

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **1703** Component **Diesel Engine** Fluid

DIESEL ENGINE OIL SAE 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.

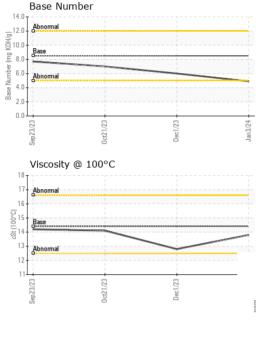
Fluid Condition

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	1ATI <u>ON</u>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0868123	WC0868081	WC0855932
Sample Date		Client Info		03 Jan 2024	01 Dec 2023	21 Oct 2023
Machine Age	mls	Client Info		491416	0	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron			>90	23	34	12
Chromium	ppm	ASTM D5185m	>90 >20	23 <1	2	<1
Nickel	ppm	ASTM D5185m		<1 0	<1	< 1
Titanium	ppm ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m		<1	3	2
Lead	ppm	ASTM D5185m		0	0	<1
Copper	ppm	ASTM D5185m		2	4	8
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES	nnm		limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	2	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	2 0	0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250	2 0 59	0 0 59	2 0 58
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	2 0 59 <1	0 0 59 <1	2 0 58 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	2 0 59 <1 963	0 0 59 <1 895	2 0 58 <1 885
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	2 0 59 <1 963 1098	0 0 59 <1 895 1029	2 0 58 <1 885 1055
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	2 0 59 <1 963 1098 960	0 0 59 <1 895 1029 855	2 0 58 <1 885 1055 956
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	2 0 59 <1 963 1098	0 0 59 <1 895 1029	2 0 58 <1 885 1055
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	2 0 59 <1 963 1098 960 1250	0 0 59 <1 895 1029 855 1135	2 0 58 <1 885 1055 956 1233
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	2 0 59 <1 963 1098 960 1250 2994	0 0 59 <1 895 1029 855 1135 2800	2 0 58 <1 885 1055 956 1233 2713
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	2 0 59 <1 963 1098 960 1250 2994 current	0 0 59 <1 895 1029 855 1135 2800 history1	2 0 58 <1 885 1055 956 1233 2713 history2
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 method	250 10 100 450 3000 1150 1350 4250 Limit/base	2 0 59 <1 963 1098 960 1250 2994 current 4	0 0 59 <1 895 1029 855 1135 2800 history1 5	2 0 58 <1 885 1055 956 1233 2713 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	2 0 59 <1 963 1098 960 1250 2994 current 4 3	0 0 59 <1 895 1029 855 1135 2800 history1 5 0	2 0 58 <1 885 1055 956 1233 2713 history2 4 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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	2 0 59 <1 963 1098 960 1250 2994 Current 4 3 2	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	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 >6	2 0 59 <1 963 1098 960 1250 2994 <i>current</i> 4 3 2 <i>current</i>	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3 3	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >6	2 0 59 <1 963 1098 960 1250 2994 current 4 3 2 2 current 0.5	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3 3 history1 1.5	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2 2 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 Iimit/base >25 >158 >20 Iimit/base >6 >20	2 0 59 <1 963 1098 960 1250 2994 <i>current</i> 4 3 2 <i>current</i> 0.5 10.9	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3 history1 1.5 12.0	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2 2 history2 0.4 9.0
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 Iinit/base >25 >158 >20 Iinit/base >6 >20	2 0 59 <1 963 1098 960 1250 2994 <i>current</i> 4 3 2 2 <i>current</i> 0.5 10.9 25.3	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3 history1 1.5 12.0 25.0	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2 2 history2 0.4 9.0 21.3
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 D7624 *ASTM D7415	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >6 >20 >30	2 0 59 <1 963 1098 960 1250 2994 Current 4 3 2 2 Current 0.5 10.9 25.3	0 0 59 <1 895 1029 855 1135 2800 history1 5 0 3 history1 1.5 12.0 25.0 history1	2 0 58 <1 885 1055 956 1233 2713 history2 4 3 2 2 history2 0.4 9.0 21.3 history2



OIL ANALYSIS REPORT



NONE NONE *Visual NONE NONE White Metal scalar Yellow Metal NONE NONE NONE NONE scalar *Visual Precipitate scalar *Visua NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE NONE Debris *Visual NONE NONE NONE scalar NONE Sand/Dirt scalar *Visual NONE NONE NONE scalar NORML Appearance *Visual NORML NORML NORML Odor NORML NORML NORML scalar *Visual NORML **Emulsified Water** scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG FLUID PROPERTIES Visc @ 100°C cSt ASTM D445 14.4 13.8 12.8 14.1 GRAPHS Iron (ppm) Lead (ppm) 100 200 80 150 60 ppm ppm 100 40 Abnor 50 20 0 Dec1/23 lct21/23 Dec1/23 -÷ Aluminum (ppm) Chromium (ppm) 50 5 40 40 30 30 10 0 Dec1/23 Dec1/23 ep23/ Dct21 lct21 Silicon (ppm) Copper (ppm) 400 80 300 60 la 200 ۲,40 100 20 Π Dec1/23 -**Dec1/23** an3/74 0ct21/23 Viscosity @ 100°C Base Number 15. 18 (^B/HOX ^Bu) Ab Abr 10 St (100°C) Ab 5.0 Base 10 0.0 Sep23/23 0ct21/23 Dec1/23 Jan3/24 Dec1/23 -0ct21/23 Sen23/23 3/24 **GO DURHAM - RAPT** : WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0868123 Recieved : 17 Jan 2024 1903 FAYETTEVILLE ST Lab Number : 06062394 DURHAM, NC Diagnosed : 18 Jan 2024 Diagnostician : Sean Felton US 27701 Unique Number : 10833776 Test Package : MOB 1 (Additional Tests: TBN) Contact: Robert Iosiniecki To discuss this sample report, contact Customer Service at 1-800-237-1369. Robert.losiniecki@ratpdev.com T: * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. F: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Laboratory

Sample No.

Contact/Location: Robert Iosiniecki - GODDUR