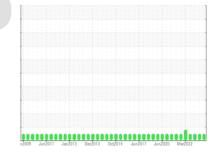


# **OIL ANALYSIS REPORT**

# **KEMP QUARRIES / HULBERT OHT049**

Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (--- GAL)



Sample Rating Trend



### 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

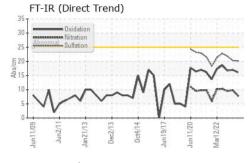
### **Fluid Condition**

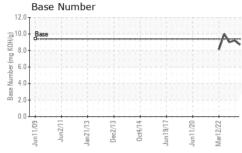
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

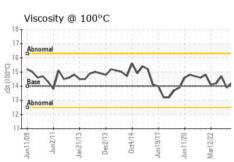
Sample Date	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2	
Machine Age         hrs         Client Info         9818         9318         8820           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         Not Changed         Ch	Sample Number		Client Info		PCA0109280	PCA0109165	PCA0086130	
Oil Age         hrs         Client Info         Not Changed         Changed Changed Changed Changed Sample Status         NoRMAL N	Sample Date		Client Info		13 Apr 2024	27 Jan 2024	23 Sep 2023	
Colient Info	Machine Age	hrs	Client Info		9818	9318	8820	
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   imit/base   current   history1   history2   history2	Oil Age	hrs	Client Info		0	0	0	
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   imit/base   current   history1   history2   history2	Oil Changed		Client Info		Not Changd	Changed	Changed	
Fuel	Sample Status							
Water Glycol         WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >10.0         28         41         48           Chromium         ppm         ASTM D5185m         >2.0         <1	CONTAMINA	TION	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	
Irron	Glycol		WC Method		NEG	NEG	NEG	
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         1           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         1         2         2           Lead         ppm         ASTM D5185m         >40         <1	WEAR METAI	LS	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>100	28	41	48	
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1	
Description	Nickel	ppm	ASTM D5185m	>2	0	0	1	
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         1         2         2           Lead         ppm         ASTM D5185m         >40         <1         1         4           Copper         ppm         ASTM D5185m         >330         5         6         9           Tin         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         10         1         <1           Boron         ppm         ASTM D5185m         0         10         1         <1           Barium         ppm         ASTM D5185m         0         2         6         0           Molybdenum         ppm         ASTM D5185m         0         62         61         67           Mangnesium         ppm         ASTM D5185m         1         0         <1         67           Magnesium         ppm         ASTM D5185m         1068         985         1031	Titanium	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	Silver		ASTM D5185m	>2	0	0	0	
Lead	Aluminum		ASTM D5185m	>25	1	2	2	
Copper         ppm         ASTM D5185m         >330         5         6         9           Tin         ppm         ASTM D5185m         >15         <1					<1		4	
Tin							9	
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         10         1         <1	• •				_			
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         10         1         <1				710				
Boron	Cadmium							
Barium         ppm         ASTM D5185m         0         2         6         0           Molybdenum         ppm         ASTM D5185m         0         62         61         67           Manganese         ppm         ASTM D5185m         1         0         <1           Magnesium         ppm         ASTM D5185m         0         961         886         979           Calcium         ppm         ASTM D5185m         1073         987         1088           Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           S	ADDITIVES		method	limit/base	current	history1	history2	
Barium         ppm         ASTM D5185m         0         2         6         0           Molybdenum         ppm         ASTM D5185m         0         62         61         67           Manganese         ppm         ASTM D5185m         1         0         <1	Boron	ppm	ASTM D5185m	0	10	1	<1	
Molybdenum         ppm         ASTM D5185m         0         62         61         67           Manganese         ppm         ASTM D5185m         1         0         <1           Magnesium         ppm         ASTM D5185m         0         961         886         979           Calcium         ppm         ASTM D5185m         1073         987         1088           Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration	Barium	ppm	ASTM D5185m	0	2	6	0	
Manganese         ppm         ASTM D5185m         1         0         <1           Magnesium         ppm         ASTM D5185m         0         961         886         979           Calcium         ppm         ASTM D5185m         1073         987         1088           Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7845         >30         20.1         20.3         21.8 <tr< td=""><td>Molybdenum</td><td></td><td>ASTM D5185m</td><td>0</td><th>62</th><td>61</td><td>67</td></tr<>	Molybdenum		ASTM D5185m	0	62	61	67	
Magnesium         ppm         ASTM D5185m         0         961         886         979           Calcium         ppm         ASTM D5185m         1073         987         1088           Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         *ASTM D7414         >25         16.1         17.0         16.7			ASTM D5185m		1	0	<1	
Calcium         ppm         ASTM D5185m         1073         987         1088           Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1<	•			0	961		979	
Phosphorus         ppm         ASTM D5185m         1068         985         1031           Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         *ASTM D7414         >25         16.1         17.0         <			ASTM D5185m			987	1088	
Zinc         ppm         ASTM D5185m         1255         1162         1247           Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16								
Sulfur         ppm         ASTM D5185m         3549         2908         3046           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7								
Silicon         ppm         ASTM D5185m         >25         3         5         4           Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	Sulfur							
Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	CONTAMINA	NTS	method	limit/base	current	history1	history2	
Sodium         ppm         ASTM D5185m         4         6         14           Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	Silicon	ppm	ASTM D5185m	>25	3	5	4	
Potassium         ppm         ASTM D5185m         >20         0         2         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	Sodium						14	
Soot %         %         *ASTM D7844 >3         0.9         1.3         1.9           Nitration         Abs/cm         *ASTM D7624 >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         16.1         17.0         16.7	Potassium			>20		2	2	
Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	INFRA-RED		method	limit/base	current	history1	history2	
Nitration         Abs/cm         *ASTM D7624         >20         7.9         9.8         9.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7	Soot %	%	*ASTM D7844	>3	0.9	1.3	1.9	
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.3         21.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.1         17.0         16.7								
Oxidation Abs/.1mm *ASTM D7414 >25 <b>16.1</b> 17.0 16.7	Sulfation							
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.1	17.0	16.7	
	Base Number (BN)				8.7	9.2	9.0	



