

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



Machine Id **99M** Component **Diesel Engine** Fluid

### PETRO CANADA DURON SHP 15W40 (36 QTS)

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		GFL0110149	GFL0110051	GFL0104319
Sample Date		Client Info		13 Feb 2024	23 Jan 2024	27 Dec 2023
Machine Age	hrs	Client Info		20274	20142	19966
Oil Age	hrs	Client Info		600	600	19966
Oil Changed		Client Info	Changed		Changed	Not Changd
Sample Status			NORMAL		NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	23	3	20
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	2	4
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	<1	0	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current <1	history1 2	5
	ppm ppm					
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1	2	5
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0	<1 0	2 <1 53 <1	5 0 59 <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	<1 0 56 0 926	2 <1 53 <1 839	5 0 59 <1 955
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 1010 1070	<1 0 56 0 926 1000	2 <1 53 <1 839 909	5 0 59 <1 955 1104
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	<1 0 56 0 926 1000 1028	2 <1 53 <1 839 909 947	5 0 59 <1 955 1104 1058
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	<1 0 56 0 926 1000 1028 1238	2 <1 53 <1 839 909 947 1115	5 0 59 <1 955 1104 1058 1272
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 0 1010 1070 1150 1270 2060	<1 0 56 0 926 1000 1028	2 <1 53 <1 839 909 947 1115 2728	5 0 59 <1 955 1104 1058 1272 3263
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 0 1010 1070 1150 1270 2060	<1 0 56 0 926 1000 1028 1238	2 <1 53 <1 839 909 947 1115 2728 history1	5 0 59 <1 955 1104 1058 1272
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060	<1 0 56 0 926 1000 1028 1238 3081 current 5	2 <1 53 <1 839 909 947 1115 2728 history1 5	5 0 59 <1 955 1104 1058 1272 3263 history2 10
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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	<1 0 56 0 926 1000 1028 1238 3081 current 5 4	2 <1 53 <1 839 909 947 1115 2728 history1 5 2	5 0 59 <1 955 1104 1058 1272 3263 history2 10 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	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 kimit/base >25	<1 0 56 0 926 1000 1028 1238 3081 current 5	2 <1 53 <1 839 909 947 1115 2728 history1 5	5 0 59 <1 955 1104 1058 1272 3263 history2 10
Boron 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	<1 0 56 0 926 1000 1028 1238 3081 current 5 4 <1 <1	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 2 history1	5 0 59 <1 955 1104 1058 1272 3263 <b>history2</b> 10 5 2 2 <b>history2</b>
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >26	<1 0 56 0 926 1000 1028 1238 3081 <i>current</i> 5 4 <1 <i>current</i> 0.2	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 history1 0.1	5 0 59 <1 955 1104 1058 1272 3263 <b>history2</b> 10 5 2 2 <b>history2</b> 0.2
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 225 20 20 20 1imit/base >20	<1 0 56 0 926 1000 1028 1238 3081 <i>current</i> 5 4 <1 <i>current</i> 0.2 6.7	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 history1 0.1 4.8	5 0 59 <1 955 1104 1058 1272 3263 history2 10 5 2 2 history2 0.2 5.2
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >26	<1 0 56 0 926 1000 1028 1238 3081 <i>current</i> 5 4 <1 <i>current</i> 0.2	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 history1 0.1	5 0 59 <1 955 1104 1058 1272 3263 <b>history2</b> 10 5 2 2 <b>history2</b> 0.2
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 2060 2060 225 20 20 20 1imit/base >20	<1 0 56 0 926 1000 1028 1238 3081 <i>current</i> 5 4 <1 <i>current</i> 0.2 6.7	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 history1 0.1 4.8	5 0 59 <1 955 1104 1058 1272 3263 history2 10 5 2 2 history2 0.2 5.2
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 225 20 225 20 <b>limit/base</b> >20 <b>limit/base</b> >20 30	<1 0 56 0 926 1000 1028 1238 3081 <i>current</i> 5 4 <1 <i>current</i> 0.2 6.7 18.3	2 <1 53 <1 839 909 947 1115 2728 history1 5 2 2 2 history1 0.1 4.8 17.6	5 0 59 <1 955 1104 1058 1272 3263 <b>history2</b> 10 5 2 <b>history2</b> 0.2 5.2 17.5

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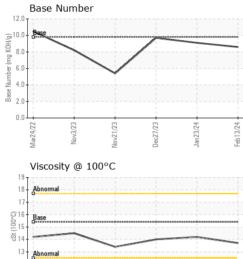
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Mar24/22

Nov3/23

# **OIL ANALYSIS REPORT**

VISUAL



		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Ť		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Nov21/23 Dec27/23	Jan 23/24 Feb 13/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Nov	Jan	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
°C		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.7	14.2	14.0
		GRAPHS Ferrous Alloys						
		70 iron	\					
Nov21/23 Dec27/23	Jan 23/24	60 50						
		E 40 30						
		20			1			
		10-		$\searrow$				
		Mar24/22	Dec27/23	Jan 23/24	Feb13/24			
		2 2		Jan	Feb			
		Non-ferrous Metal	S					
		copper	$\mathbf{i}$					
		8 tin						
		6	<b>1</b>					
		mdd 4						
		2	1					
			····	4	4			
		Mar24/22 Nov3/23	Dec27/23	Jan 23/24	Feb13/24			
		≥ – ≥ Viscosity @ 100°C		2 C	£			
		<sup>19</sup> T			12.	Base Number		
		18 - Abnormal						
		17			10. P			
		S <sup>16</sup> Base			1.8 Base Number (mg KOH(g)		/	
		0015 314			uper 6.	0	$\checkmark$	
					N as	0		
		13 Abnormal		1	2.	0-		
		11				0		
		.: Mar24/22 -: Nov3/23 -	Dec27/23	Jan23/24 -	Feb 13/24	Mar24/22 - Nov3/23 -	Nov21/23 - Dec27/23 -	Jan23/24 - Feb13/24 -
		Mari, Nov	Dec2	Janź	Feb	Mar	Novi	Feb1
	Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 410 - Michiga						
ANAB	Sample No.	: GFL0110149	: GFL0110149 Received : 16 Feb 2024					0 Van Born Rd
	Lab Number		Teste		Feb 2024			Wayne, MI
Certificate L2367	Unique Number Test Package		Diagn	1 <b>0sea</b> : 19	Feb 2024 - W	ves Davis	Contact	US 48184 Belal Dgheish
		contact Customer Servi	ice at 1-8	00-237-1369	Э.			sh@gflenv.com
* - Denotes tes	t methods that	are outside of the ISO 1	7025 sco	pe of accred	litation.		T:	(734)714-2340
Statements of o	conformity to sp	pecifications are based o	on the sin	nple accepta	nce decision	rule (JCGM 106:	2012)	F:

Submitted By: seel also GFL468 - Laura Wilson