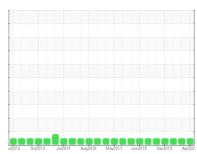


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



PETERBILT 99

Component

Front Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (40 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. The amount and size of particulates present in the system are acceptable.

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 INFORMATION method imitibase current history1 history2	10)		ul2012 Oct	2013 Jul2014 Aug20	16 May2017 Jun2018 Dec2	019 Apr202	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 1093996 1073617 1057186 Oil Age mls Client Info 30000 100000 100000 Oil Changed Client Info Not Changd Not	Sample Number		Client Info		KL0006548	KLM2339097	KLM2339669
Oil Age mls Client Info 30000 10000 10000 Not Changd NormAL 1.0 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>28 Apr 2023</th> <th>09 Jul 2021</th> <th>09 Feb 2021</th>	Sample Date		Client Info		28 Apr 2023	09 Jul 2021	09 Feb 2021
Oil Changed Sample Status	Machine Age	mls	Client Info		1093996	1073617	1057186
Sample Status	Oil Age	mls	Client Info		30000	10000	10000
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG NEG Glycol WC Method NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 18 18 21 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 <1 0 <1 <1 Lead ppm ASTM D5185m >2 <1 2 1 <1 <1 Copper ppm ASTM D5185m >15 <1 <1 <1 <1 <1 Antimony<	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 18 18 21 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >22 <1 0 0 Titanium ppm ASTM D5185m >22 <1 0 <1 <1 Aluminum ppm ASTM D5185m >22 <1 2 1 <1 Lead ppm ASTM D5185m >40 2 1 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	CONTAMINATION	N	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 1 1 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	18	18	21
Titanium ppm ASTM D5185m >2 <1	Chromium	ppm	ASTM D5185m	>20	1	1	<1
Silver ppm ASTM D5185m >2 0 <1	Nickel	ppm	ASTM D5185m	>2	<1	0	0
Aluminum ppm ASTM D5185m >25 <1	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead ppm ASTM D5185m >40 2 1 1 Copper ppm ASTM D5185m >330 3 4 6 Tin ppm ASTM D5185m >15 <1	Silver	ppm	ASTM D5185m	>2	0	<1	<1
Copper ppm ASTM D5185m >330 3 4 6 Tin ppm ASTM D5185m >15 <1 <1 <1 Antimony ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 19 378 335 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1 <1 <1 <1 Calcium ppm ASTM D5185m 0 987 546 517 Calcium ppm ASTM D5185m 1082 692 718 <t< th=""><th>Aluminum</th><th>ppm</th><th>ASTM D5185m</th><th>>25</th><th><1</th><th>2</th><th>1</th></t<>	Aluminum	ppm	ASTM D5185m	>25	<1	2	1
Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	2	1	1
Antimony ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 19 378 335 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1382 1520 1537 Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m >25 4 7 21 Sodium ppm <td< th=""><th>Copper</th><th>ppm</th><th>ASTM D5185m</th><th>>330</th><th>3</th><th>4</th><th>6</th></td<>	Copper	ppm	ASTM D5185m	>330	3	4	6
Vanadium ppm ASTM D5185m <1	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 19 378 335 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m 0 987 546 517 Magnesium ppm ASTM D5185m 0 987 546 517 Calcium ppm ASTM D5185m 1382 1520 1537 Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 2820 2587 CONTAMINANTS method limit/base current history1 history2 Sodium	Antimony	ppm	ASTM D5185m			0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 19 378 335 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 0 19 378 335 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 0 987 546 517 Calcium ppm ASTM D5185m 1382 1520 1537 Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m >20 4 0 <1 INFRA-RED method limit/base current history1 history2 Soot % *AST	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 65 126 131 Manganese ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m	0	19	378	335
Manganese ppm ASTM D5185m <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 0 987 546 517 Calcium ppm ASTM D5185m 1382 1520 1537 Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m >20 4 0 <1	Molybdenum	ppm	ASTM D5185m	0	65	126	131
Calcium ppm ASTM D5185m 1382 1520 1537 Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m >20 4 0 <1 Potassium ppm ASTM D5185m >20 4 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 1082 692 718 Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m >25 4 7 21 Potassium ppm ASTM D5185m >20 4 0 <1	Magnesium	ppm	ASTM D5185m	0	987	546	517
Zinc ppm ASTM D5185m 1328 808 787 Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m >20 4 0 <1 Potassium ppm ASTM D5185m >20 4 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Calcium	ppm	ASTM D5185m		1382	1520	1537
Sulfur ppm ASTM D5185m 4645 2820 2587 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m <1 <1 0 Potassium ppm ASTM D5185m >20 4 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Phosphorus	ppm	ASTM D5185m		1082	692	718
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m <1 <1 0 Potassium ppm ASTM D5185m >20 4 0 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Zinc	ppm	ASTM D5185m		1328	808	787
Silicon ppm ASTM D5185m >25 4 7 21 Sodium ppm ASTM D5185m <1	Sulfur	ppm	ASTM D5185m		4645	2820	2587
Sodium ppm ASTM D5185m <1	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 0 <1	Silicon	ppm	ASTM D5185m	>25	4	7	21
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Sodium	ppm	ASTM D5185m		<1	<1	0
Soot % % *ASTM D7844 >3 0.2 0.2 0.2 Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	Potassium	ppm	ASTM D5185m	>20	4	0	<1
Nitration Abs/cm *ASTM D7624 >20 6.6 7.1 7	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	*ASTM D7844	>3	0.2	0.2	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 20.2 22.2 21.8	Nitration	Abs/cm	*ASTM D7624	>20	6.6	7.1	7
	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.2	22.2	21.8



