

# **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



#### Area [12415] Machine Id CATERPILLAR 305E CAT0305EKDJX00158 Component Diesel Engine

Fluid SHELL ROTELLA T4 15W40 (--- 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.

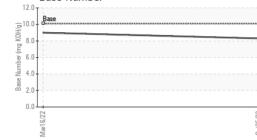
SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		SHM0000084	WC0674703	
Sample Date		Client Info		25 Oct 2023	16 Mar 2022	
Machine Age	hrs	Client Info		1591	1463	
Oil Age	hrs	Client Info		1563	0	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Glycol		WC Method	20	NEG	NEG	
,		_				
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	2	5	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>2	0	0	
Titanium	ppm	ASTM D5185m	>2	<1	0	
Silver	ppm	ASTM D5185m	>2	<1	0	
Aluminum	ppm	ASTM D5185m	>25	2	2	
Lead	ppm	ASTM D5185m	>40	0	0	
Copper	ppm	ASTM D5185m	>330	<1	<1	
Tin	ppm	ASTM D5185m	>15	0	<1	
Vanadium	ppm	ASTM D5185m		<1	0	
Cadmium	ppm	ASTM D5185m		<1	0	
	1-1-		11 1.4			
						hietory/2
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	IIIIII/Dase	221	196	
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	IIIII/base	221 0	196 0	
Boron Barium Molybdenum		ASTM D5185m ASTM D5185m ASTM D5185m	IIIII/Jase	221 0 <1	196 0 <1	
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m		221 0	196 0 <1 <1	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		221 0 <1	196 0 <1	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		221 0 <1 0	196 0 <1 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		221 0 <1 0 10	196 0 <1 <1 20	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		221 0 <1 0 10 2013	196 0 <1 <1 20 2403	  
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 ASTM D5185m		221 0 <1 0 10 2013 934	196 0 <1 <1 20 2403 1064	   
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	limit/base	221 0 <1 0 10 2013 934 1106	196 0 <1 20 2403 1064 1190	
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 ASTM D5185m	limit/base	221 0 <1 0 10 2013 934 1106 3597	196 0 <1 20 2403 1064 1190 3357	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	limit/base	221 0 <1 0 10 2013 934 1106 3597 current	196 0 <1 <1 20 2403 1064 1190 3357 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	limit/base	221 0 <1 0 10 2013 934 1106 3597 current 4	196 0 <1 20 2403 1064 1190 3357 history1 3	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10	196 0 <1 <1 20 2403 1064 1190 3357 history1 3 2 7	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current	196 0 <1 20 2403 1064 1190 3357 history1 3 2 7 history1	     history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1	196 0 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1 5.5	196 0 <1 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1 7.0	     history2   history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1	196 0 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1 5.5	196 0 <1 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1 7.0	     history2   history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20 >30	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1 5.5 20.3	196 0 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1 7.0 22.0	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	limit/base >25 >20 limit/base >3 >20 >30 limit/base	221 0 <1 0 10 2013 934 1106 3597 current 4 <1 10 current 0.1 5.5 20.3 current	196 0 <1 <1 20 2403 1064 1190 3357 history1 3 2 7 history1 0.1 7.0 22.0 history1	      history2  history2  history2  history2

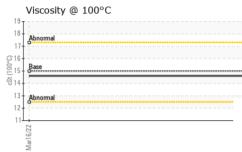


# **OIL ANALYSIS REPORT**

VICLAI

Base Number





	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	
0ct25/23	Appearance	scalar	*Visual	NORML	NORML	NORML	
00	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	
	FLUID PROPER	TIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15	14.6	14.6	
	GRAPHS						
	Ferrous Alloys						
	10 iron						
	8						
	•••••••••••••						
	6 -						
	4						
	2-						
	0 - 1			/23			
	Mar16/22			0ct25/23			
				0			
	Non-ferrous Meta	llS					
	copper						
	8 - essesses lead						
	Е <sup>6</sup>						
	E						
	2-						
				53			
	Mar16/22			0ct25/23			
	Ma			00			
	Viscosity @ 100°	С			Base Number	-	
	19		12.0				
	18 Abnormal			10.0	Base		
	17+			ÎU.U Î			
Ģ	p <sup>16</sup>				)		
00017	Base 15 Base 3 14				)		
ć	3 <sub>14</sub>			m			
	13 Abaamat			0.8 (M) Base Number 9.4	)		
	Abnormal			2.0	)		
	11 <del>1 i</del>			0.0			c C
	Mar16/22			0ct25/23	Mar16/22		
	: WearCheck USA -	501 Madi	son Ave Ca	ry NC 27513		SOUND HEAV	
	: SHM0000084	Receive		Nov 2023			
er	: 06008027	Diagnos		Nov 2023			MINGTON, N
ber	: 10741789	Diagnos		s Davis			US 2840
	. 10/41/09			5 Davis		Contract: C	



Unique Number : 10741789 Diagnostician : Wes Davis Test Package : CONST (Additional Tests: TBN) Certificate L2367 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)

Submitted By: SERVICE MANAGER

Contact: CONNER GORE

cgore@soundhm.com

T: (910)782-2477

F: (910)782-2477

Page 2 of 2