

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

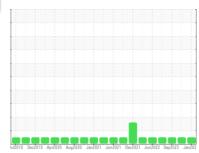
NORMAL



## **KEMP QUARRIES / HULBERT** WL131 Component

**Diesel Engine** 

MOBIL DELVAC 1300 SUPER15W40 (--- GAL)





# Fluic

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0109162	PCA0109235	PCA0086836
Sample Date		Client Info		27 Jan 2024	03 Nov 2023	15 Sep 2023
Machine Age	hrs	Client Info		10805	10240	9868
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>86	20	13	23
Chromium	ppm	ASTM D5185m	>3	<1	<1	<1
Nickel	ppm	ASTM D5185m	>3	1	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	1	<1	<1
Lead	ppm	ASTM D5185m	>16	1	1	1
Copper	ppm	ASTM D5185m	>250	10	6	11
Tin	ppm	ASTM D5185m	>2	<1	<1	1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 0	history2 0
	ppm ppm					
Boron		ASTM D5185m	0	2	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	2 0 54	0 0 57	0 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	2 0 54 <1	0 0 57 <1	0 0 60 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	2 0 54 <1 863	0 0 57 <1 945	0 0 60 0 937
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	2 0 54 <1 863 1042	0 0 57 <1 945 1024	0 0 60 0 937 1043
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	2 0 54 <1 863 1042 1096	0 0 57 <1 945 1024 1023	0 0 60 0 937 1043 984
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 0 0 limit/base	2 0 54 <1 863 1042 1096 1119 3244 current	0 0 57 <1 945 1024 1023 1288 3111 history1	0 0 60 0 937 1043 984 1194
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 0 0 0	2 0 54 <1 863 1042 1096 1119 3244 current 3	0 0 57 <1 945 1024 1023 1288 3111 history1 3	0 0 60 937 1043 984 1194 2932 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 0 	2 0 54 <1 863 1042 1096 1119 3244 current	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1	0 0 60 937 1043 984 1194 2932 history2 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 0 0 	2 0 54 <1 863 1042 1096 1119 3244 current 3	0 0 57 <1 945 1024 1023 1288 3111 history1 3	0 0 60 937 1043 984 1194 2932 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 0 	2 0 54 <1 863 1042 1096 1119 3244 current 3 1 1 1 current	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 history1	0 0 60 937 1043 984 1194 2932 history2 3 3 2 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 2 1 2 0	2 0 54 <1 863 1042 1096 1119 3244 current 3 1 1 1 current 0.8	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 history1 1.1	0 0 60 937 1043 984 1194 2932 history2 3 3 3 2 history2 1.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 54 <1 863 1042 1096 1119 3244 <i>current</i> 3 1 1 1 <i>current</i> 0.8 6.9	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 history1	0 0 60 0 937 1043 984 1194 2932 history2 3 3 3 2 history2 1.1 7.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 0 limit/base >35 >20 limit/base >3	2 0 54 <1 863 1042 1096 1119 3244 current 3 1 1 1 current 0.8	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 history1 1.1	0 0 60 937 1043 984 1194 2932 history2 3 3 3 2 history2 1.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 54 <1 863 1042 1096 1119 3244 <i>current</i> 3 1 1 1 <i>current</i> 0.8 6.9	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 history1 1.1 20.5	0 0 60 0 937 1043 984 1194 2932 history2 3 3 3 2 history2 1.1 7.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 0 54 <1 863 1042 1096 1119 3244 current 3 1 1 1 0.8 6.9 19.2	0 0 57 <1 945 1024 1023 1288 3111 history1 3 <1 2 <u>history1</u> 1.1 20.5 42.9	0 0 60 0 937 1043 984 1194 2932 history2 3 3 3 2 history2 1.1 7.1 19.7

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

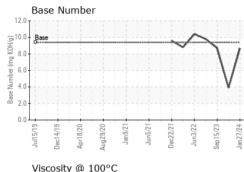
There is no indication of any contamination in the oil.

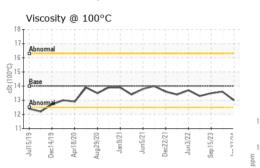
#### Fluid Condition

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



# **OIL ANALYSIS REPORT**





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

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