

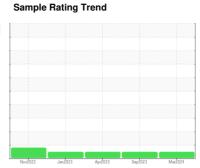
# **OIL ANALYSIS REPORT**

# SIS REPORT



VINASSIGNED

5156
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 40 (36 QTS)





#### DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor. 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

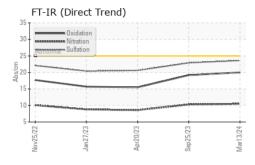
## Fluid Condition

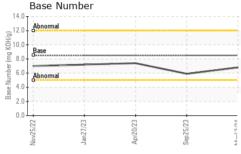
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

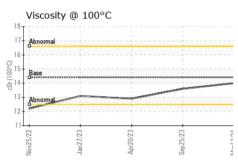
Sample Date	AE 40 (36 Q IS)		Nov2022	Jan2023	Apr2023 Sep2023	Mar2024	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         5630         4412         3344           Dil Age         hrs         Client Info         1218         1068         581           Dil Changed         Client Info         Changed         Changed         Changed         Changed         Changed         NORMAL         1.0         1.0         1.0         1.0         1.0	Sample Number		Client Info		WC0847915	WC0847883	WC0760001
Machine Age         hrs         Client Info         5630         4412         3344           Dil Age         hrs         Client Info         1218         1068         581           Dil Changed         Client Info         Changed         Changed         Changed         Changed         Changed         NORMAL         1.0         1.0         1.0         1.0         1.0	Sample Date		Client Info		13 Mar 2024	25 Sep 2023	20 Apr 2023
Client Info   Changed   Changed   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL		hrs	Client Info		5630	4412	3344
CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		1218	1068	581
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Water	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         37         40         22           Chromium         ppm         ASTM D5185m         >20         1         1         1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         2         0           Lead         ppm         ASTM D5185m         >40         <1	CONTAMINATIO	Ν	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>120	37	40	22
Description	Chromium	ppm	ASTM D5185m	>20	1	1	1
Silver	Vickel	ppm	ASTM D5185m	>5	1	2	1
Aluminum	Γitanium	ppm	ASTM D5185m	>2	0	0	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>20	2	2	0
Proceedings   Proceedings   Processing   P	_ead	ppm	ASTM D5185m	>40	<1	<1	<1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         2         4         7           Barium         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         100         66         73         67           Manganese         ppm         ASTM D5185m         100         66         73         67           Magnesium         ppm         ASTM D5185m         450         946         947         880           Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1350         1226         1280         1203           Zinc         ppm         ASTM D5185m         >25         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>330	4	6	4
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         2         4         7           Barium         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         100         66         73         67           Manganese         ppm         ASTM D5185m         100         66         73         67           Magnesium         ppm         ASTM D5185m         450         946         947         880           Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1350         1226         1280         1203           Zinc         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0<	Γin	ppm	ASTM D5185m	>15	<1	2	1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         100         66         73         67           Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         450         946         947         880           Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1150         1019         947         960           Zinc         ppm         ASTM D5185m         1350         1226         1280         1203           Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         1	Boron	ppm	ASTM D5185m	250	2	4	7
Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         450         946         947         880           Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1150         1019         947         960           Zinc         ppm         ASTM D5185m         1350         1226         1280         1203           Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         <	Barium	ppm	ASTM D5185m	10	0	0	0
Magnesium         ppm         ASTM D5185m         450         946         947         880           Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1150         1019         947         960           Zinc         ppm         ASTM D5185m         1350         1226         1280         1203           Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/.1mm         *ASTM D7415	Molybdenum	ppm	ASTM D5185m	100	66	73	67
Calcium         ppm         ASTM D5185m         3000         1229         1241         1162           Phosphorus         ppm         ASTM D5185m         1150         1019         947         960           Zinc         ppm         ASTM D5185m         1350         1226         1280         1203           Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/:1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         1019         947         960           Zinc         ppm         ASTM D5185m         1350         1226         1280         1203           Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>450</td><th>946</th><td>947</td><td>880</td></td<>	Magnesium	ppm	ASTM D5185m	450	946	947	880
Zinc   ppm   ASTM D5185m   1350   1226   1280   1203	Calcium	ppm	ASTM D5185m	3000	1229	1241	1162
Sulfur         ppm         ASTM D5185m         4250         2944         2732         2875           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Phosphorus	ppm	ASTM D5185m	1150	1019	947	960
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Zinc	ppm	ASTM D5185m	1350	1226	1280	1203
Silicon         ppm         ASTM D5185m         >25         0         6         3           Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Sulfur	ppm	ASTM D5185m	4250	2944	2732	2875
Sodium         ppm         ASTM D5185m         >216         11         10         6           Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	CONTAMINANTS	3	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         3         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Silicon	ppm	ASTM D5185m	>25	0	6	3
INFRA-RED	Sodium	ppm	ASTM D5185m	>216	11	10	6
Soot %         %         *ASTM D7844 >4         1         1.3         0.7           Nitration         Abs/cm         *ASTM D7624 >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415 >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         20.0         19.2         15.5	Potassium	ppm	ASTM D5185m	>20	2	3	1
Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         10.5         10.3         8.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Soot %	%	*ASTM D7844	>4	1	1.3	0.7
Sulfation         Abs/.1mm         *ASTM D7415         >30         23.6         22.9         20.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         20.0         19.2         15.5	Vitration	Abs/cm	*ASTM D7624	>20	10.5		8.6
Oxidation	Sulfation						
	FLUID DEGRADA	ATION _	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.0	19.2	15.5
	Base Number (BN)	mg KOH/g	ASTM D2896		6.8	5.9	7.4

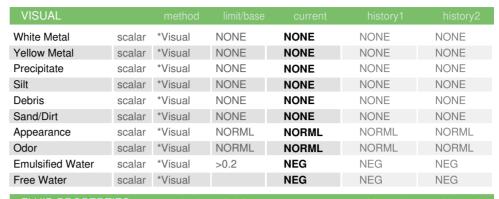


# **OIL ANALYSIS REPORT**



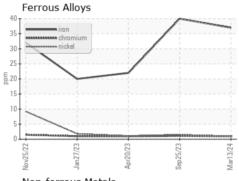


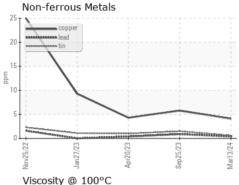


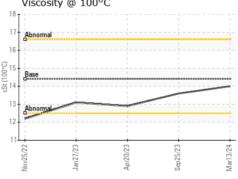


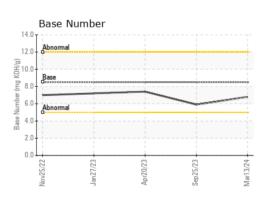
FLUID PROPER	TIES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.0	13.6	12.9

## **GRAPHS**













Laboratory Sample No.

Lab Number : 06198958 Unique Number : 11061081

: WC0847915

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

: 04 Jun 2024 **Tested** : 05 Jun 2024 Diagnosed

: 05 Jun 2024 - Wes Davis

Apple Valley Waste - Chambersburg Location

5436 Sunset Pike Chambersburg, PA US 17202

Contact: Service Manager

Test Package : CONST ( Additional Tests: TBN ) Certificate 12367 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.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

T:

F: