

OIL ANALYSIS REPORT

Area KEMP QUARRIES / RIVER VALLEY OZARK Machine Id TTH017

Diesel Engine

Fluid MOBIL DELVAC 1300 SUPER15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

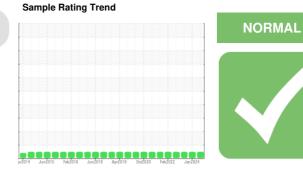
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

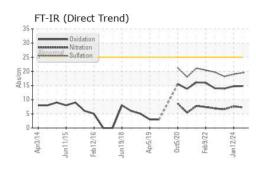
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

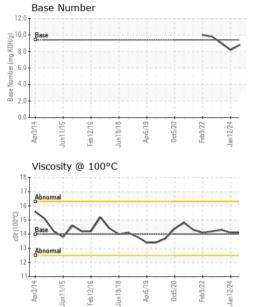


SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0108997	PCA0084493	PCA0037184
Sample Date		Client Info		19 Jun 2024	12 Jan 2024	13 Jan 2023
Machine Age	hrs	Client Info		5494	5255	18563
Oil Age	hrs	Client Info		5494	5255	300
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	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	>31	9	10	23
Chromium	ppm	ASTM D5185m	>3	1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>4	3	2	2
Lead	ppm	ASTM D5185m	>9	1	1	2
Copper	ppm	ASTM D5185m	>20	2	2	15
Tin	ppm	ASTM D5185m	>9	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 5	history1 0	history2 1
	ppm ppm					
Boron		ASTM D5185m	0	5	0	1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 0	0	1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	5 0 60	0 0 56	1 0 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	5 0 60 <1	0 0 56 0	1 0 54 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	5 0 60 <1 1011	0 0 56 0 866	1 0 54 <1 791
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	5 0 60 <1 1011 1215	0 0 56 0 866 1047	1 0 54 <1 791 1245
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0	5 0 60 <1 1011 1215 1061	0 0 56 0 866 1047 888	1 0 54 <1 791 1245 1000
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	0 0 0	5 0 60 <1 1011 1215 1061 1367	0 0 56 0 866 1047 888 1117	1 0 54 <1 791 1245 1000 1182
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 ASTM D5185m ASTM D5185m	0 0 0 0 0	5 0 60 <1 1011 1215 1061 1367 3708	0 0 56 0 866 1047 888 1117 3748	1 0 54 <1 791 1245 1000 1182 2867
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 0 Init/base	5 0 60 <1 1011 1215 1061 1367 3708 current	0 0 56 0 866 1047 888 1117 3748 history1	1 0 54 <1 791 1245 1000 1182 2867 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 0 0 Init/base	5 0 60 <1 1011 1215 1061 1367 3708 current 4	0 0 56 0 866 1047 888 1117 3748 history1 3	1 0 54 <1 791 1245 1000 1182 2867 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 0 limit/base >26	5 0 60 <1 1011 1215 1061 1367 3708 <u>current</u> 4 2	0 0 56 0 866 1047 888 1117 3748 history1 3 0	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 0 limit/base >26 >20	5 0 60 <1 1011 1215 1061 1367 3708 current 4 2 3	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 0 60 <1 1011 1215 1061 1367 3708 current 4 2 3 3	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2 history1	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 0 limit/base >26 >20 limit/base >3	5 0 60 <1 1011 1215 1061 1367 3708 <u>current</u> 4 2 3 <u>current</u> 0.6	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2 history1 0.5	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2 7 3 2 <i>history2</i> 0.3
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 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 0 60 <1 1011 1215 1061 1367 3708 <i>current</i> 4 2 3 <i>current</i> 0.6 7.3	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2 history1 0.5 7.6	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2 7 3 2 history2 0.3 6.6
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	5 0 60 <1 1011 1215 1061 1367 3708 <u>current</u> 4 2 3 3 <u>current</u> 0.6 7.3 19.5	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2 <u>history1</u> 0.5 7.6 19.0	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2 7 3 2 bistory2 0.3 6.6 18.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5 0 60 <1 1011 1215 1061 1367 3708 <i>current</i> 4 2 3 <i>current</i> 0.6 7.3 19.5 <i>current</i>	0 0 56 0 866 1047 888 1117 3748 history1 3 0 2 history1 0.5 7.6 19.0 history1	1 0 54 <1 791 1245 1000 1182 2867 history2 7 3 2 history2 0.3 6.6 18.2 history2



