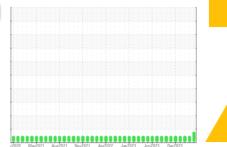


OIL ANALYSIS REPORT

Sample Rating Trend







AAAB IRAQ Machine Id 2000-4181 Component

Genset

VALVOLINE PREMIUM BLUE (380 LTR)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

The lead level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

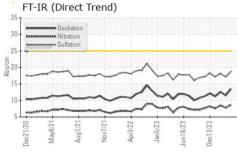
Fluid Condition

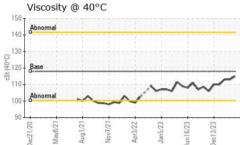
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

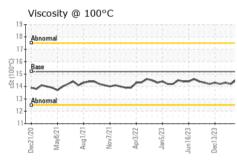
SAMPLE INFORMATION method limit/base current history1 history2			c2020 May20	021 Aug2021 Nov2021	Apr2022 Jan2023 Jun2023 1	Dec2023	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 17 May 2024 2 2 Mar 2024 19 Feb 2024 Machine Age hrs Client Info 30680 30252 30002 Oil Age hrs Client Info 428 250 250 Oil Changed Client Info Changed	Sample Number		Client Info		WC0860668	WC0860607	WC0860741
Machine Age hrs Client Info 30680 30252 30002 Oil Age hrs Client Info 428 250 250 Oil Changed Client Info Changed NoRMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL 1.0 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 </td <td></td> <td></td> <td>Client Info</td> <td></td> <th>17 May 2024</th> <td>22 Mar 2024</td> <td>19 Feb 2024</td>			Client Info		17 May 2024	22 Mar 2024	19 Feb 2024
Oil Age hrs Client Info 428 250 250 Oil Changed Sample Status Client Info Changed Ch	•	hrs	Client Info		•	30252	30002
Oil Changed Sample Status Client Info Changed ABNORMAL NORMAL NORMAL NORMAL Changed NORMAL NORMAL NORMAL Changed ABNORMAL NORMAL NORMAL Changed NORMAL NORMAL NORMAL Changed ABNORMAL NORMAL NORMAL Changed ABNORMAL NORMAL NORMAL NORMAL Changed ABNORMAL NORMAL NORMAL NORMAL Changed ABNORMAL NORMAL NORMAL NORMAL Changed NORMAL NORMAL NORMAL Changed ABNORMAL Normal N	•	hrs	Client Info		428	250	250
ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	-		Client Info		Changed	Changed	Changed
Fuel						Ü	NORMAL
Water Glycol WC Method WC Method >0.1 NEG NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 6 2 4 Chromium ppm ASTM D5185m >4 <1 <1 0 Nickel ppm ASTM D5185m >2 0 <1 <1 <1 0 Silver ppm ASTM D5185m >2 0 <1 <1 0 0 Aluminum ppm ASTM D5185m >12 4 2 2 2 Lead ppm ASTM D5185m >17 17 3 3 3 3 3 Copper ppm ASTM D5185m >10 <1 0 0 0 0 <1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< th=""><th>CONTAMINATION</th><th>V</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	CONTAMINATION	V	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 6 2 4 Chromium ppm ASTM D5185m >4 <1	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 6 2 4 Chromium ppm ASTM D5185m >4 <1	Water		WC Method	>0.1	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium	Iron	mag	ASTM D5185m	>50	6	2	4
Nickel	-					_	
Titanium							
Silver ppm ASTM D5185m >5 0 0 0 Aluminum ppm ASTM D5185m >12 4 2 2 Lead ppm ASTM D5185m >17 ▲ 17 3 3 Copper ppm ASTM D5185m >70 1 <1 0 Vanadium ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m 0 <1 <1 <1 <1 Cadmium ppm ASTM D5185m 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1				_			
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Lead ppm ASTM D5185m >17 ▲ 17 3 3 Copper ppm ASTM D5185m >70 1 <1 0 Tin ppm ASTM D5185m >15 <1 <1 0 Vanadium ppm ASTM D5185m >15 <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.9 77 70 72 Barium ppm ASTM D5185m 0.0 42 38 37 Manganese ppm ASTM D5185m 0.0 42 38 37 Magnesium ppm ASTM D5185m 0 <1 <1 <1 Calcium ppm ASTM D5185m 2936 3950 3539 3569 Phosphorus ppm ASTM D5185m 1095 1163							2
Copper ppm ASTM D5185m >70 1 <1 0 Tin ppm ASTM D5185m >15 <1					<u> 17</u>		3
Tin							
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.9 77 70 72 Barium ppm ASTM D5185m 0.1 1 1 0 Molybdenum ppm ASTM D5185m 0.0 42 38 37 Manganese ppm ASTM D5185m 0 <1 <1 1 Magnesium ppm ASTM D5185m 18 20 18 20 Calcium ppm ASTM D5185m 2936 3950 3539 3569 Phosphorus ppm ASTM D5185m 2998 962 954 943 Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m >25 6 7	• •				-		
Cadmium ppm ASTM D5185m <1 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2.9 77 70 72 Barium ppm ASTM D5185m 0.1 1 1 0 Molybdenum ppm ASTM D5185m 0.0 42 38 37 Manganese ppm ASTM D5185m 0.0 42 38 37 Magnesium ppm ASTM D5185m 0 <1	Vanadium		ASTM D5185m				0
Boron					<1		<1
Barium ppm ASTM D5185m 0.1 1 1 0 Molybdenum ppm ASTM D5185m 0.0 42 38 37 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 0.1 1 1 0 Molybdenum ppm ASTM D5185m 0.0 42 38 37 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	2.9	77	70	72
Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 18 20 18 20 Calcium ppm ASTM D5185m 2936 3950 3539 3569 Phosphorus ppm ASTM D5185m 998 962 954 943 Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.7 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0.1</td> <th>1</th> <td>1</td> <td>0</td>	Barium	ppm	ASTM D5185m	0.1	1	1	0
Manganese ppm ASTM D5185m 0 <1 <1 Magnesium ppm ASTM D5185m 18 20 18 20 Calcium ppm ASTM D5185m 2936 3950 3539 3569 Phosphorus ppm ASTM D5185m 998 962 954 943 Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Molybdenum	ppm	ASTM D5185m	0.0	42	38	37
Calcium ppm ASTM D5185m 2936 3950 3539 3569 Phosphorus ppm ASTM D5185m 998 962 954 943 Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/:mm *ASTM D7415 >30 18.7 7.8 8.5 Sulfation Abs/:mm *ASTM D7415 >30	Manganese	ppm	ASTM D5185m		0	<1	<1
Phosphorus ppm ASTM D5185m 998 962 954 943 Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base	Magnesium	ppm	ASTM D5185m	18	20	18	20
Zinc ppm ASTM D5185m 1095 1163 1053 1073 Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m >20 2 2 2 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Calcium	ppm	ASTM D5185m	2936	3950	3539	3569
Sulfur ppm ASTM D5185m 5469 4461 4382 4650 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m 0 0 <1	Phosphorus	ppm	ASTM D5185m	998	962	954	943
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m 0 0 <1	Zinc	ppm	ASTM D5185m	1095	1163	1053	1073
Silicon ppm ASTM D5185m >25 6 7 6 Sodium ppm ASTM D5185m 0 0 <1 Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Sulfur	ppm	ASTM D5185m	5469	4461	4382	4650
Sodium ppm ASTM D5185m 0 0 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Silicon	ppm	ASTM D5185m	>25	6	7	6
INFRA-RED	Sodium	ppm	ASTM D5185m		0	0	<1
Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Potassium	ppm	ASTM D5185m	>20	2	2	2
Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 8.7 7.8 8.5 Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Soot %	%	*ASTM D7844		0.1	0.1	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 18.7 17.1 18.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Nitration	Abs/cm	*ASTM D7624	>20			
Oxidation Abs/.1mm *ASTM D7414 >25 13.5 11.5 12.6	Sulfation						
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	11.5	12.6
	Base Number (BN)	mg KOH/g	ASTM D2896	10.0	9.4	8.9	9.4