# **OIL ANALYSIS REPORT**



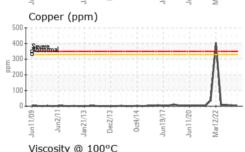


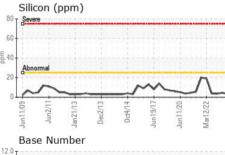


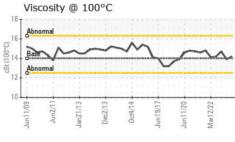
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

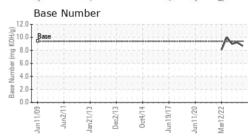
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	14	14.2	13.9	14.7

Iron (p	Iron (ppm)						. 10	Lead (ppm)			
200 Severe	1111111					11 1111	8	Seve	re		
150 - Abnormal							wdd 4	Abn	ormal		
50	~	~	~~	1	~	~	2	111	^		
100/11/nut	Jan21/13	Dec2/13	0ct4/14	Jun19/17	Jun11/20	Mar12/22 -	-	90/11mn	Jun2/11-	Jan21/13	Dec2/13
	Aluminum (ppm)						_	Chr	omiu	m (pp	m)
50 Severe	111111			11111			4	Seve	re		1177
30 - Abnormal							mdd 2	Abn	ormal		













Laboratory Sample No.

Lab Number : 06155608

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : PCA0109280

**GRAPHS** 

Unique Number : 10991031

Received **Tested** Diagnosed

: 22 Apr 2024 : 23 Apr 2024 : 24 Apr 2024 - Sean Felton

17801 Hwy 80 Hulbert, OK US 74441

Certificate 12367

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.

hulbert@kempstone.com

Kemp Quarries - Kemp Stone - Hulbert

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

Contact:

T:

F: