

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 812010

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.

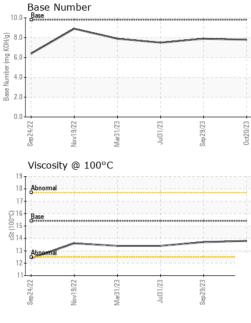
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0075177	GFL0075175	GFL0061878
Sample Date		Client Info		20 Oct 2023	29 Sep 2023	31 Jul 2023
Machine Age	hrs	Client Info		4178	4086	3580
Oil Age	hrs	Client Info		4178	4086	3580
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	18	16	26
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm		>4	<1	<1	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	12	11	15
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	1	1	2
Tin	ppm		>15	<1	0	0
Vanadium	ppm	ASTM D5185m	210	0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm			Ū.	-	-
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	2	2	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	2 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 67	2 0 63	4 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 67 0	2 0 63 <1	4 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	2 0 67 0 962	2 0 63 <1 1054	4 0 59 <1 963
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 67 0 962 1132	2 0 63 <1 1054 1155	4 0 59 <1 963 1098
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 67 0 962 1132 1073	2 0 63 <1 1054 1155 1186	4 0 59 <1 963 1098 986
Boron 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 0 60 0 1010 1070 1150 1270	2 0 67 0 962 1132 1073 1276	2 0 63 <1 1054 1155 1186 1472	4 0 59 <1 963 1098 986 1230
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	2 0 67 0 962 1132 1073	2 0 63 <1 1054 1155 1186	4 0 59 <1 963 1098 986
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 67 0 962 1132 1073 1276	2 0 63 <1 1054 1155 1186 1472	4 0 59 <1 963 1098 986 1230
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 67 0 962 1132 1073 1276 3519	2 0 63 <1 1054 1155 1186 1472 3496	4 0 59 <1 963 1098 986 1230 3278
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 1010 1070 1150 1270 2060	2 0 67 0 962 1132 1073 1276 3519 current	2 0 63 <1 1054 1155 1186 1472 3496 history1	4 0 59 <1 963 1098 986 1230 3278 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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 67 0 962 1132 1073 1276 3519 current 4	2 0 63 <1 1054 1155 1186 1472 3496 history1 3	4 0 59 <1 963 1098 986 1230 3278 history2 3
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	2 0 67 0 962 1132 1073 1276 3519 current 4 2	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4	4 0 59 <1 963 1098 986 1230 3278 history2 3 4
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 limit/base >25	2 0 67 0 962 1132 1073 1276 3519 current 4 2 2	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	2 0 67 0 962 1132 1073 1276 3519 current 4 2 2 21 current	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15 history1	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22 history2
Boron 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 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	2 0 67 0 962 1132 1073 1276 3519 <u>current</u> 4 2 21 <u>current</u> 0.5	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15 history1 0.5	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22 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 67 0 962 1132 1073 1276 3519 <i>current</i> 4 2 21 <i>current</i> 0.5 8.2	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15 history1 0.5 8.2	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22 history2 0.7 10.0
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 imit/base >25 imit/base >3 >20	2 0 67 0 962 1132 1073 1276 3519 current 4 2 21 current 0.5 8.2 18.9	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15 history1 0.5 8.2 19.1	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22 history2 0.7 10.0 20.0
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 3 20 3 20 3 3 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 67 0 962 1132 1073 1276 3519 <i>current</i> 4 2 21 <i>current</i> 0.5 8.2 18.9 <i>current</i>	2 0 63 <1 1054 1155 1186 1472 3496 history1 3 4 15 history1 0.5 8.2 19.1 history1	4 0 59 <1 963 1098 986 1230 3278 history2 3 4 22 history2 0.7 10.0 20.0 history2



