

## **OIL ANALYSIS REPORT**

#### Area [41859930] Machine Id 9470

#### Component Diesel Engine

DIESEL ENGINE OIL SAE 10W30 (--- GAL)

#### DIAGNOSIS

#### Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

### Wear

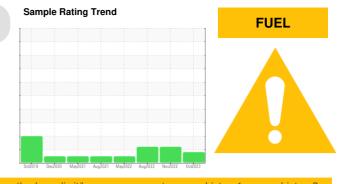
All component wear rates are normal.

#### Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

#### Fluid Condition

The oil is no longer serviceable due to the presence of contaminants.



SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0853363	WC	WC0702804
Sample Date		Client Info		22 Oct 2023	29 Nov 2022	28 Aug 2022
Machine Age	kms	Client Info		391880	341363	335588
Oil Age	kms	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>100	36	17	13
Chromium	ppm	ASTM D5185(m)	>20	2	<1	<1
Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Titanium	ppm	ASTM D5185(m)		0	<1	<1
Silver	ppm	ASTM D5185(m)	>3	<1	0	0
Aluminum	ppm	ASTM D5185(m)	>20	5	3	5
Lead	ppm	ASTM D5185(m)	>40	6	9	2
Copper	ppm	ASTM D5185(m)	>330	3	1	2
Tin	ppm	ASTM D5185(m)	>15	<1	1	<1
Antimony	ppm	ASTM D5185(m)		0	<1	<1
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
		method	in the babe	Current	TIStory I	Thotol y 2
Boron	ppm	ASTM D5185(m)	250	31	31	45
Boron	ppm ppm					
Boron Barium		ASTM D5185(m)	250	31	31	45
Boron Barium Molybdenum	ppm	ASTM D5185(m) ASTM D5185(m)	250 10	31 <1	31 0	45 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10	31 <1 12	31 0 2	45 0 3
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100	31 <1 12 <1	31 0 2 <1	45 0 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450	31 <1 12 <1 708	31 0 2 <1 660	45 0 3 <1 653
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150	31 <1 12 <1 708 1349	31 0 2 <1 660 1310	45 0 3 <1 653 1280
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000	31 <1 12 <1 708 1349 654	31 0 2 <1 660 1310 700	45 0 3 <1 653 1280 684
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350	31 <1 12 <1 708 1349 654 763	31 0 2 <1 660 1310 700 751	45 0 3 <1 653 1280 684 726
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350	31 <1 12 <1 708 1349 654 763 2363 <1	31 0 2 <1 660 1310 700 751 2434	45 0 3 <1 653 1280 684 726 2390
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250	31 <1 12 <1 708 1349 654 763 2363 <1	31 0 2 <1 660 1310 700 751 2434 <1	45 0 3 <1 653 1280 684 726 2390 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250	31 <1 12 <1 708 1349 654 763 2363 <1 current	31 0 2 <1 660 1310 700 751 2434 <1 history1	45 0 3 <1 653 1280 684 726 2390 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) <b>method</b> ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250	31 <1 12 <1 708 1349 654 763 2363 <1 2363 <1 <i>current</i> 6	31 0 2 <1 660 1310 700 751 2434 <1 kistory1 4	45 0 3 <1 653 1280 684 726 2390 <1 kistory2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm	ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250 limit/base >25	31 <1 12 <1 708 1349 654 763 2363 <1 2363 <1 current 6 3	31 0 2 <1 660 1310 700 751 2434 <1 2434 <1 history1 4 3	45 0 3 <1 653 1280 684 726 2390 <1 2390 <1 history2 5 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm   ppm	ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25	31 <1 12 <1 708 1349 654 763 2363 <1 2363 <1 current 6 3 8	31 0 2 <1 660 1310 700 751 2434 <1 2434 <1 history1 4 3 5	45 0 3 <1 653 1280 684 726 2390 <1 kistory2 5 4 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel	ppm   ppm	ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250 imit/base >25 	31 <1 12 <1 708 1349 654 763 2363 <1 current 6 3 8 3 8 3.2 current	31 0 2 <1 660 1310 700 751 2434 <1 history1 4 3 5 ▲ 6.1	45 0 3 <1 653 1280 684 726 2390 <1 2390 <1 history2 5 4 10 2.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm   ppm   %	ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250 <b>i</b> iiiii/base >20 >20 >20 >20 ]	31 <1 12 <1 708 1349 654 763 2363 <1 <i>current</i> 6 3 8 3 8 3.2 <i>current</i> 0.8	31 0 2 <1 660 1310 700 751 2434 <1 <b>history1</b> 4 3 5 ▲ 6.1 <b>history1</b> 0.1	45 0 3 <1 653 1280 684 726 2390 <1 history2 5 4 10 ▲ 2.5 history2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm   ppm   %	ASTM D5185(m) ASTM D5185(m)	250 10 100 450 3000 1150 1350 4250 <b>i</b> iiiii/base >20 >20 >20 >20 ]	31 <1 12 <1 708 1349 654 763 2363 <1 current 6 3 8 3 8 3.2 current	31 0 2 <1 660 1310 700 751 2434 <1 history1 4 3 5 5 ▲ 6.1 history1	45 0 3 <1 653 1280 684 726 2390 <1 history2 5 4 10 ▲ 2.5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Solicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593*	250 10 100 450 3000 1150 1350 4250 imit/base >25 >20 >20 >2.0 imit/base >3 >20	31 <1 12 <1 708 1349 654 763 2363 <1 <i>current</i> 6 3 8 3.2 <i>current</i> 0.8 11.9	31 0 2 <1 660 1310 700 751 2434 <1 history1 4 3 5 ▲ 6.1 history1 0.1 10.8	45 0 3 <1 653 1280 684 726 2390 <1 <b>bistory2</b> 5 4 10 2.5 4 10 2.5 <b>bistory2</b> 0 10.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7844* ASTM D7844* ASTM D7624*	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >25 >20 >20 >20 >20 >20 >3 >3 >20	31 <1 12 <1 708 1349 654 763 2363 <1 <i>current</i> 6 3 8 ▲ 3.2 <i>current</i> 0.8 11.9 27.2	31 0 2 <1 660 1310 700 751 2434 <1 history1 4 3 5 ▲ 6.1 history1 0.1 10.8 25.0	45 0 3 <1 653 1280 684 726 2390 <1 bistory2 5 4 10 ▲ 2.5 bistory2 0 10.2 21.8

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