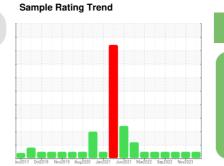


OIL ANALYSIS REPORT

Area KANSAS/15/EG - EXCAVATOR 20.139L [KANSAS^15^EG - EXCAVATOR] Component Diesel Engine

SAMPLE INFORMATION meth





CAT DIESEL ENGINE OIL 10W30 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

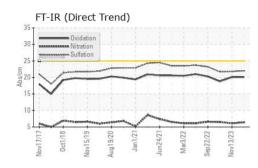
Fluid Condition

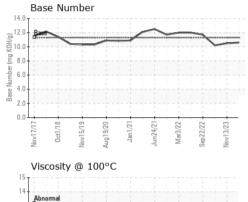
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

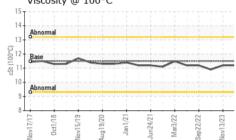
SAMPLE INFORM		method	limit/base	current	nistory i	nistory2
Sample Number		Client Info		WC0781198	WC0833759	WC0712259
Sample Date		Client Info		08 Apr 2024	13 Nov 2023	28 Mar 2023
Machine Age	hrs	Client Info		5813	5534	5029
Oil Age	hrs	Client Info		5029	505	267
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	10	12
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>25	6	3	8
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	<1	<1	1
Tin	ppm	ASTM D5185m	>15	0	0	0
Vanadium	ppm	ASTM D5185m	210	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
e da man	pp			•	0	0
		mathad	limit/bass	ourropt	biotorud	biotory 0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	145	50	52	65
Boron Barium	ppm	ASTM D5185m ASTM D5185m	145 0.0	50 0	52 2	65 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	145	50 0 41	52 2 40	65 0 44
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0	50 0 41 0	52 2 40 0	65 0 44 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248	50 0 41 0 474	52 2 40 0 470	65 0 44 1 495
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203	50 0 41 0 474 1751	52 2 40 0 470 1627	65 0 44 1 495 1695
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203 731	50 0 41 0 474 1751 1010	52 2 40 0 470 1627 872	65 0 44 1 495 1695 925
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203 731 1460	50 0 41 0 474 1751 1010 1133	52 2 40 0 470 1627 872 1049	65 0 44 1 495 1695 925 1090
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203 731	50 0 41 0 474 1751 1010	52 2 40 0 470 1627 872	65 0 44 1 495 1695 925
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203 731 1460	50 0 41 0 474 1751 1010 1133	52 2 40 0 470 1627 872 1049	65 0 44 1 495 1695 925 1090
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088	50 0 41 0 474 1751 1010 1133 2925	52 2 40 0 470 1627 872 1049 3153	65 0 44 1 495 1695 925 1090 3213
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088	50 0 41 0 474 1751 1010 1133 2925 current	52 2 40 0 470 1627 872 1049 3153 history1	65 0 44 1 495 1695 925 1090 3213 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	145 0.0 0.0 248 2203 731 1460 5088 limit/base >25	50 0 41 0 474 1751 1010 1133 2925 current 6	52 2 40 0 470 1627 872 1049 3153 history1 6	65 0 44 1 495 1695 925 1090 3213 history2 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	145 0.0 0.0 248 2203 731 1460 5088 limit/base >25	50 0 41 0 474 1751 1010 1133 2925 current 6 4	52 2 40 0 470 1627 872 1049 3153 history1 6 3	65 0 44 1 495 1695 925 1090 3213 history2 8 14
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088 Imit/base >25 >25	50 0 41 0 474 1751 1010 1133 2925 current 6 4 2	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088 Imit/base >25 >20 Imit/base >3	50 0 41 0 474 1751 1010 1133 2925 current 6 4 2 2	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2 2 history1	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1 +istory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088 Imit/base >25 >20 Imit/base >3	50 0 41 0 474 1751 1010 1133 2925 current 6 4 2 2 current 0.2	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2 <u>history1</u> 0.2	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1 kistory2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088 <i>imit/base</i> >25 20 <i>imit/base</i> >20	50 0 41 0 474 1751 1010 1133 2925 <i>current</i> 6 4 2 <i>current</i> 0.2 6.4	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2 history1 0.2 6.1	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1 kistory2 0.2 6.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	145 0.0 248 2203 731 1460 5088 imit/base >25 20 imit/base >3 >20 >30	50 0 41 0 474 1751 1010 1133 2925 Current 6 4 2 2 Current 0.2 6.4 22.0	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2 history1 0.2 6.1 21.8 history1	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1 ×1 history2 0.2 6.5 21.7 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	145 0.0 248 2203 731 1460 5088 imit/base >25 imit/base >3 >20 imit/base >3 30	50 0 41 0 474 1751 1010 1133 2925 <u>current</u> 6 4 2 2 <u>current</u> 0.2 6.4 22.0	52 2 40 0 470 1627 872 1049 3153 history1 6 3 2 <u>history1</u> 0.2 6.1 21.8	65 0 44 1 495 1695 925 1090 3213 history2 8 14 <1 kistory2 0.2 6.5 21.7



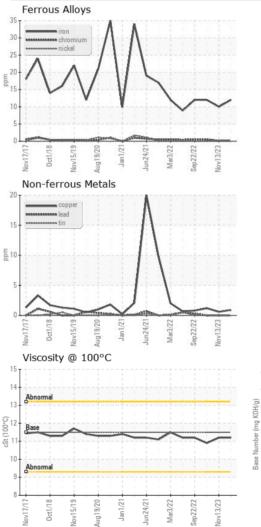
OIL ANALYSIS REPORT

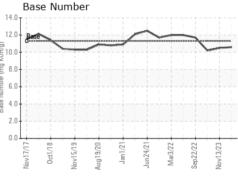






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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 PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	11.5	11.2	11.2	10.9
GRAPHS						





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 SHERWOOD CONSTRUCTION CO INC Sample No. : WC0781198 Received : 17 Apr 2024 3219 WEST MAY ST Lab Number : 06151843 Tested : 18 Apr 2024 WICHITA, KS Unique Number : 10981921 Diagnosed : 18 Apr 2024 - Wes Davis US 67213 Test Package : CONST (Additional Tests: TBN) Contact: DOUG KING Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. doug.king@sherwood.net * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (316)617-3161 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: x:

Submitted By: RANDY ROBERTS

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