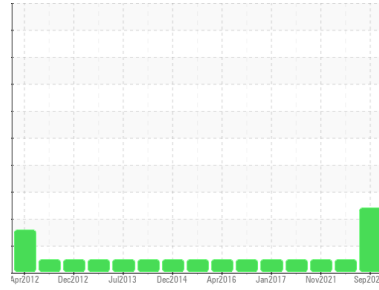


# OIL ANALYSIS REPORT

## Sample Rating Trend



Area  
**KEMP QUARRIES / MUSKOGEE SAND**  
 Machine Id  
**WL001**  
 Component  
**Diesel Engine**  
 Fluid  
**MOBIL DELVAC 1300 SUPER15W40 (--- GAL)**

### DIAGNOSIS

#### Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

#### Fluid Condition

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

### SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>PCA0037711</b>	PCA0070485	PCA0034544
Sample Date	Client Info		<b>06 Sep 2023</b>	08 Jul 2022	06 Nov 2021
Machine Age	hrs	Client Info	<b>3441</b>	2975	2835
Oil Age	hrs	Client Info	<b>0</b>	140	473
Oil Changed	Client Info		<b>N/A</b>	Changed	Changed
Sample Status			<b>ABNORMAL</b>	NORMAL	NORMAL

### CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Glycol	WC Method		<b>NEG</b>	NEG	NEG

### WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	<b>64</b>	13	21
Chromium	ppm	ASTM D5185m >20	<b>6</b>	<1	1
Nickel	ppm	ASTM D5185m >2	<b>3</b>	0	2
Titanium	ppm	ASTM D5185m >2	<b>1</b>	0	<1
Silver	ppm	ASTM D5185m >2	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m >25	<b>▲ 13</b>	2	2
Lead	ppm	ASTM D5185m >40	<b>20</b>	3	9
Copper	ppm	ASTM D5185m >330	<b>21</b>	3	2
Tin	ppm	ASTM D5185m >15	<b>5</b>	<1	0
Antimony	ppm	ASTM D5185m	<b>---</b>	---	0
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>&lt;1</b>	0	0

### ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 0	<b>2</b>	6	22
Barium	ppm	ASTM D5185m 0	<b>45</b>	0	0
Molybdenum	ppm	ASTM D5185m 0	<b>64</b>	63	56
Manganese	ppm	ASTM D5185m	<b>2</b>	<1	<1
Magnesium	ppm	ASTM D5185m 0	<b>915</b>	965	941
Calcium	ppm	ASTM D5185m	<b>1011</b>	1129	1497
Phosphorus	ppm	ASTM D5185m	<b>915</b>	1068	1032
Zinc	ppm	ASTM D5185m	<b>1160</b>	1290	1124
Sulfur	ppm	ASTM D5185m	<b>3010</b>	3147	3330

### CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	<b>▲ 25</b>	4	7
Sodium	ppm	ASTM D5185m	<b>4</b>	0	5
Potassium	ppm	ASTM D5185m >20	<b>5</b>	<1	3

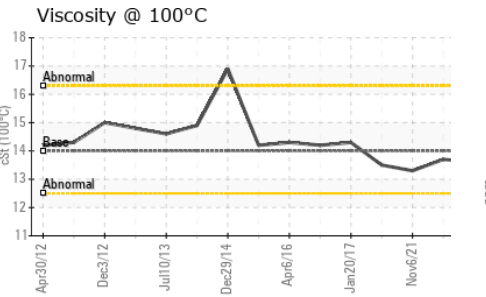
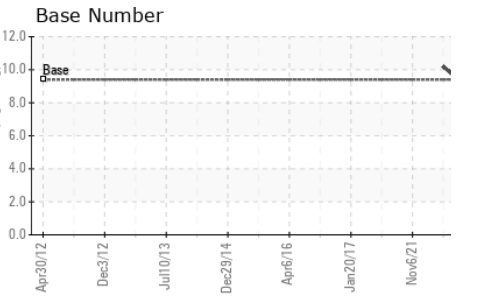
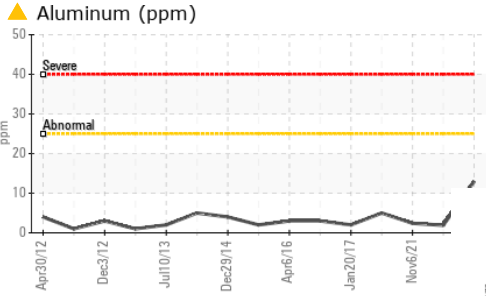
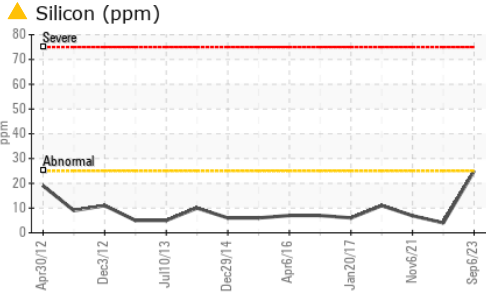
### INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	<b>0.3</b>	0.2	0.2
Nitration	Abs/cm	*ASTM D7624 >20	<b>7.1</b>	7.4	8.8
Sulfation	Abs/.1mm	*ASTM D7415 >30	<b>18.7</b>	19.4	20.6

### FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	<b>14.5</b>	15.7	18.5
Base Number (BN)	mg KOH/g	ASTM D2896 9.4	<b>8.6</b>	10.2	---

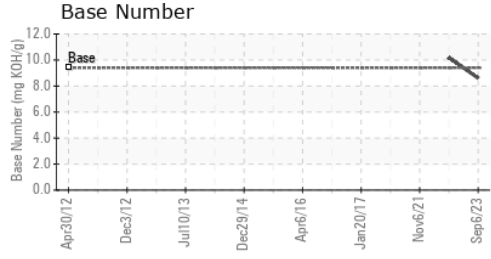
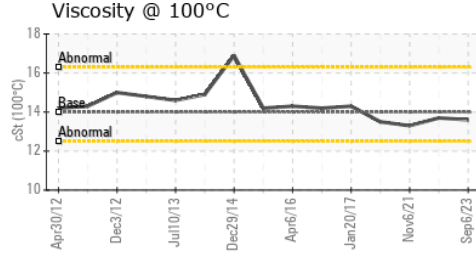
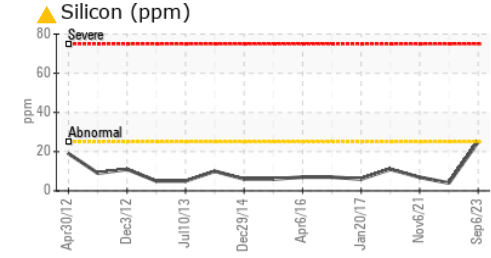
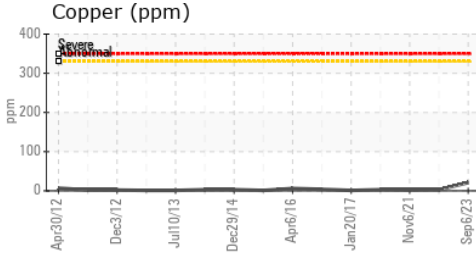
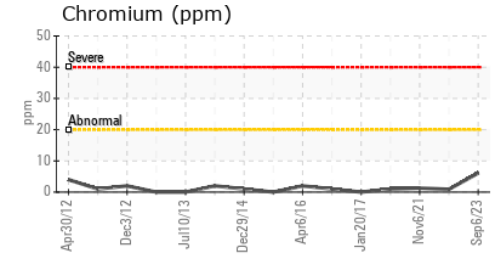
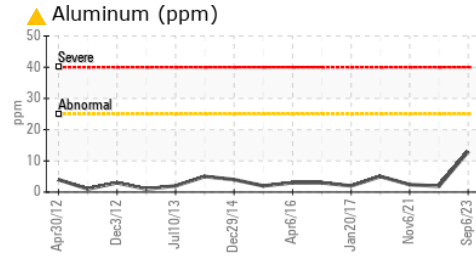
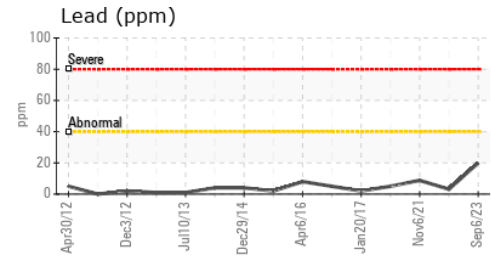
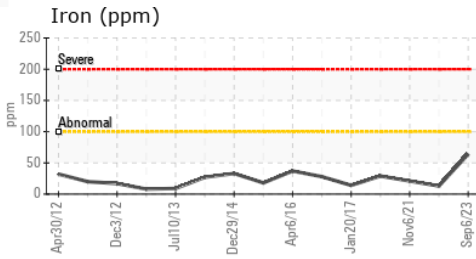
# OIL ANALYSIS REPORT



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14	13.6	13.7

## GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : PCA0037711 Received : 15 Sep 2023  
 Lab Number : 05952466 Diagnosed : 19 Sep 2023  
 Unique Number : 10648425 Diagnostician : Sean Felton  
 Test Package : MOB 1 ( Additional Tests: TBN )

**Kemp Quarries - Muskogee Sand**  
 3395 W 50th St N  
 Porter, OK  
 US 74454

Contact: MUSCOGEE NOTIFICATIONS  
 muskogee@muskogeessand.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.

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

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F: