

OIL ANALYSIS REPORT

Sample Rating Trend





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

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.

				2 Nov2022 Jul2023	Aug2023	
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0844951	WC0827069	WC0744258
Sample Date		Client Info		18 Aug 2023	11 Jul 2023	29 Nov 2022
Machine Age	mls	Client Info		181843	177939	164151
Oil Age	mls	Client Info		0	0	6000
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	4	8	7
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	2	3
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	2
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 29	history1 8	history2 27
	ppm ppm					
Boron		ASTM D5185m	250	29	8	27
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	29 0	8	27 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	29 0 77	8 2 72	27 0 78
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	29 0 77 <1	8 2 72 <1	27 0 78 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	29 0 77 <1 277	8 2 72 <1 432	27 0 78 <1 126
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	29 0 77 <1 277 2135	8 2 72 <1 432 1980	27 0 78 <1 126 2062
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	250 10 100 450 3000 1150 1350	29 0 77 <1 277 2135 1124	8 2 72 <1 432 1980 1090	27 0 78 <1 126 2062 959
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	250 10 100 450 3000 1150 1350	29 0 77 <1 277 2135 1124 1386	8 2 72 <1 432 1980 1090 1381	27 0 78 <1 126 2062 959 1192
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	250 10 100 450 3000 1150 1350 4250	29 0 77 <1 277 2135 1124 1386 4450	8 2 72 <1 432 1980 1090 1381 4052	27 0 78 <1 126 2062 959 1192 4092
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	29 0 77 <1 277 2135 1124 1386 4450 current	8 2 72 <1 432 1980 1090 1381 4052 history1	27 0 78 <1 126 2062 959 1192 4092 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	250 10 100 450 3000 1150 1350 4250 <i>limit/base</i>	29 0 77 <1 277 2135 1124 1386 4450 current 8	8 2 72 <1 432 1980 1090 1381 4052 history1 6	27 0 78 <1 126 2062 959 1192 4092 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS 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 method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	29 0 77 <1 277 2135 1124 1386 4450 current 8 5	8 2 72 <1 432 1980 1090 1381 4052 history1 6 5	27 0 78 <1 126 2062 959 1192 4092 history2 4 2
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	29 0 77 <1 277 2135 1124 1386 4450 current 8 5 0	8 2 72 <1 432 1980 1090 1381 4052 history1 6 5 5 <1	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	29 0 77 <1 277 2135 1124 1386 4450 current 8 5 0 0	8 2 72 72 <1 432 1980 1090 1381 4052 history1 6 5 <1 history1	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0 0 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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3	29 0 77 <1 277 2135 1124 1386 4450 <u>current</u> 8 5 0 <u>current</u> 0.3	8 2 72 <1 432 1980 1090 1381 4052 history1 6 5 <1 history1 0.4	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0 history2 0.4
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20	29 0 77 <1 277 2135 1124 1386 4450 <i>current</i> 8 5 0 <i>current</i> 0.3 8.9	8 2 72 <1 432 1980 1090 1381 4052 history1 6 5 <1 5 <1 history1 0.4 10.1	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0 history2 0.4 11.1
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	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >3 >20	29 0 77 <1 277 2135 1124 1386 4450 <u>current</u> 8 5 0 <u>current</u> 0.3 8.9 19.7	8 2 72 72 <1 432 1980 1090 1381 4052 history1 6 5 <1 history1 0.4 10.1 21.8	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0 0 history2 0.4 11.1 23.4
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 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	29 0 77 <1 277 2135 1124 1386 4450 <i>current</i> 8 5 0 <i>current</i> 0.3 8.9 19.7 <i>current</i>	8 2 72 72 <1 432 1980 1090 1381 4052 history1 6 5 <1 history1 0.4 10.1 21.8 history1	27 0 78 <1 126 2062 959 1192 4092 history2 4 2 0 history2 0.4 11.1 23.4 history2



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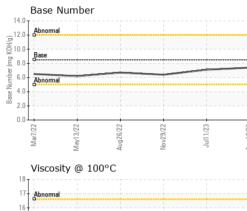
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Mar7/22

May13/22

OIL ANALYSIS REPORT

VISUAL



Aug26/22	Nov29/22	Jul11/23		Metal tate	scalar scalar scalar scalar scalar scalar scalar scalar scalar	*Visual *Visual *Visual *Visual *Visual *Visual *Visual *Visual	NONE NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NONE NONE NORM NORM	IL IL	NONE NONE NONE NONE NONE NONE NORML NORML NEG	NONE NONE NONE NONE NONE NORM NORM	1L	
0°C			Free W		scalar	*Visual		NEG		NEG	NEG		
			FLUI	D PROPE	RTIES	method	limit/base	e curre	ent	history1	histo	ry2	
			Visc @		cSt	ASTM D445	14.4	14.1		13.8	13.8		
			GRA										
Aug26/22	Nov29/22	Juli1/23	10 8 6 4 2 0 0 22/Lee W	errous Me			Aug18/23						
				May13/22	Aug26/22	ΠηΓ	Aug18/23						
			Visco:	sity @ 100	РС 1		1	Base Nu	umber				
			17- Abnorm	al			1	2.0 - Abnormal				-	
			16 () 15 83 14 13 12	a			Base Number (mg KOH/g)	0.0 Base 8.0 Abnormal 4.0					
			11	3/22	6/22	1/23	8/23	0.0	3/22)/22	1/23	3/23	
			Mar7/22	May13/22	Aug26/22 Nov29/22	Jul11/23	Aug18/23	Mar7/22	May13/22	Aug.26/22 Nov.29/22	Jul11/23	Aug18/23 -	
Certificat To disc		Laboratory Sample No. Lab Number Unique Number Test Package sample report,	: WC084 : 059340 r : 106193 e : FLEET	44951 <mark>)85</mark> 356	Receive Diagnos Diagnos	ed : 25 tician : We	Aug 2023 Aug 2023 Is Davis	13	TOWN OF CHAPEL HILL 6900 MILLHOUSE RD CHAPEL HILL, NC US 27516 Contact: Lisa DePasqua Idepasqua@townofchapelhill.org				
* - Der	notes tes	t methods that onformity to spe	are outside	of the ISC	0 17025 sco	ope of accred	litation.	e (JCGM 106	-		: (919)696		

Contact/Location: Lisa DePasqua - TOWCHANC