

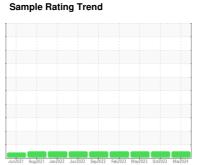
OIL ANALYSIS REPORT



COLORADO/443/EG - EXCAVATOR 20.204L [COLORADO^443^EG - EXCAVATOR]

Diesel Engine

MOBIL DELVAC 1300 SUPER15W40 (5 GAL)





NORMAL

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

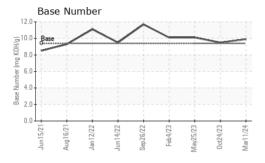
Fluid Condition

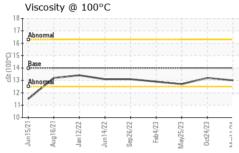
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info WC0883889 WC0859685 WC0799073 Sample Date Client Info 11 Mar 2024 24 Oct 2023 25 May 2023 25 M	OANADI E INIEGE	4 A TION			Sep2022 Feb2023 May2023 Oct20		
Sample Date	SAMPLE INFORM	TATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		WC0883889	WC0859685	WC0799073
Oil Age hrs Client Info Changed Changed <t< td=""><td>Sample Date</td><td></td><td>Client Info</td><td></td><th>11 Mar 2024</th><td>24 Oct 2023</td><td>25 May 2023</td></t<>	Sample Date		Client Info		11 Mar 2024	24 Oct 2023	25 May 2023
Cilient Info	Machine Age	hrs	Client Info		3042	2770	2411
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs			0	0	0
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limitibase current history1 history2 Iron ppm ASTM D5185m >20 0 0 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 2 1 1 0 Copper ppm ASTM D5185m >330 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	CONTAMINATION	J	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	6	4	8
Titanium	Chromium	ppm	ASTM D5185m	>20	0	0	<1
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 2 1 Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 54 52 58 Barium ppm ASTM D5185m 0 39 39 42 Manganesium ppm ASTM D5185m <1 <1 <1 <1 Calcium ppm ASTM	Nickel	ppm	ASTM D5185m	>2	0	0	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >25 2 2 1 Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 <1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 54 52 58 Barium ppm ASTM D5185m 0 39 39 42 Manganesium ppm ASTM D5185m <1 <1 <1 <1 Calcium ppm ASTM	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 <1 0 Copper ppm ASTM D5185m >330 <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 <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 <	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 <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 <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 <1 <1 <1 <1 <1 <1 <1 <1 <1	Aluminum	ppm	ASTM D5185m	>25	2	2	1
Copper ppm ASTM D5185m >330 <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 <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 <1 <1 <1 <1 <1 <1 <1 <1 <1	Lead	ppm	ASTM D5185m	>40	0	<1	0
Tin	Copper	• •	ASTM D5185m	>330	<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 0 54 52 58 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 39 39 42 Manganese ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 785 Zinc ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 225 4 5 5 Sodium ppm ASTM D5185m 22 1 2 Potassium ppm	• •		ASTM D5185m	>15	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 54 52 58 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 39 39 42 Manganese ppm ASTM D5185m 0 39 39 42 Magnesium ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 785 Zinc ppm ASTM D5185m 765 748 785 785 Zinc ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 histor	Vanadium	• •	ASTM D5185m		0	0	0
Boron	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 39 39 42 Manganese ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 22 1 2 Potassium ppm ASTM D5185m 20 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 39 39 42 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 4 5 5 Sodium ppm ASTM D5185m 20 0 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % *6 **ASTM D7624 >20 6.0 5.9 6.4 Nitration <	Boron	ppm	ASTM D5185m	0	54	52	58
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 20 0 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7845 >30 21.5 21.3 22.0	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 0 529 521 542 Calcium ppm ASTM D5185m 1601 1615 1730 Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 4 5 5 Sodium ppm ASTM D5185m 20 0 <1 2 Potassium ppm ASTM D5185m 20 0 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0	Molybdenum	ppm	ASTM D5185m	0	39	39	42
Calcium ppm ASTM D5185m 1601 1615 1730 Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 4 5 5 Sodium ppm ASTM D5185m 20 0 <1	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 765 748 785 Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1	Magnesium	ppm	ASTM D5185m	0	529	521	542
Zinc ppm ASTM D5185m 894 892 942 Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1	Calcium	ppm	ASTM D5185m		1601	1615	1730
Sulfur ppm ASTM D5185m 2843 2430 3123 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1	Phosphorus	ppm	ASTM D5185m		765	748	785
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1	Zinc	ppm	ASTM D5185m		894	892	942
Silicon ppm ASTM D5185m >25 4 5 5 Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.0 5.9 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	Sulfur		ASTM D5185m		2843	2430	3123
Sodium ppm ASTM D5185m 2 1 2 Potassium ppm ASTM D5185m >20 0 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.0 5.9 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	Silicon	ppm	ASTM D5185m	>25	4	5	5
INFRA-RED	Sodium	ppm	ASTM D5185m		2	1	2
Soot % % *ASTM D7844 >3 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.0 5.9 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	Potassium	ppm	ASTM D5185m	>20	0	<1	<1
Nitration Abs/cm *ASTM D7624 >20 6.0 5.9 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 21.5 21.3 22.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5	Nitration	Abs/cm	*ASTM D7624	>20	6.0	5.9	6.4
Oxidation Abs/.1mm *ASTM D7414 >25 19.5 19.6 19.5							
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	19.5	19.6	19.5
	Base Number (BN)	mg KOH/g	ASTM D2896	9.4	9.9	9.5	10.1



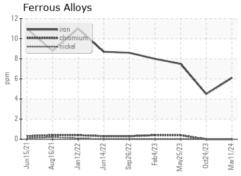
OIL ANALYSIS REPORT

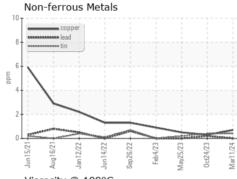


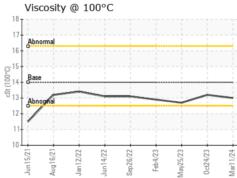


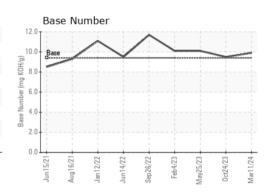
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	14	13.0	13.2	12.7













Laboratory Sample No. Lab Number : 06124201

: WC0883889

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

Received

Tested Diagnosed

Unique Number : 10938352

Test Package : CONST (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.

SHERWOOD CONSTRUCTION CO INC

3219 WEST MAY ST WICHITA, KS US 67213

Contact: DOUG KING doug.king@sherwood.net

> T: (316)617-3161 F: x:

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

: 20 Mar 2024

: 21 Mar 2024

: 21 Mar 2024 - Wes Davis