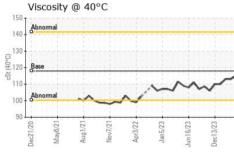


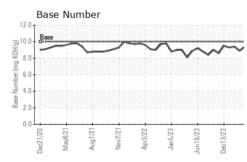
OIL ANALYSIS REPORT

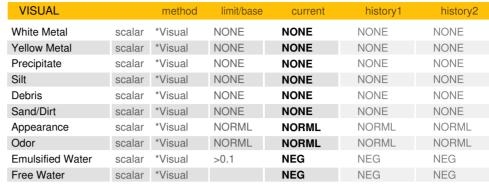








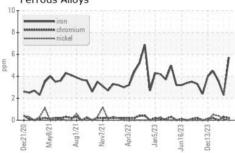


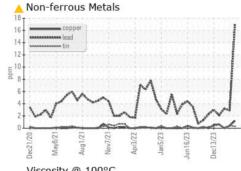


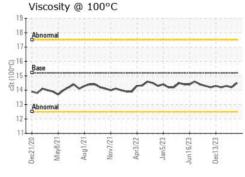
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	118	115	113	113
Visc @ 100°C	cSt	ASTM D445	15.2	14.5	14.2	14.3
Viscosity Index (VI)	Scale	ASTM D2270	134	128	126	128

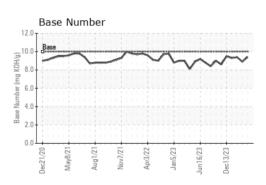
GRAPHS

Ferrous Alloys













Laboratory Sample No.

Unique Number : 11063216

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0860668 Lab Number : 06201093

Received : 05 Jun 2024 **Tested**

Diagnosed

: 07 Jun 2024 : 09 Jun 2024 - Don Baldridge

CUMMINS - PRIME POWER & IPP STRATEGIC ACCOUNTS 3850 N VICTORIA ST SHOREVIEW, MN US 55126

Contact: Harsha Padigae hpadigae@louisberger.com T: (964)780-7579134

Test Package: FLEET (Additional Tests: KV40, VI) 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)

F: x: