

OIL ANALYSIS REPORT

Area (10A80900) 410017

Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Elui

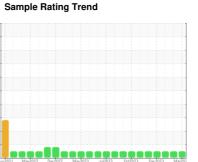
All component wear rates are normal.

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.





NORMAL

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0099290	GFL0105545	GFL0105553
Sample Date		Client Info		12 Mar 2024	15 Feb 2024	19 Jan 2024
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	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	7	7	4
Chromium	ppm	ASTM D5185m	>20	0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	4	3
Lead	ppm	ASTM D5185m	>40	0	1	1
Copper	ppm	ASTM D5185m	>330	4	2	1
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
					,	
Boron	ppm	ASTM D5185m	0	7	4	3
Boron Barium	ppm ppm			7 0		
		ASTM D5185m			4	3
Barium	ppm	ASTM D5185m ASTM D5185m	0 60	0	4 0	3 0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60	0 61	4 0 67	3 0 60
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 61 0	4 0 67 <1	3 0 60 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 61 0 985 1144 1048	4 0 67 <1 1236 1394 1249	3 0 60 <1 943 1082 1044
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 60 0 1010 1070 1150 1270	0 61 0 985 1144	4 0 67 <1 1236 1394 1249 1643	3 0 60 <1 943 1082 1044 1262
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 60 0 1010 1070 1150 1270 2060	0 61 0 985 1144 1048	4 0 67 <1 1236 1394 1249	3 0 60 <1 943 1082 1044 1262 3194
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 60 0 1010 1070 1150 1270	0 61 0 985 1144 1048 1227	4 0 67 <1 1236 1394 1249 1643 3957 history1	3 0 60 <1 943 1082 1044 1262 3194 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 method ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 61 0 985 1144 1048 1227 3581 current 3	4 0 67 <1 1236 1394 1249 1643 3957 history1 3	3 0 60 <1 943 1082 1044 1262 3194 history2 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 61 0 985 1144 1048 1227 3581 current 3 3 3	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 3
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 method ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base	0 61 0 985 1144 1048 1227 3581 current 3	4 0 67 <1 1236 1394 1249 1643 3957 history1 3	3 0 60 <1 943 1082 1044 1262 3194 history2 3
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 method ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 61 0 985 1144 1048 1227 3581 current 3 3 3	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 3
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 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20	0 61 0 985 1144 1048 1227 3581 current 3 3 10	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1 0.2	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 8 8 history2 0.1
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	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 Limit/base >25 >20	0 61 0 985 1144 1048 1227 3581 <u>current</u> 3 3 10 <u>current</u>	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 8 8
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6	0 61 0 985 1144 1048 1227 3581 current 3 3 10 current 0.2	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1 0.2	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 8 8 history2 0.1
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 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	0 61 0 985 1144 1048 1227 3581 current 3 3 10 current 0.2 7.1	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1 0.2 6.4	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 3 8 history2 0.1 5.4
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 Limit/base >25 >20 Limit/base >6 >20 Salaria >30	0 61 0 985 1144 1048 1227 3581 <u>current</u> 3 3 3 10 <u>current</u> 0.2 7.1 18.7	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1 0.2 6.4 18.2	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 3 8 <u>history2</u> 0.1 5.4 17.7
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 60 1010 1070 1150 1270 2060 <i>limit/base</i> >25 <i>limit/base</i> >20 <i>limit/base</i> >30 <i>limit/base</i>	0 61 0 985 1144 1048 1227 3581 current 3 3 10 current 0.2 7.1 18.7 current	4 0 67 <1 1236 1394 1249 1643 3957 history1 3 4 10 history1 0.2 6.4 18.2 history1	3 0 60 <1 943 1082 1044 1262 3194 history2 3 3 3 8 history2 0.1 5.4 17.7 history2



(100°C) 10°C) 14 Base

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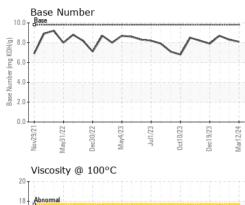
Vov29/21

May31/22

Jec30/22

OIL ANALYSIS REPORT

VISUAL



\sim	\sim	White Metal Yellow Metal	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	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
May4/23 Jul1/23	Dec19/23 Mar12/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
≥ ′ č	Ma De	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
0°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	13.2	13.3	13.7
\sim	$\sim\sim$	GRAPHS						
		Ferrous Alloys						
May4/23	Dec19/23	Non-ferrous Metal	G Mary4/23	0ct10/23 5 Dec19/23 Dec19/23	Mar1224			
		Nov29/21	May ⁴ /23	0ct10/23	Mar12/24			
		Viscosity @ 100°C			-	Daga Neverbar		
		19 T			10.0	Base Number		
		18 - Abnormal	100000		8.0	$ \land \land$	\sim	\sim
		16 - Base			0.0 Base Number (mg KOH/g)			1
		0015 015 014			E 6.0			
				~	- 4.0			
		13 Abpennel	\sim		ase a o			
		11			² 2.0			
			23	23	0.0		23	23
		Nov29/21 May31/22 Dec30/22	May4/23 Jul1/23	0ct10/23 Dec19/23	Mar12/24	Nov29/21 May31/22 Dec30/22	May4/23 Jul1/23	0ct10/23 Dec19/23 Mar12/24
		: WearCheck USA - 50 : GFL0099290 : 06122038 : 10936189 : FLEET contact Customer Serve	Recei Teste Diagn	n Ave., Cary ved : 19 d : 19 iosed : 19 00-237-1365	NC 27513 GFL Enviro Mar 2024 Mar 2024 Mar 2024 - Wes Davis		onmental - 846 - Mayfield Hauling 3426 State Route 45 Mayfield, KY US 42066 Contact: Jack Lindsey jack.lindsey@gflenv.com	
		are outside of the ISO 1 pecifications are based c				rule (JCGM 106:2		(270)970-3690 F:

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