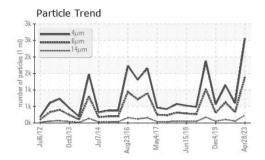
OIL ANALYSIS REPORT

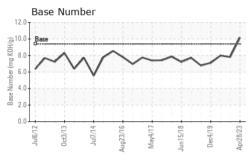
FLUID DEGRADATION

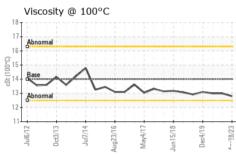
cSt

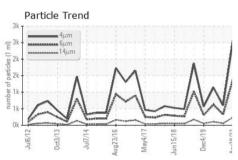
Oxidation

Visc @ 100°C









method	limit/base	current	history1	history2
ASTM D7647		2559	600	1140
ASTM D7647	>5000	1394	327	621
ASTM D7647	>640	237	56	106
ASTM D7647	>160	80	19	36
ASTM D7647	>40	12	3	5
ASTM D7647	>10	1	0	1
ISO 4406 (c)	>19/16	18/15	16/13	16/14
	ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	ASTM D7647 ASTM D7647 >5000 ASTM D7647 >640 ASTM D7647 >160 ASTM D7647 >40 ASTM D7647 >10	ASTM D7647 2559 ASTM D7647 >5000 1394 ASTM D7647 >640 237 ASTM D7647 >160 80 ASTM D7647 >40 12 ASTM D7647 >10 1	ASTM D7647 2559 600 ASTM D7647 >5000 1394 327 ASTM D7647 >640 237 56 ASTM D7647 >160 80 19 ASTM D7647 >40 12 3 ASTM D7647 >10 1 0

16.2

12.8

17.9

13.0

17.6

13.0

Abs/.1mm *ASTM D7414 >25

ASTM D445

14

Base Number (BN)	mg KOH/g	ASTM D2896	9.4	10.15	7.82	7.98
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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID DDODEDT	TEO.		1: 1: //		111	111

GRA	APHS								
Ferr	ous A	lloys						Particle Count	т26
0-	iron							122,880	-24
0-	nick		/			~		30,720	-22
0 1	23	######################################	91/	17	80	61/	- 123	膏 7.680-	-20
Jul6/12	Oct3/13	Jul7/14	Aug23/16	May4/17	Jun15/18	Dec4/19	Apr28/23	1,920 1,920	-20 -18 -16 -14
Non	-ferro	us Me	tals					900 480	-16
	copp	1						120-	11
14000000	tin	V						30	-12
0					_			8 Subremenal	-10
Jul6/12	Oct3/13	Jul7/14	Aug23/16	May4/17	Jun15/18	Dec4/19	Apr28/23	2	18
	osity (~	7		A	0 4μ 6μ 14μ 21μ 38μ — Base Number	71µ
Abno	rmal		7.7.7	7777				NO.01	
Base Abnor		~						Base Number 5.0 10.0 Base 10.0 2 E 4 9 E 10.0	
11:11	imai							TEMP 5.0	
Jul6/12	0ct3/13 -	Jul7/14	3/16	May4/17	Jun15/18	Dec4/19	Apr28/23	Base Jul6/12 — Jul7/14 — Jul7/14 — May4/17 — May4/17 — Dec4/19 —	
3	Oct	Jul.	Aug23/16	Мау	Jun	Dec	Apr2	Ba Jul6/12 Jul7/14 Aug23/16 May4/17 Jun15/18	





Laboratory Sample No.

: KL0006548 Lab Number : 05845740 Unique Number : 10469847

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received **Tested**

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Diagnosed Test Package : MOB 2 (Additional Tests: PrtCount)

: 12 May 2023 : 16 May 2023

: 17 May 2023 - Jonathan Hester

BERRINGTON CUSTOM HAY

PO BOX 540 WELLINGTON, NV US 89444

Contact: REBECCA BERRINGTON berringtoncustomhay@gmail.com

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (775)465-2264

Contact/Location: REBECCA BERRINGTON - BERWELKL

F: