MOB III

WEAR CHECK

OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINANTS	ABNORMAL
OIL CONDITION	NORMAL

Area
[WO 25489]
Machine Id
5608
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 10W30 (--- GAL)

RECOMMENDATION

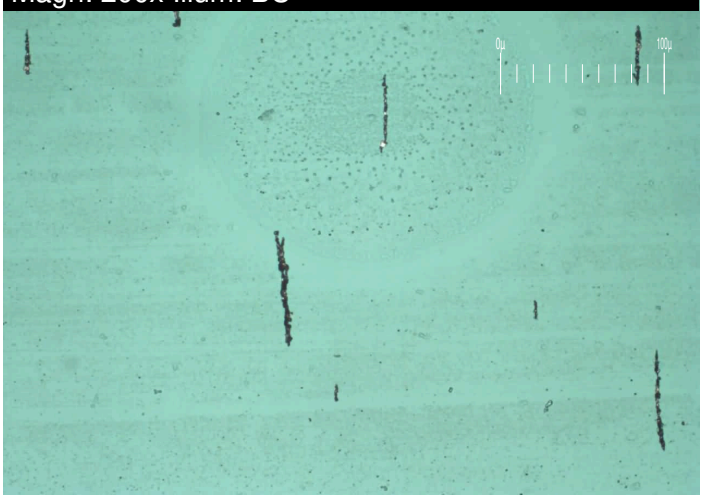
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend that you drain the oil from the component if this has not already been done. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

WEAR

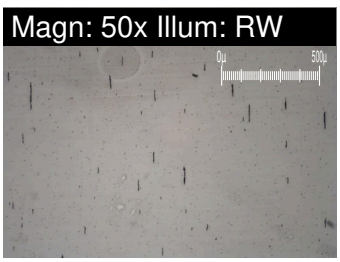
Copper ppm levels are abnormal. Lead ppm levels are noted. A sharp increase in the copper level is noted. Bearing wear is indicated. The ferrography results are normal indicating no abnormal wear in the system.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0916682	WC0907677	WC0308093
Sample Date		Client Info		04 Apr 2024	05 Mar 2024	04 Apr 2019
Machine Age	kms	Client Info		696992	8	182280
Oil Age	kms	Client Info		24000	0	0
Filter Age	kms	Client Info		24000	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	SEVERE	NORMAL
PQ		ASTM D8184*		0	0	---
Iron	ppm	ASTM D5185(m)	>100	23	6	15
Chromium	ppm	ASTM D5185(m)	>20	1	0	<1
Nickel	ppm	ASTM D5185(m)	>4	0	0	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)	>3	0	0	0
Aluminum	ppm	ASTM D5185(m)	>20	2	2	1
Lead	ppm	ASTM D5185(m)	>40	4	0	1
Copper	ppm	ASTM D5185(m)	>330	132	3	2
Tin	ppm	ASTM D5185(m)	>15	<1	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	LTMOD	---
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	---
Large Particles		DR-Ferr*		2.7	55.6	---
Small Particles		DR-Ferr*		1.8	13.5	---
Total Particles		DR-Ferr*	>---	4.5	69.1	---
Large Particles Percentage	%	DR-Ferr*		20	60.9	---
Severity Index		DR-Ferr*		2	2341	---
Ferrous Rubbing	Scale 0-10	ASTM D7684*		2	4	
Ferrous Sliding	Scale 0-10	ASTM D7684*				
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		1	2	
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*			1	
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*				
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				

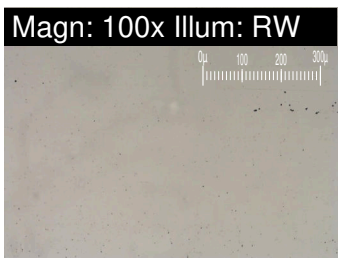
Magn: 200x Illum: BC



Magn: 50x Illum: RW



Magn: 100x Illum: RW



CONTAMINANTS

There is a moderate concentration of dirt present in the oil. High amount of ingressed dirt has caused abrasive wear to the component.

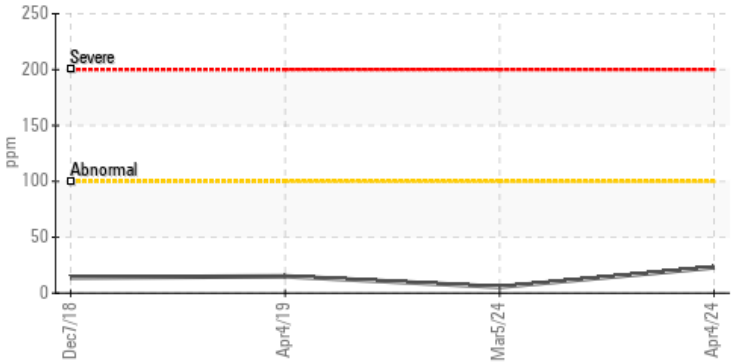
OIL CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. Viscosity of sample indicates oil is within SAE 40 range, advise investigate. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

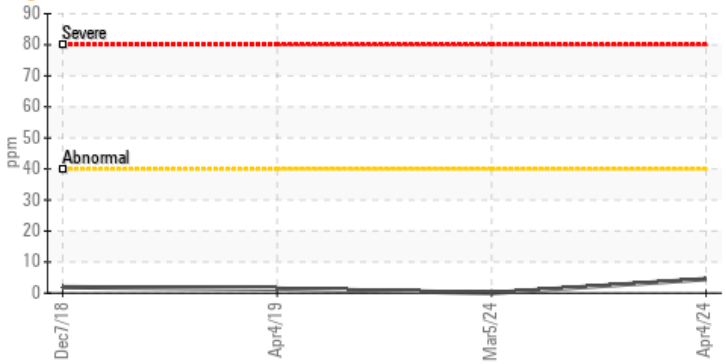
Silicon	ppm	ASTM D5185(m)	>25	▲ **63**	41	9
Potassium	ppm	ASTM D5185(m)	>20	**3**	2	3
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG
Soot %	%	ASTM D7844*	>3	**0.2**	0	0.2
Nitration	Abs/cm	ASTM D7624*	>20	**7.9**	5.3	10.9
Sulfation	Abs/.1mm	ASTM D7415*	>30	**19.6**	16.2	25.5
Silt	scalar	Visual*	NONE	**NONE**	NONE	---
Debris	scalar	Visual*	NONE	**NONE**	NONE	---
Sand/Dirt	scalar	Visual*	NONE	**NONE**	NONE	---
Appearance	scalar	Visual*	NORML	**NORML**	NORML	---
Odor	scalar	Visual*	NORML	**NORML**	NORML	---
Emulsified Water	scalar	Visual*	>0.2	**NEG**	NEG	NEG
Carbonaceous Material	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		**1**	1	
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*		**1**	2	

Sodium	ppm	ASTM D5185(m)		**3**	2	3
Boron	ppm	ASTM D5185(m)	250	**6**	6	55
Barium	ppm	ASTM D5185(m)	10	**3**	3	0
Molybdenum	ppm	ASTM D5185(m)	100	**7**	6	4
Manganese	ppm	ASTM D5185(m)		**3**	<1	<1
Magnesium	ppm	ASTM D5185(m)	450	**106**	101	677
Calcium	ppm	ASTM D5185(m)	3000	**2324**	2208	1419
Phosphorus	ppm	ASTM D5185(m)	1150	**864**	854	1027
Zinc	ppm	ASTM D5185(m)	1350	**1042**	981	1215
Sulfur	ppm	ASTM D5185(m)	4250	**2802**	2872	3042
Oxidation	Abs/.1mm	ASTM D7414*	>25	**12.4**	9.6	20.1
Base Number (BN)	mg KOH/g	ASTM D2896*	8.5	**7.93**	13.38	---
Visc @ 100°C	cSt	ASTM D7279(m)	10.9	**14.1**	14.4	13.8
Lubricant Degradation	Scale 0-10	ASTM D7684*				

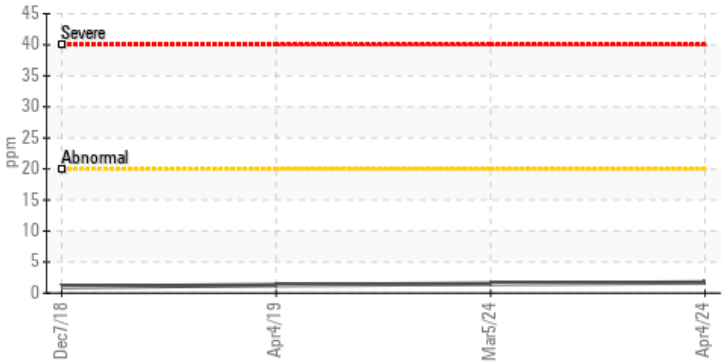
Iron (ppm)



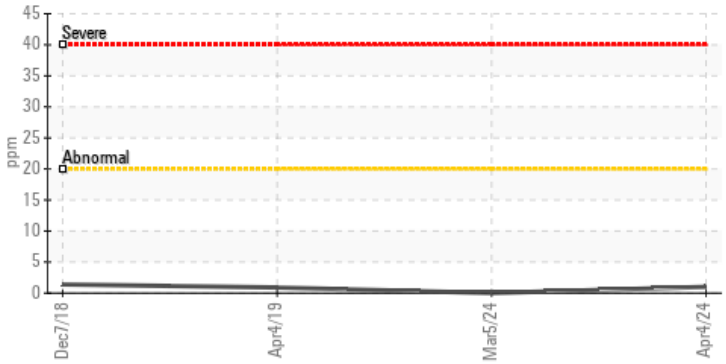
Lead (ppm)



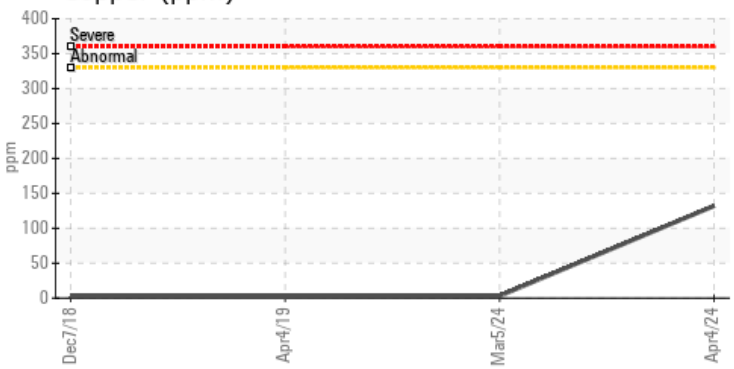
Aluminum (ppm)



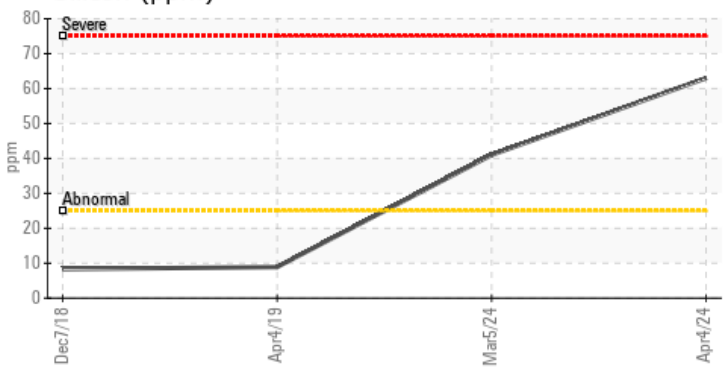
Chromium (ppm)



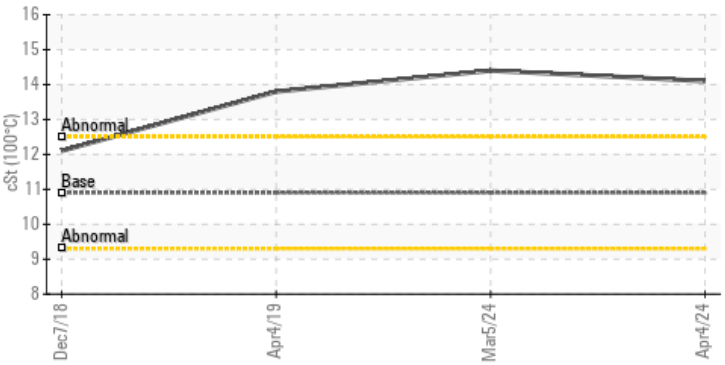
Copper (ppm)



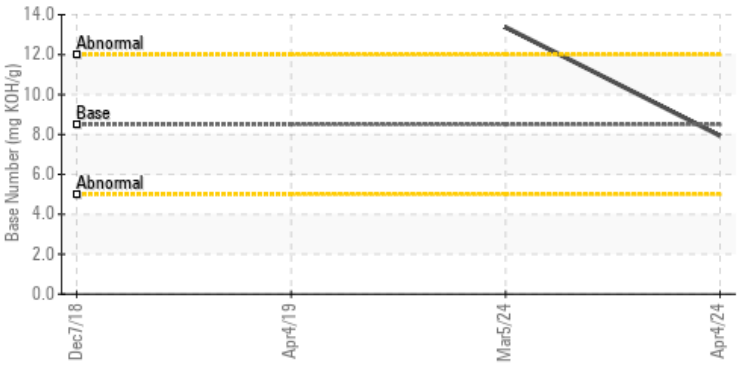
Silicon (ppm)



Viscosity @ 100°C



Base Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0916682
Lab Number : 02628335
Unique Number : 5761467
Test Package : MOB 3

Received : 12 Apr 2024
Tested : 19 Apr 2024
Diagnosed : 19 Apr 2024 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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