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
	V		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	N	~	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	1	Summer Street Streeting	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
~			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Apr5/19 -	0ct5/20	Feb9/22 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Apr	Oct	Feb9/22 Jan12/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			Free Water	scalar	*Visual		NEG	NEG	NEG
		\sim	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
			Visc @ 100°C	cSt	ASTM D445	14	14.1	14.1	14.3
			GRAPHS						
			Iron (ppm) 50 _T Severe				Lead (ppm)		
19	20	22	40				15 Severe		
Apr5/19	0ct5/20	Feb 9/22 Jan 12/24	Abnormal				10 - Abnormal		
		,				A dd	r		
			10-	\sim	$\sqrt{\Lambda}$		5-		A
			0					\sim	\sim
			Apr3/14 - Jun11/15 - Feb12/16 -	Apr5/19 -	0ct5/20 Feb9/22	Jan 1 2/2 4	Apr3/14 Jun11/15 Feb12/16	Jun 19/18 Apr5/19	0ct5/20 Feb9/22 Jan12/24
	~		-, L -	A	0 £	Jai	-, L	7	
$\overline{}$			Aluminum (ppm)				Chromium (p	pm)	
	* - * - * - *		Smore				4 Severe	i i li i li i	
							3 - Abnormal		
Apr5/19 .	0ct5/20	Feb9/22 -	E 4 - Abnormal			Шd	2	\wedge	A
Apr	Oct	Feb Jan1	2	\sim	4	~	1		\sim
			0				0		v
			Apr3/14 Jun11/15 Feb12/16	Jun 19/18 -	0ct5/20 Feb9/22	Jan 12/24	Apr3/14 Jun11/15 Feb12/16	Jun 19/18 - Apr5/19 -	0ct5/20 Feb 9/22 Jan 12/24
			Ar Jun Feb	Aŗ	F	Jan	Ar Jun Feb	Jun Aŗ	Jan Fe
			Copper (ppm)				Silicon (ppm)		
			40 Severe				40 Severe		
			30 -						
			a 20 - Abnormal			E S	Abnormal		
			10		-+-+-+-+-+-+-	A : : :	10		
					l			$\sim\sim$	$\sim \sim$
			Apr3/14 - Jun11/15 - Feb12/16 -	- Jun 19/18 - Apr5/19 -	0ct5/20 - Feb9/22 -	Jan 12/24 -	Apr3/14 - Jun11/15 - Feb12/16 -	Jun 19/18 - Apr5/19 -	0ct5/20 - Feb9/22 - an 12/24 -
			Apr Jun1 Feb1	Jun1 Apr	Peb Oct	Jan 1	Apr Jun1 Feb1	Jun1 Apr	0ct5/21 Feb9/22 Jan12/24
			Viscosity @ 100°	C			Base Number		
			¹⁸			12 ,⊡	.0		
			16 - Abnormal			KOH Na K	.0 - Base		\sim
			Abnormal		\sim	E 6	.0		
			경 12 -	_		quin 4	.0 -		
						Base Number (mg KOH/g) 9 9 8	.0		
			10 4 21 12	- 81/ - 61/	/20+	0	.0	/18+	/20+
			Apr3/14 Jun 11/15 Feb 12/16	Jun 19/18 Apr5/19	0ct5/20 Feb9/22	Jan 12/24	Apr3/14 Jun11/15 Feb12/16	Jun 19/18 Apr5/19	0ct5/20 Feb9/22 Jan12/24
	Sa La Un	nique Number	: WearCheck USA - 50 : PCA0108997 : 06223021 : 11101218	Rece Teste Diagr	ived : 2 ed : 2 nosed : 30	y, NC 27513 7 Jun 2024 8 Jun 2024) Jun 2024 - Doi	-	Quarries - River 9	446 N Hwy 30 Ozark, A US 7294
	Te	ot Dookogo	: MOB 1 (Additional T	antes TDA	1.1				Contac

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

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