OIL ANALYSIS REPORT



		VISUAL		method	limit/base	current	history1	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
Mar31/23	9/23		scalar	*Visual	NORML	NORML	NORML	NORML
Mar31/23 Jul31/23	Sep 29/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
С		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.7	13.4
		GRAPHS						
		Ferrous Alloys						
		¹⁰⁰ T						
Mar31/23 Jul31/23	Sep 29/23	80 - iron kol						
Mar Jul	Sep	IIICKel						
		60 E						
		H 40						
		20-		~				
			-					
		Sep 24/22 Vov 19/22	Mar31/23 Jul31/23	Sep 29/23	0ct20/23			
			<u> </u>	Sep	00			
		Non-ferrous Meta	als					
		14 copper						
		12 -						
		10-						
		<u>ة</u> 8						
		6						
		4						
		2						
		ep.24/22	23	23	23			
		24,	Mar31/23 Jul31/23	Sep 29/23	20)			
		dag op	5 7	e e	Oct			
		0 2	<u> </u>	Ser	0ct20/23	De es Novelese		
		Viscosity @ 100°	<u> </u>	Ser		Base Number		
		Viscosity @ 100°	<u> </u>		10.0			
		Viscosity @ 100° 19 18 - Abnormal 17 -	<u> </u>		10.0			
		Viscosity @ 100° 19 18 - Abnormal 17 -	<u> </u>	83	10.0			
		Viscosity @ 100° 19 18 - Abnormal 17 -	<u> </u>	83	10.0			
		Viscosity @ 100°	<u> </u>		10.0			
		Viscosity @ 100° 19 18 - Abnormal 17 -	<u> </u>		0.0 8.0 HOX BU Bu Jaq			
		Viscosity @ 100°	C		10.0 (0)HOX Buy bquuny aquiny age 2.0 0.0	Base		
		Viscosity @ 100°	C		10.0 (0)HOX Buy bquuny aquiny age 2.0 0.0	Base	31/23	29/23
		Viscosity @ 100°	<u> </u>	Sep29/23 Sep	10.0 (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (CHO) (Mai21/23	Sep29/23
	Laboratory	Viscosity @ 100°	C	Sep29/23	10.0 (6,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (0,0) (Base ZZ/b7/daS		
	Laboratory Sample No.	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100° Viscosity @ 100° Viscosity @ 100° Base Configuration of the second of t	501 Madis Received	son Ave., Ca	10.0 (0)HOX Dul January 10.0 (0)HOX DUL JANUARY 10.0 (Base ZZ/b7/daS	ironmental - 044	- Elizabeth City 657 Old US 17
	Sample No. Lab Number	Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10	501 Madis Received Diagnose	son Ave., Ca d : 23 (ed : 24 (10.0 (0)HOX Dull January 10.0 (0)HOX DULL JANU	Base ZZ/b7/das	ironmental - 044	- Elizabeth City 657 Old US 17 abeth City, NC
	Sample No. Lab Number Unique Numbe	Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10	501 Madis Received	son Ave., Ca d : 23 (ed : 24 (10.0 (0)HOX Dul January 10.0 (0)HOX DUL JANUARY 10.0 (Base ZZ/b7/das	ironmental - 044 Eliz	- Elizabeth City 657 Old US 17 abeth City, NC US 27909
Certificate L2367 To discuss thi	Sample No. Lab Number Unique Numbe Test Package	Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10	501 Madia Received Diagnost	son Ave., Ca d : 23 (ed : 24 (tician : Wes	10.0 (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Base ZZ/b7/das	ironmental - 044 Eliz Contac	- Elizabeth City 657 Old US 17 cabeth City, NC US 27909 ct: TOM BAIRD
To discuss the * - Denotes te	Sample No. Lab Number Unique Numbe Test Package is sample report est methods that	Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10	501 Madia Received Diagnost vice at 1-8 17025 sco	son Ave., Ca d : 23 (ed : 24 (tician : Wes 200-237-1369 ope of accred	10.0 () () () () () () () () () ()	ZZ/61/08/ GFL Envi	ironmental - 044 Eliz Contac tom.bain T:	- Elizabeth City 657 Old US 17 abeth City, NC US 27909

Submitted By: TOM BAIRD

Page 2 of 2