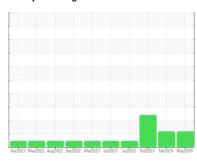


OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id
1204
Component

Component

Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high. Test for glycol is negative.

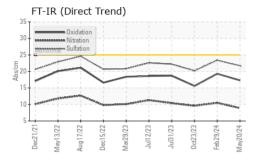
Fluid Condition

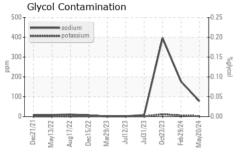
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

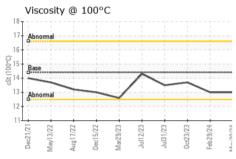
	Dec2021 May2022 Aug2022 Dec2022 Mar2023 Ju2023 Ju2023 Dec2023 Feb2024 May2024									
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		HRE0000164	WC0887609	WC0860424				
Sample Date		Client Info		20 May 2024	29 Feb 2024	23 Oct 2023				
Machine Age	mls	Client Info		316082	310548	305018				
Oil Age	mls	Client Info		0	0	6000				
Oil Changed		Client Info		Changed	N/A	Changed				
Sample Status				ATTENTION	ATTENTION	ABNORMAL				
CONTAMINATIO	V	method	limit/base	current	history1	history2				
Fuel		WC Method	>5	<1.0	<1.0	<1.0				
Water		WC Method	>0.2	NEG	NEG	NEG				
WEAR METALS		method	limit/base	current	history1	history2				
Iron	ppm	ASTM D5185m	>100	16	28	21				
Chromium	ppm	ASTM D5185m	>20	<1	2	<1				
Nickel	ppm	ASTM D5185m	>4	0	0	<1				
Titanium	ppm	ASTM D5185m		<1	<1	<1				
Silver	ppm	ASTM D5185m	>3	0	0	<1				
Aluminum	ppm	ASTM D5185m	>20	3	3	4				
Lead	ppm	ASTM D5185m	>40	0	<1	<1				
Copper	ppm	ASTM D5185m	>330	<1	1	3				
Tin	ppm	ASTM D5185m	>15	<1	0	0				
Vanadium	ppm	ASTM D5185m		0	0	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES										
ADDITIVES		method	limit/base	current	history1	history2				
Boron	ppm	method ASTM D5185m	limit/base 250	current 178	history1 73	history2 74				
	ppm									
Boron	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	250	178	73	74				
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	178 0	73 0	74 4				
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	178 0 82	73 0 101	74 4 111				
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	178 0 82 <1	73 0 101 0	74 4 111 <1				
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	178 0 82 <1 351	73 0 101 0 225	74 4 111 <1 325				
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	178 0 82 <1 351 1347	73 0 101 0 225 1703	74 4 111 <1 325 1454				
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	250 10 100 450 3000 1150	178 0 82 <1 351 1347 960	73 0 101 0 225 1703 928	74 4 111 <1 325 1454 975				
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	250 10 100 450 3000 1150 1350	178 0 82 <1 351 1347 960 1112	73 0 101 0 225 1703 928 1129	74 4 111 <1 325 1454 975 1088				
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	250 10 100 450 3000 1150 1350 4250	178 0 82 <1 351 1347 960 1112 3318	73 0 101 0 225 1703 928 1129 3335	74 4 111 <1 325 1454 975 1088 2895				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	250 10 100 450 3000 1150 1350 4250 limit/base	178 0 82 <1 351 1347 960 1112 3318 current	73 0 101 0 225 1703 928 1129 3335 history1	74 4 111 <1 325 1454 975 1088 2895 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	178 0 82 <1 351 1347 960 1112 3318 current	73 0 101 0 225 1703 928 1129 3335 history1	74 4 111 <1 325 1454 975 1088 2895 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	178 0 82 <1 351 1347 960 1112 3318 current 11 78	73 0 101 0 225 1703 928 1129 3335 history1 14 177	74 4 111 <1 325 1454 975 1088 2895 history2 19 396				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6	74 4 111 <1 325 1454 975 1088 2895 history2 19 396 11				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m Method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2 NEG	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6 NEG	74 4 111 <1 325 1454 975 1088 2895 history2 19 396 11 NEG				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D2982	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2 NEG current	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6 NEG history1	74 4 111 <1 325 1454 975 1088 2895 history2 19 ▲ 396 ▲ 11 NEG history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2 NEG current 0.7	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6 NEG history1 0.8	74 4 111 <1 325 1454 975 1088 2895 history2 19 396 11 NEG history2 0.6				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m **ASTM D5185m ASTM D5185m ASTM D5185m **ASTM D5185m ASTM D5185m **ASTM D7844 **ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2 NEG current 0.7 8.9	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6 NEG history1 0.8 10.5	74 4 111 <1 325 1454 975 1088 2895 history2 19 396 11 NEG history2 0.6 9.6				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	178 0 82 <1 351 1347 960 1112 3318 current 11 78 2 NEG current 0.7 8.9 21.7	73 0 101 0 225 1703 928 1129 3335 history1 14 177 6 NEG history1 0.8 10.5 23.4	74 4 111 <1 325 1454 975 1088 2895 history2 19 ▲ 396 ▲ 11 NEG history2 0.6 9.6 20.2				

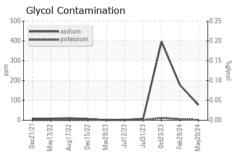


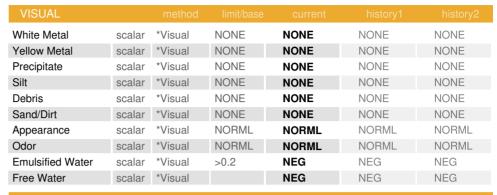
OIL ANALYSIS REPORT





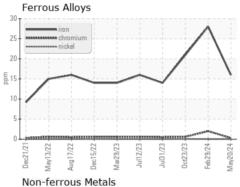


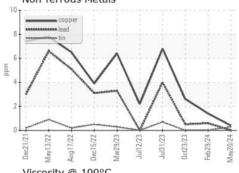


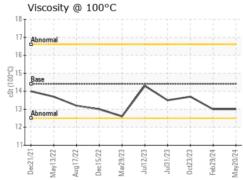


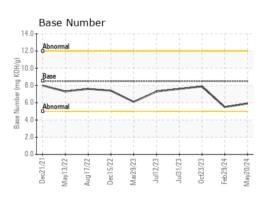
FLUID PROPERTIES						
Visc @ 100°C	cSt	ASTM D445	14.4	13.0	13.0	13.7

GRAPHS













Certificate 12367

Laboratory Sample No.

: HRE0000164 Lab Number : 06196206 Unique Number : 11058329

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 31 May 2024 **Tested** : 03 Jun 2024

Diagnosed : 03 Jun 2024 - Don Baldridge

Test Package : FLEET (Additional Tests: Glycol)

To discuss this sample report, contact Customer Service at 1-800-237-1369. st - Denotes test methods that are outside of the ISO 17025 scope of accreditation. **TOWN OF CHAPEL HILL** 6900 MILLHOUSE RD CHAPEL HILL, NC

US 27516 Contact: Lisa DePasqua Idepasqua@townofchapelhill.org

T: (919)696-4941 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: TOWCHANC [WUSCAR] 06196206 (Generated: 06/04/2024 06:44:00) Rev: 1

Contact/Location: Lisa DePasqua - TOWCHANC