

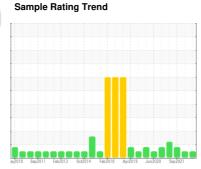
OIL ANALYSIS REPORT



KEMP QUARRIES / MUSKOGEE SAND WL015

Component **Hydraulic System**

MOBIL DELVAC 1300 SUPER15W40 (--- GAL)





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the fluid.

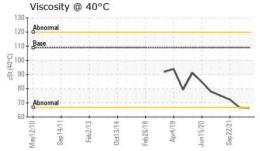
Fluid Condition

The condition of the fluid is acceptable for the time in service.

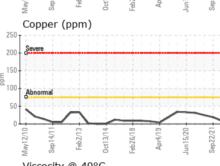
Sample Number Client Info PCA0087111 PCA0070541 PCA003457 Sample Date Client Info 03 Jun 2023 16 Feb 2023 22 Sep 202 Machine Age hrs Client Info 685 2000 2990 Clind Info 685 2000 2990 Client Info 685 2000 2990 Client Info Rot Changed North Changed	OPER 15W40 (- GAL)	ay2010 Sep2	011 Feb2013 Oct2014	Feb2018 Apr2019 Jun2020	Sep2021	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 1895 1210 760	Sample Number		Client Info		PCA0087111	PCA0070541	PCA0034576
Oil Age hrs Client Info 685 2000 2990 Oil Changed Dil Changed Sample Status Client Info Not Changed Nor Changed Not Changed Not Changed Nor	Sample Date		Client Info		03 Jun 2023	16 Feb 2023	22 Sep 2021
Not Changed Client Info Not Changed NorMAL NorM	Machine Age	hrs	Client Info		1895	1210	760
NORMAL NORMAL MARGINAL	Oil Age	hrs	Client Info		685	2000	2990
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 10 11 11 11 Chromium ppm ASTM D5185m >10 14 12 ▲ 22 Nickel ppm ASTM D5185m >10 0 0 -1 Silver ppm ASTM D5185m >10 0 0 -1 Aluminum ppm ASTM D5185m >10 <1	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Pron	Sample Status				NORMAL	NORMAL	MARGINAL
Chromium ppm ASTM D5185m >10 14 12 ▲ 22 Nickel ppm ASTM D5185m >10 0 0 0 Titianium ppm ASTM D5185m 0 0 -1 Silver ppm ASTM D5185m 0 0 -1 Aluminum ppm ASTM D5185m >10 -1 2 2 Lead ppm ASTM D5185m >10 -1 0 -1 Copper ppm ASTM D5185m >10 0 0 -1 Antimony ppm ASTM D5185m 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 <	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>20	10	11	11
Description	Chromium	ppm	ASTM D5185m	>10	14	12	<u>^</u> 22
Silver	Nickel	ppm	ASTM D5185m	>10	0	0	0
ASTM D5185m >10	Titanium	ppm	ASTM D5185m		0	0	<1
Lead	Silver	ppm	ASTM D5185m		0	0	<1
Copper	Aluminum	ppm	ASTM D5185m	>10	<1	2	2
Copper	Lead	ppm	ASTM D5185m	>10	<1	0	<1
Antimony	Copper		ASTM D5185m	>75	28	8	19
Antimony	Tin				0		<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 3 32 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 2 13 Manganese ppm ASTM D5185m 0 16 25 198 Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 4 6 Sodium ppm	Antimony		ASTM D5185m				0
ADDITIVES	Vanadium				0	0	
Boron	Cadmium				-		
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 1 2 13 Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 0 16 25 198 Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 4 6 Sodium pp	Boron	ppm	ASTM D5185m	0	0	3	32
Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 0 16 25 198 Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 0 16 25 198 Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 345 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base </td <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>1</th> <td>2</td> <td>13</td>	Molybdenum	ppm	ASTM D5185m	0	1	2	13
Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current history2 CONTAMINANTS method limit/base current history2 CONTAMINANTS method limit/base current <	Manganese	ppm	ASTM D5185m		0	<1	<1
Calcium ppm ASTM D5185m 106 130 633 Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current history2 CONTAMINANTS method limit/base current history2 CONTAMINANTS method limit/base current <	Magnesium	ppm	ASTM D5185m	0	16	25	198
Phosphorus ppm ASTM D5185m 340 360 495 Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 4 6 Sodium ppm ASTM D5185m >20 -2 0 Potassium ppm ASTM D5185m >20 -1 -1 -1 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE<	Calcium		ASTM D5185m		106	130	633
Zinc ppm ASTM D5185m 445 446 552 Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 4 6 Sodium ppm ASTM D5185m 0 2 0 Potassium ppm ASTM D5185m >20 <1	Phosphorus		ASTM D5185m		340	360	495
Sulfur ppm ASTM D5185m 942 1079 1529 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3 4 6 Sodium ppm ASTM D5185m >20 2 0 Potassium ppm ASTM D5185m >20 <1	Zinc		ASTM D5185m		445		
Silicon	Sulfur				_		
Sodium ppm ASTM D5185m 0 2 0 Potassium ppm ASTM D5185m >20 <1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 <1 <1 <1 VISUAL method limit/base current history1 history2 White Metal scalar *Visual NONE NONE NONE NONE NONE Yellow Metal scalar *Visual NONE NONE NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris scalar *Visual NONE LIGHT LIGHT NONE Sand/Dirt scalar *Visual NONE NONE NONE NONE NONE Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.1 NEG NEG	Silicon	ppm	ASTM D5185m	>20	3	4	6
White Metal scalar *Visual NONE NONE NONE NONE NONE NONE NONE NON	Sodium	ppm	ASTM D5185m		0	2	0
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 LIGHT LIGHT 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 >0.1 NEG NEG	Potassium	ppm	ASTM D5185m	>20	<1	<1	<1
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONELIGHTLIGHTNONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGNEG	VISUAL		method	limit/base	current	history1	history2
Precipitate scalar *Visual NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE LIGHT LIGHT 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 >0.1 NEG NEG	White Metal	scalar					
Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE LIGHT LIGHT 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 >0.1 NEG NEG	Yellow Metal		*Visual				
Debrisscalar*VisualNONELIGHTLIGHTNONESand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGNEGNEG	Precipitate	scalar		NONE			NONE
Sand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGNEGNEG	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearancescalar*VisualNORMLNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.1NEGNEGNEG	Debris	scalar	*Visual	NONE		LIGHT	NONE
Odor scalar *Visual NORML NORML NORML NORML NORML NORML Emulsified Water scalar *Visual >0.1 NEG NEG NEG	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Emulsified Water scalar *Visual >0.1 NEG NEG NEG	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Free Water scalar *Visual NEG NEG NEG	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG

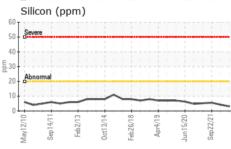


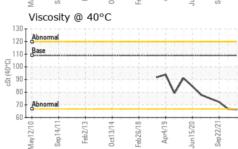
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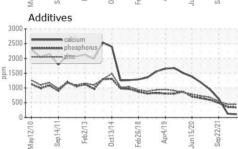














Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 1

: PCA0087111 : 05900876

: 10562232

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Jul 2023

Diagnosed : 20 Jul 2023 Diagnostician

: Jonathan Hester

Kemp Quarries - Muskogee Sand 3395 W 50th St N

Porter, OK US 74454

Contact: muskogee@muskogeesand.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: