

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 933026

Component
Natural Gas 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 INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0078140	GFL0084655	GFL0078098
Sample Date		Client Info		09 Jan 2024	02 Nov 2023	21 Apr 2023
Machine Age	hrs	Client Info		4887	48244	30230
Oil Age	hrs	Client Info		600	0	0
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method				
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	8	5	3
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	2	2
Lead	ppm	ASTM D5185m	>30	_ <1	<1	0
Copper	ppm	ASTM D5185m	>35	1	<1	<1
Tin	ppm	ASTM D5185m	>4	1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	maa	ASTM D5185m	0			41
	ppm ppm	ASTM D5185m ASTM D5185m	0	10	13	41
Barium	ppm	ASTM D5185m	0	10 0	13 0	41 0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	10 0 49	13 0 51	41 0 52
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	10 0 49 <1	13 0 51 <1	41 0 52 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	10 0 49 <1 521	13 0 51 <1 609	41 0 52 <1 635
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	10 0 49 <1 521 1536	13 0 51 <1 609 1627	41 0 52 <1 635 1689
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	10 0 49 <1 521 1536 761	13 0 51 <1 609 1627 738	41 0 52 <1 635 1689 816
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	10 0 49 <1 521 1536 761 932	13 0 51 <1 609 1627	41 0 52 <1 635 1689
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 0 60 0 1010 1070 1150 1270	10 0 49 <1 521 1536 761	13 0 51 <1 609 1627 738 1025 2576	41 0 52 <1 635 1689 816 961
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 0 1010 1070 1150 1270 2060	10 0 49 <1 521 1536 761 932 2345 current	13 0 51 <1 609 1627 738 1025 2576 history1	41 0 52 <1 635 1689 816 961 2663 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 0 60 0 1010 1070 1150 1270 2060	10 0 49 <1 521 1536 761 932 2345 2345 current 5	13 0 51 <1 609 1627 738 1025 2576 history1 5	41 0 52 <1 635 1689 816 961 2663 history2 5
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm 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 0 60 0 1010 1070 1150 1270 2060 kimit/base >+100	10 0 49 <1 521 1536 761 932 2345 current	13 0 51 <1 609 1627 738 1025 2576 history1	41 0 52 <1 635 1689 816 961 2663 history2
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 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >+100	10 0 49 <1 521 1536 761 932 2345 2345 current 5 6 2	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4	41 0 52 <1 635 1689 816 961 2663 history2 5 4 4 <1
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 60 0 1010 1070 1150 1270 2060 kimit/base >+100	10 0 49 <1 521 1536 761 932 2345 current 5 6 2 2	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 history1	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 ×1
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 60 0 1010 1070 1150 1270 2060 >timit/base >20 imit/base	10 0 49 <1 521 1536 761 932 2345 <b>current</b> 5 6 2 2 <b>current</b> 0	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 history1 0	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 <1 history2 0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >+100 20 <i>limit/base</i>	10 0 49 <1 521 1536 761 932 2345 <i>current</i> 5 6 2 2 <i>current</i> 0 10.1	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 history1 0 9.9	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 ×1 history2 0 7.1
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> >20 <b>Imit/base</b>	10 0 49 <1 521 1536 761 932 2345 <b>current</b> 5 6 2 2 <b>current</b> 0 10.1 20.6	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 <b>history1</b> 0 9.9 20.5	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 history2 0 7.1 17.6
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 >+100 >20 20 imit/base >20 >30 imit/base	10 0 49 <1 521 1536 761 932 2345 current 5 6 2 2 current 0 10.1 20.6 current	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 history1 0 9.9 20.5 history1	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 history2 0 7.1 17.6 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAM	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> >20 <b>imit/base</b> >20 <b>imit/base</b> >30	10 0 49 <1 521 1536 761 932 2345 <b>current</b> 5 6 2 2 <b>current</b> 0 10.1 20.6 <b>current</b> 17.6	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 <b>history1</b> 0 9.9 20.5 history1 17.6	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 history2 0 7.1 17.6 history2 15.7
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 2060 >+100 >20 20 imit/base >20 >30 imit/base	10 0 49 <1 521 1536 761 932 2345 current 5 6 2 2 current 0 10.1 20.6 current	13 0 51 <1 609 1627 738 1025 2576 history1 5 4 4 4 history1 0 9.9 20.5 history1	41 0 52 <1 635 1689 816 961 2663 history2 5 4 <1 history2 0 7.1 17.6 history2



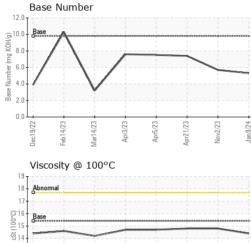
13 Abnorma 12

Dec19/22

Feb14/23

# **OIL ANALYSIS REPORT**

VISUAL



Mar14/23

			Dec Feb Mar	A, A,	Apri No	Ja	Peb Mar	Ap	Apr21/23 Nov2/23 Jan9/24
			Dec19/22 15/23 14/23	Apr3/23 Apr5/23	Apr21/23		Dec19/22 Feb14/23	Apr3/23 Apr5/23	Apr21/23
			13 - Abnormal			2 4.0 888 2.0	Ý V		
			G 16 Base 115 3 14			-0.8 6.0- 9.0.9 8ase Number (mg KOH/g)	$/ \setminus$	/	
			17- <sup>16</sup> Base			0.8 KOH/g)			_
			18 - Abnormal			10.0	Base		
			Viscosity @ 100°C	2		12.0	Base Number		
			Dec19/22 Feb14/23 Mar14/23	Apr3/23 Apr5/23	Apr21/23 Nov2/23	Jan9/24			
				3	3 33	24			
			10						
			30 20						
			40 - tin						
			Non-ferrous Meta	IS					
			Dec19/22 Feb14/23 Mar14/23	Apr3/23 Apr5/23	Apr21/23 Nov2/23	Jan 9/24			
				23	23	24			
			20						
			<u>ā</u> 30-						
Apr3/23	Apr5/23	Apr2.1/23 Nov2/23	50						
	23	2 22	60 iron A						
			GRAPHS Ferrous Alloys						
			Visc @ 100°C	cSt	ASTM D445	15.4	14.4	14.8	14.8
			FLUID PROPE			limit/base	current	history1	history2
°C			Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.1	NEG NEG	NEG NEG	NEG NEG
A	< ,	Ap N	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Apr3/23	Apr5/23	Apr21/23 Nov2/23 Jan9/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
			Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
			Silt	scalar	*Visual	NONE	NONE	NONE	NONE
			Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		6666666667FFFFFFFFFFFFFF	White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE
				0	*\/:!		NONE		

\* - Denotes test met Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)