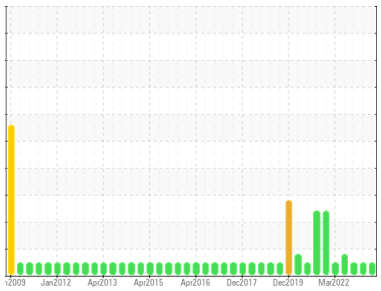
OIL ANALYSIS REPORT

OIL DIAGNOSTICS

Sample Rating Trend



NORMAL

Area
KEMP QUARRIES / MUSKOGEE SAND
Machine Id
WL042
Component
Diesel Engine
Fluid
MOBIL DELVAC 1300 SUPER15W40 (--- 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 INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**PCA0087130**	PCA0087161	PCA0070526
Sample Date		Client Info		**23 May 2023**	20 Mar 2023	29 Dec 2022
Machine Age	hrs	Client Info		**31670**	31562	31010
Oil Age	hrs	Client Info		**660**	552	540
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**20**	37	29
Chromium	ppm	ASTM D5185m	>20	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**<1**	<1	<1
Titanium	ppm	ASTM D5185m	>2	**<1**	0	0
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>25	**2**	2	2
Lead	ppm	ASTM D5185m	>40	**<1**	1	3
Copper	ppm	ASTM D5185m	>330	**8**	43	289
Tin	ppm	ASTM D5185m	>15	**<1**	2	2
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	**<1**	2	0
Barium	ppm	ASTM D5185m	0	**0**	0	0
Molybdenum	ppm	ASTM D5185m	0	**60**	65	63
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	0	**990**	1012	904
Calcium	ppm	ASTM D5185m		**1176**	1161	1011
Phosphorus	ppm	ASTM D5185m		**1047**	1082	940
Zinc	ppm	ASTM D5185m		**1329**	1363	1221
Sulfur	ppm	ASTM D5185m		**3915**	3465	3146

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**7**	7	5
Sodium	ppm	ASTM D5185m		**<1**	3	3
Potassium	ppm	ASTM D5185m	>20	**<1**	0	<1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.2**	0.4	0.4
Nitration	Abs/cm	*ASTM D7624	>20	**7.1**	10.0	9.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**18.5**	21.5	20.7

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.1**	19.7	18.8
Base Number (BN)	mg KOH/g	ASTM D2896	9.4	**8.8**	8.4	8.1

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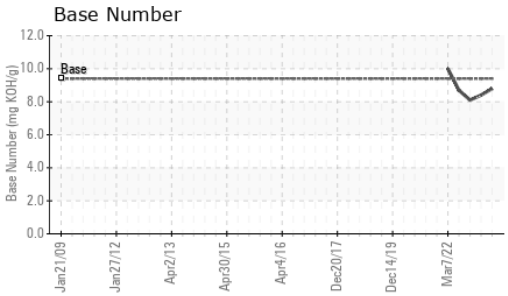
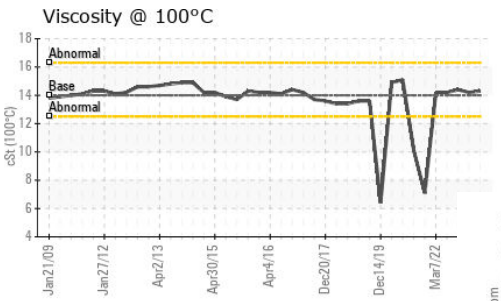
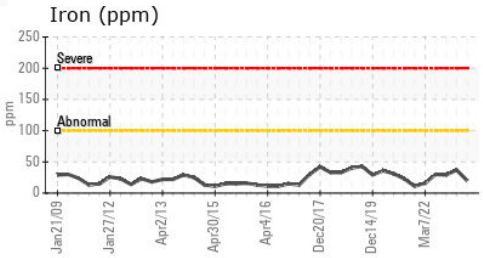


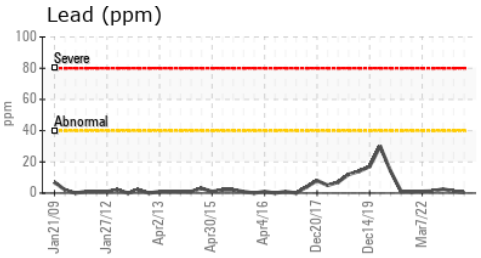


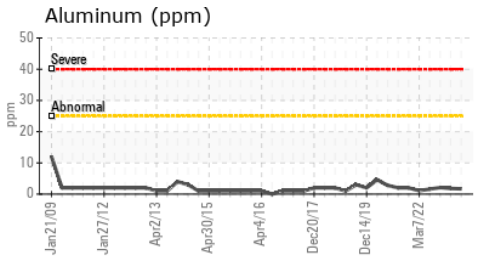
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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

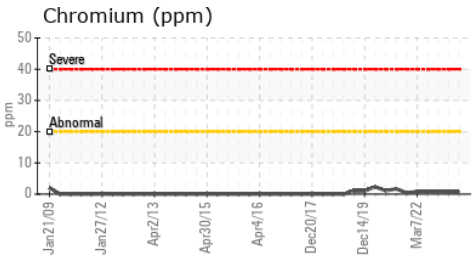
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14	**14.3**	14.2	14.4

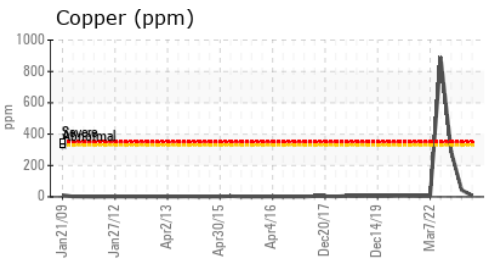
GRAPHS

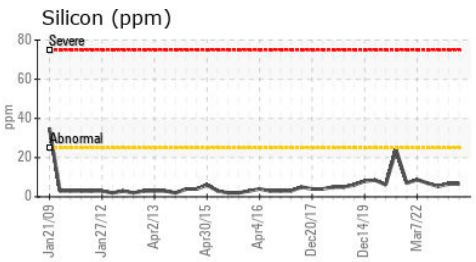


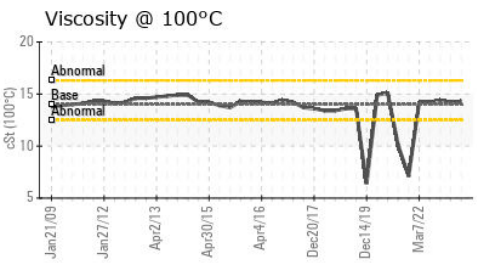


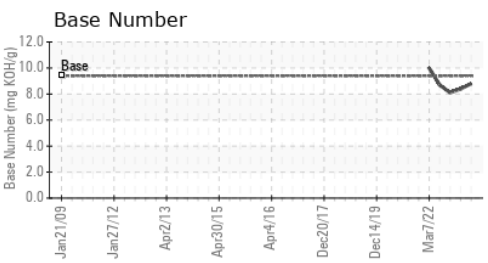












Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0087130 **Received** : 17 Jul 2023
Lab Number : 05900603 **Diagnosed** : 19 Jul 2023
Unique Number : 10561959 **Diagnostician** : Don Baldridge
Test Package : MOB 1 (Additional Tests: TBN)

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

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Porter, OK
US 74454
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muskogee@muskogeesand.com
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Report Id: KEMPOR [WUSCAR] 05900603 (Generated: 07/19/2023 13:10:33) Rev: 1

Submitted By: