

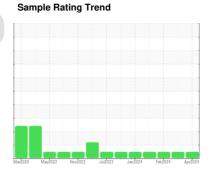
# **OIL ANALYSIS REPORT**



# **Action Newark CATERPILLAR 5580**

Diesel Engine

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





## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the

## **Fluid Condition**

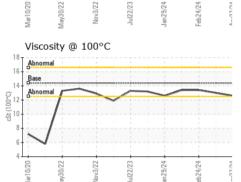
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		WC0912325	WC0900113	WC0900090
Oil Age         hrs         Client Info         N/A	Sample Date		Client Info		27 Apr 2024	09 Mar 2024	24 Feb 2024
Oil Changed   Client Info   N/A   N/A   N/A   NORMAL   NORMAL	Machine Age	hrs	Client Info		35034	34563	0
Oil Changed Sample Status         Client Info         N/A         N/A         N/A         N/A         N/A         N/A         NAMAL         NORMAL         NO		hrs	Client Info		0	0	0
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2	-				-	N/A	N/A
Fuel							
Fuel			method	limit/base	current		
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         22         5         4           Chromium         ppm         ASTM D5185m         >20         0         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >40         1         0         <1           Capper         ppm         ASTM D5185m         >40         1         0         <1           Capper         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         >10         0 <t< td=""><td></td><td></td><td></td><td></td><th></th><td>•</td><td></td></t<>						•	
NEG   NEG   NEG   NEG   NEG   NEG   NEG							
WEAR METALS				<b>70.</b> L			
Iron							
Chromium         ppm         ASTM D5185m         >20         0         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m			5	4
Titanium	Chromium	ppm	ASTM D5185m	>20	0	0	<1
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         <1         0         2           Lead         ppm         ASTM D5185m         >40         1         0         <1           Copper         ppm         ASTM D5185m         >330         <1         0         <1           Vanadium         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         10         0         0         0         0           Barium         ppm         ASTM D5185m         10         0         0         0         0           Molydenum         ppm         ASTM D5185m         10         0         0         0           Marganesium         ppm         ASTM D5185m         30         <	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum         ppm         ASTM D5185m         >25         <1         0         2           Lead         ppm         ASTM D5185m         >40         1         0         <1           Copper         ppm         ASTM D5185m         >330         <1         0         <1           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         10         0         0         0           Magnesium         ppm         ASTM D5185m         10         0         0         0           Magnesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213 </td <td>Titanium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;2</td> <th>0</th> <td>0</td> <td>&lt;1</td>	Titanium	ppm	ASTM D5185m	>2	0	0	<1
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Lead	Aluminum	ppm	ASTM D5185m	>25	<1	0	2
Copper         ppm         ASTM D5185m         >330         <1         0         <1           Tin         ppm         ASTM D5185m         >15         0         0         <1	Lead		ASTM D5185m	>40	1	0	<1
Trin	Copper		ASTM D5185m	>330	<1	0	<1
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         0         12         13           Barium         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         100         56         52         53           Manganese         ppm         ASTM D5185m         100         56         52         53           Manganesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         >25         4         3 <td></td> <td></td> <td></td> <td></td> <th>0</th> <td></td> <td></td>					0		
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         250         0         12         13           Barium         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         100         56         52         53           Manganese         ppm         ASTM D5185m         100         56         52         53           Manganesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         >25         4         3         4           CONTAMINANTS         method         limit/base         current							
ADDITIVES							
Boron		PPIII		limit/hase			
Barium         ppm         ASTM D5185m         10         0         0         0           Molybdenum         ppm         ASTM D5185m         100         56         52         53           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         <							
Molybdenum         ppm         ASTM D5185m         100         56         52         53           Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3         0.7							
Manganese         ppm         ASTM D5185m         0         0         0           Magnesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3							
Magnesium         ppm         ASTM D5185m         450         855         826         816           Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30 <td></td> <td></td> <td></td> <td>100</td> <th></th> <td></td> <td></td>				100			
Calcium         ppm         ASTM D5185m         3000         1269         1213         1092           Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/.mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit		ppm					
Phosphorus         ppm         ASTM D5185m         1150         1027         1014         1047           Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         "ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         "ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method <t< td=""><td>J.</td><td></td><td></td><td></td><th></th><td></td><td></td></t<>	J.						
Zinc         ppm         ASTM D5185m         1350         1206         1185         1192           Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm		ppm					
Sulfur         ppm         ASTM D5185m         4250         3649         3736         3596           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Phosphorus	ppm				1014	1047
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Zinc	ppm	ASTM D5185m	1350	1206	1185	1192
Silicon         ppm         ASTM D5185m         >25         4         3         4           Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Sulfur	ppm	ASTM D5185m	4250	3649	3736	3596
Sodium         ppm         ASTM D5185m         >158         3         1         1           Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Silicon	ppm	ASTM D5185m	>25	4	3	4
INFRA-RED	Sodium	ppm	ASTM D5185m	>158	3	1	1
Soot %         %         *ASTM D7844 >3         0.7         0.2         0.1           Nitration         Abs/cm         *ASTM D7624 >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415 >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         12.9         12.0         12.0	Potassium	ppm	ASTM D5185m	>20	0	0	1
Nitration         Abs/cm         *ASTM D7624         >20         6.5         5.1         4.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Soot %	%	*ASTM D7844	>3	0.7	0.2	0.1
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.9         17.2         17.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         12.0         12.0	Nitration	Abs/cm	*ASTM D7624	>20	6.5	5.1	4.7
Oxidation Abs/.1mm *ASTM D7414 >25 <b>12.9</b> 12.0 12.0							
	FLUID DEGRADA	ΓΙΟΝ	method	limit/base	current	history1	history2
	Oxidation	Ahs/ 1mm	*ASTM D7414	>25	12.9	12.0	12 0



## **OIL ANALYSIS REPORT**

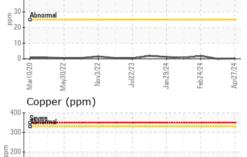


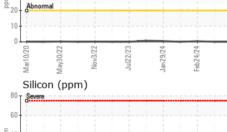


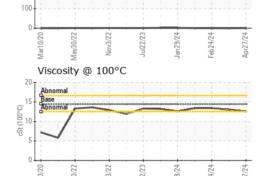
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	ΓIES	method	limit/base	current	history1	history2

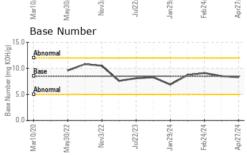
FLUID FROFER	IIES	memou			HISTOLAL	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	14.4	12.6	13.0	13.4

Iron	(ppm)						Lead (ppm)	
200 Severe							80 Severe	
E 150-	l						60 Abnormal	
100 - Abnor	mal			-			Abnormal	
0							0	
Mar10/20	May30/22	Nov3/22	Jul22/23	Jan29/24	Feb24/24	Apr27/24	Mari 0/20 May30/22 Nov3/22 Jul22/23	Jan29/24
	ninum	(ppm)					Chromium (ppm)	
50 Severe							40 Severe	
E 30 - Abnor	mal						Abnormal	













Certificate 12367

Sample No.

: WC0912325 Lab Number : 06178342 Unique Number : 11029668

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 14 May 2024 **Tested** : 14 May 2024

Diagnosed : 14 May 2024 - Wes Davis Test Package : MOB 1 ( Additional Tests: TBN )

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - 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)

**INTERSTATE WASTE-NEWARK** 

110 EVERGREEN AVE, BAY 3 NEWARK, NJ

US 07114

Contact: Robert Witynski RWitynski@interstatewaste.com

T: F: