

OIL ANALYSIS REPORT

(MC12183) S0916A-Suamico Machine Id PETERBILT 821018

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (39 QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

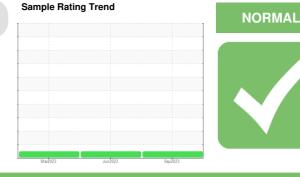
All component wear rates are normal.

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 INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0074847	GFL0074820	GFL0074808
Sample Date		Client Info		12 Sep 2023	05 Jun 2023	14 Mar 2023
Machine Age	hrs	Client Info		6191	5586	5030
Oil Age	hrs	Client Info		605	556	590
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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	14	28
Chromium	ppm	ASTM D5185m		1	1	1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	<1	<1	0
Aluminum	ppm	ASTM D5185m	>20	4	6	10
Lead	ppm	ASTM D5185m	>40	<1	<1	0
Copper	ppm	ASTM D5185m	>330	4	2	6
Tin	ppm	ASTM D5185m	>15	2	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 7	history2 14
	ppm ppm					
Boron		ASTM D5185m	0	2	7	14
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 44	7 0	14 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 44 57	7 0 64	14 0 84
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 44 57 1	7 0 64 <1	14 0 84 <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 44 57 1 867	7 0 64 <1 985	14 0 84 <1 841
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 44 57 1 867 1083	7 0 64 <1 985 1263	14 0 84 <1 841 1342
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 44 57 1 867 1083 919	7 0 64 <1 985 1263 1073	14 0 84 <1 841 1342 931
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 44 57 1 867 1083 919 1163	7 0 64 <1 985 1263 1073 1346	14 0 84 <1 841 1342 931 1164
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	2 44 57 1 867 1083 919 1163 3039	7 0 64 <1 985 1263 1073 1346 3801	14 0 84 <1 841 1342 931 1164 2597
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 0 1010 1070 1150 1270 2060	2 44 57 1 867 1083 919 1163 3039 current	7 0 64 <1 985 1263 1073 1346 3801 history1	14 0 84 <1 841 1342 931 1164 2597 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	0 0 60 0 1010 1070 1150 1270 2060	2 44 57 1 867 1083 919 1163 3039 current 4	7 0 64 <1 985 1263 1073 1346 3801 history1 4	14 0 84 <1 841 1342 931 1164 2597 history2 6
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 method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base	2 44 57 1 867 1083 919 1163 3039 current 4 2	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2	14 0 84 <1 841 1342 931 1164 2597 history2 6 3
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 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 44 57 1 867 1083 919 1163 3039 current 4 2 4	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6
Boron 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 0 1010 1070 1150 1270 2060 Imit/base >25	2 44 57 1 867 1083 919 1163 3039 current 4 2 4 2 4	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4 4 2 4	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6 3 6
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 >3	2 44 57 1 867 1083 919 1163 3039 <u>current</u> 4 2 4 2 4 <u>current</u>	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4 4 2 4 history1 0.8	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6 3 6 history2 1.2
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	2 44 57 1 867 1083 919 1163 3039 current 4 2 4 2 4 current 0.8 8.2	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4 4 2 4 history1 0.8 8.8	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6 3 6 history2 1.2 1.2 10.8
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 imit/base >25 imit/base >3 >20	2 44 57 1 867 1083 919 1163 3039 <u>current</u> 4 2 4 2 4 <u>current</u> 0.8 8.2 20.4	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4 4 2 4 history1 0.8 8.8 21.6	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6 3 6 history2 1.2 1.2 1.2
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20	2 44 57 1 867 1083 919 1163 3039 current 4 2 4 2 4 current 0.8 8.2 20.4 current	7 0 64 <1 985 1263 1073 1346 3801 history1 4 2 4 4 2 4 4 0.8 8.8 21.6 history1	14 0 84 <1 841 1342 931 1164 2597 history2 6 3 6 3 6 history2 1.2 10.8 24.0 history2

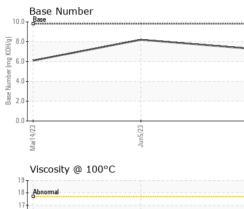


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13 Abnormal 12 11

Mar14/23

OIL ANALYSIS REPORT



		VISUAL		method				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
5/23	2/23 -		scalar	*Visual	NORML	NORML	NORML	NORML
Jun5/23	Sep 12/23	Odor	scalar		NORML	NORML	NORML	NORML
-		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
C		Free Water	scalar	*Visual	2 0.L	NEG	NEG	NEG
		FLUID PROF		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.6	13.5	13.5
		GRAPHS		No fill B filo	10.1	1010	10.0	10.0
		Ferrous Alloys						
		30iron]						
Jun5/23		25 - sesses chromium						
		20						
		ឝ្ <u></u> 15 -						
		10						
		5-						
			22					
		Marl 4/23	Jun5/23		Sep12/23			
		_	-		S			
		Non-ferrous Me	tals					
		copper						
		8 - enseense lead						
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				and in the state water that the little is a state of the				
		0 - #:5:***********************************	57	Contraction of the second s				
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		0 Warl 4/23	Principal Contraction of the second s		Sep 12/23			
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0	Base Number		
		0 E274 Viscosity @ 100 19 Abnomal			10.1	Base		
		0 E27 19 18 Abnomal 17			10.1	Base		
		0 E27 19 18 Abnomal 17			10.1	0 - Base		
		0 E27 19 18 Abnomal 17			10.1	0 - Base		
		0 E27+ 122 Viscosity @ 100 19 18 Abnomal 17 16 Base 17 16 16 15 14			10.1	0 - Base		
		0 E27 19 18 Abnomal 17			ол 10. (В, НО, Ко Ш) вар	0 - Base 0		
		Viscosity @ 100	°C		57 10.1 (b) HOX Bull Jack HO	0 - Base		
		Viscosity @ 100	°C		57 10.1 (b) HOX Bull Jack HO	0		2
		0 E27+ 12W Viscosity @ 100 19 18 Abnomal 17 0.00115 14 13 Abnomal			57 10.1 (0)HOX 06.1 10.1 10.1 10.1 10.1 10.1 10.1 10.1	0 - Base	Jun5/23	00-11222
	Laboratory	0 E27+ izew Viscosity @ 100 19 Abnomal 17 Base 17 Base 18 Base 18 Base 19 Base 19 Base 19 Base 10 Base	°C	son Ave Ca	28 8.0 10.1 8.0 10.0 0.0 9 8 8 8 10.0 10.0 10.0 10.0 10.0 10.0 10.	0 Base	Jun5/23	16A - Suamic
	Laboratory Sample No.	Viscosity @ 100	°C		28 8.0 10.1 8.0 10.0 0.0 9 8 8 8 10.0 10.0 10.0 10.0 10.0 10.0 10.	0 Base	vironmental - 9	16A - Suamic
	Sample No. Lab Number	Viscosity @ 100 ¹⁹ ¹⁰ ¹¹ 	°C EZgung - 501 Madis Received Diagnose	d :158 ed :188	ry, NC 27511 Sep 2023 Sep 2023	0 Base	vironmental - 9	16A - Suamic o Deerfield Ave B Suamico, W
	Sample No. Lab Number Unique Number	Viscosity @ 100 Viscosity @ 100	°C	d :158 ed :188	ry, NC 27511 Sep 2023	3 GFL En	vironmental - 9 2300 I	16A - Suamic Deerfield Ave I Suamico, W US 5431
Terretificate L2367	Sample No. Lab Number Unique Number Test Package	Viscosity @ 100 Viscosity @ 100	•C EZgung - 501 Madis Received Diagnost	d :158 ed :188 tician :We	ry, NC 27511 Sep 2023 s Davis	3 GFL En	vironmental - 9 2300 I Contact: NICHOI	16A - Suamic Deerfield Ave Suamico, W US 5431

Submitted By: NICHOLAS WEIDNER