

### **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 921058-205335

#### 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.

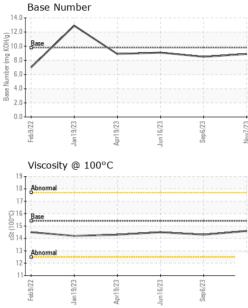
#### Fluid Condition

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		GFL0100512	GFL0093231	GFL0083413
Sample Date		Client Info		07 Nov 2023	06 Sep 2023	16 Jun 2023
Machine Age	hrs	Client Info		10305	9723	9006
Oil Age	hrs	Client Info		10305	9723	9006
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	2	6	8
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	0
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 1	history2 0
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	1	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	1 0	0 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 59	1 0 60	0 <1 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 59 <1	1 0 60 <1	0 <1 63 <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	2 0 59 <1 977	1 0 60 <1 1006	0 <1 63 <1 988
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 59 <1 977 1062	1 0 60 <1 1006 1173	0 <1 63 <1 988 1091
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	0 0 60 0 1010 1070 1150	2 0 59 <1 977 1062 1087	1 0 60 <1 1006 1173 1011	0 <1 63 <1 988 1091 1030
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 59 <1 977 1062 1087 1319	1 0 60 <1 1006 1173 1011 1281	0 <1 63 <1 988 1091 1030 1282
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 59 <1 977 1062 1087 1319 3265	1 0 60 <1 1006 1173 1011 1281 3622	0 <1 63 <1 988 1091 1030 1282 3658
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	0 0 60 1010 1070 1150 1270 2060	2 0 59 <1 977 1062 1087 1319 3265 current	1 0 60 <1 1006 1173 1011 1281 3622 history1	0 <1 63 <1 988 1091 1030 1282 3658 history2
Boron 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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 59 <1 977 1062 1087 1319 3265 current 2	1 0 60 <1 1006 1173 1011 1281 3622 history1 3	0 <1 63 <1 988 1091 1030 1282 3658 history2 4
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	2 0 59 <1 977 1062 1087 1319 3265 <u>current</u> 2 4	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58
Boron 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	0 0 0 1010 1070 1150 1270 2060 <b>Jimit/base</b> >25	2 0 59 <1 977 1062 1087 1319 3265 <u>current</u> 2 4 2	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58 21
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25	2 0 59 <1 977 1062 1087 1319 3265 current 2 4 2 2 4 2 2	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3 3	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58 21 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	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 >3	2 0 59 <1 977 1062 1087 1319 3265 <i>current</i> 2 4 2 4 2 <i>current</i> 0.5	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3 history1 0.6	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58 21 history2 0.7
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> >3 >20	2 0 59 <1 977 1062 1087 1319 3265 <i>current</i> 2 4 2 4 2 <i>current</i> 0.5 6.9	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3 9 3 history1 0.6 7.4	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58 21 58 21 history2 0.7 7.8
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> >25 <b>imit/base</b> >3 >20 >3	2 0 59 <1 977 1062 1087 1319 3265 <b>current</b> 2 4 2 2 4 2 <b>current</b> 0.5 6.9 19.4	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3 <b>history1</b> 0.6 7.4 19.1	0 <1 63 <1 988 1091 1030 1282 3658 <b>history2</b> 4 58 21 <b>history2</b> 0.7 7.8 20.1
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 33 20 330 20 330	2 0 59 <1 977 1062 1087 1319 3265 <i>current</i> 2 4 2 2 4 2 <i>current</i> 0.5 6.9 19.4	1 0 60 <1 1006 1173 1011 1281 3622 history1 3 9 3 <b>history1</b> 0.6 7.4 19.1 history1	0 <1 63 <1 988 1091 1030 1282 3658 history2 4 58 21 history2 0.7 7.8 20.1 history2



## **OIL ANALYSIS REPORT**



		VISUAL		method	limit/base	current		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
6/23	Sep 6/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jun 16/23	Sep	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		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		14.6	14.3	14.5
		GRAPHS						
		Ferrous Alloys						
		35	· · · · · · · · · · · · · · · · · · ·	·				
Jun 16/23	Sep6/23	30 - chromium						
ηr	03	25						
		E 20						
		15						
		10						
		5-						
		Feb9/22 Jan 19/23	Apri 3/23 Jun 16/23	Sep6/23	Nov7/23			
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				Se	Nov			
		Non-ferrous Meta		ů	No			
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		Non-ferrous Meta		S				
		Non-ferrous Meta		S	No			
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		Non-ferrous Meta 16 16 14 10 10 10 10 10 10 10 10 10 10	hls		lon			
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		Non-ferrous Meta	erseunder			Base Number		
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		Non-ferrous Meta	erseunder		EZU/090 14.0			
		Non-ferrous Meta	erseunder		EZU/090 14.0			
		Non-ferrous Meta	erseunder		EZU/090 14.0			
		Non-ferrous Meta	erseunder		EZU/090 14.0			
		Non-ferrous Meta Non-ferrous Meta 16 16 16 16 16 16 16 16 16 16	erseunder		14.0 12.0 (D)HOJ Bull Ball Bage 4.0			
		Non-ferrous Meta 16 16 16 16 16 16 16 16 10 10 10 10 10 10 10 10 10 10	erseunder		EZU[ANN 14.0 12.0 (0)HON Bu baquiny egg 2.0			
		Non-ferrous Meta	nls F7/ft1004 C	Sep6.23	EZ/Looy 14.0 12.0 ()HO10.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 10.0	Base	<b>\</b>	23
		Non-ferrous Meta	nls F7/ft1004 C	Sep6.23	EZ/Looy 14.0 12.0 ()HO10.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 10.0	Base	<b>\</b>	Sep6.23
		Non-ferrous Meta	erseunder	Sep6.23	EZU[ANN 14.0 12.0 (0)HON Bu baquiny egg 2.0		Apri 9/23	Sep 6/23
	Laboratory	Non-ferrous Meta Non-ferrous Meta 16 16 16 16 16 16 16 16 16 16	ols	EZgddeg EZgddeg son Ave., Ca	EZ[/non 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 10.	ZZG6pa GFL Env	Pure 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	ast Mount Haulir
NAB	Laboratory Sample No.	Non-ferrous Meta	501 Madia Received	EZIGOD EZIGOD EZIGOD Son Ave., Ca	EZ//nog 14.0 12.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 10.	ZZG6pa GFL Env	Apr19/23	a <b>st Mount Hauli</b> r t Houston Roa
	Laboratory Sample No. Lab Number	Non-ferrous Meta 16 16 16 16 16 16 16 16 16 16	501 Madia Received Diagnos	E700009 E700009 son Ave., Ca	EZ/My 14.0 12.0 10.0	ZZG6pa GFL Env	Pure 1 - 1 - 1 - 2 - E	<b>ast Mount Hauli</b> r t Houston Roa Houston, T
	Laboratory Sample No.	Non-ferrous Meta 16 16 16 16 16 16 16 16 16 16	501 Madia Received	E700009 E700009 son Ave., Ca	EZ//nog 14.0 12.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 14.0 12.0 10.	ZZG6pa GFL Env	EZőfjudy ironmental - 865 - E '213 East Mount	a <b>st Mount Hauli</b> r t Houston Roa

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Submitted By: TECHNICIAN ACCOUNT