ave., Ca <b>1</b> : 05 (	ry, NC 27513 Doct 2023	Sep 8/20	ronmental - 030 - Co	nway Myrtle Bea 3010 HWY 37
	Sample No. Lab Number	13 12 11 : V : C : O	VearCheck USA - GFL0090096 15970159	Received Diagnos	son Ave., Ca 1 : 05 ( ed : 05 (	ry, NC 27513 Dct 2023 Dct 2023	Sep 8/20	ronmental - 030 - Co	nway Myrtle Bea 3010 HWY 37 Conway, S
THE LESS T	Sample No.	13 12 11 : V : C : 0 : 1	VearCheck USA - GFL0090096	Received	son Ave., Ca 1 : 05 ( ed : 05 (	ry, NC 27513 Doct 2023		ronmental - 030 - Co	nway Myrtle Bea 3010 HWY 37 Conway, S US 2952
	Sample No. Lab Number Unique Number Test Package sample report,	13- 12- 11- : V : O : 0 : 1 : F cont	VearCheck USA - GFL0090096 15970159 0682109	Received Diagnose Diagnost vice at 1-8	son Ave., Ca d : 05 ( ed : 05 ( tician : Wes	ry, NC 27513 Oct 2023 Oct 2023 s Davis		ronmental - 030 - Co Contact: CHET	nway Myrtle Bea 3010 HWY 3 Conway, S US 295

Submitted By: CHET STROSCHINE