

OIL ANALYSIS REPORT

Area OKLAHOMA/102/TR/UNKNOWN 48.89L [OKLAHOMA^102^TR^UNKNOWN]

Diesel Engine Fluid NOT GIVEN (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: 5051 hours)

Wear

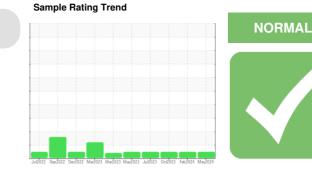
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

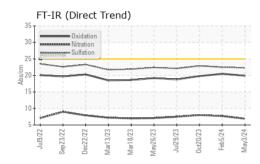
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

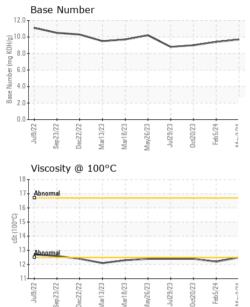


SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0864416	WC0864316	WC0819920
Sample Date		Client Info		03 May 2024	05 Feb 2024	20 Oct 2023
Machine Age	hrs	Client Info		5051	4432	3758
Oil Age	hrs	Client Info		1782	1782	1782
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	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	7	10	17
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	<1	1	<1
Lead	ppm	ASTM D5185m	>40	2	3	4
Copper	ppm	ASTM D5185m	>330	13	31	35
Tin	ppm	ASTM D5185m	>15	2	3	4
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 55	history1 49	history2 29
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	55	49	29
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	55 0	49 0	29 0
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	55 0 52	49 0 40	29 0 35
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	55 0 52 <1	49 0 40 0	29 0 35 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	55 0 52 <1 501	49 0 40 0 463	29 0 35 <1 456
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	55 0 52 <1 501 1758	49 0 40 0 463 1562	29 0 35 <1 456 1624
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	limit/base	55 0 52 <1 501 1758 789	49 0 40 0 463 1562 756	29 0 35 <1 456 1624 643
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	limit/base	55 0 52 <1 501 1758 789 936	49 0 40 0 463 1562 756 885	29 0 35 <1 456 1624 643 890
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		55 0 52 <1 501 1758 789 936 2932	49 0 40 0 463 1562 756 885 2420	29 0 35 <1 456 1624 643 890 2357
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	limit/base	55 0 52 <1 501 1758 789 936 2932 current	49 0 40 0 463 1562 756 885 2420 history1	29 0 35 <1 456 1624 643 890 2357 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 ASTM D5185m	limit/base	55 0 52 <1 501 1758 789 936 2932 2932 current 4	49 0 40 0 463 1562 756 885 2420 history1 4	29 0 35 <1 456 1624 643 890 2357 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25	55 0 52 <1 501 1758 789 936 2932 current 4 2	49 0 40 0 463 1562 756 885 2420 history1 4 0	29 0 35 <1 456 1624 643 890 2357 history2 5 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	55 0 52 <1 501 1758 789 936 2932 current 4 2 2 4	49 0 40 0 463 1562 756 885 2420 history1 4 0 2	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0
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	limit/base >25 >20 limit/base	55 0 52 <1 501 1758 789 936 2932 current 4 2 2 4 2	49 0 40 0 463 1562 756 885 2420 history1 4 0 2 2 history1	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	55 0 52 <1 501 1758 789 936 2932 current 4 2 4 2 4 current 0.2	49 0 40 0 463 1562 756 885 2420 history1 4 0 2 <u>history1</u> 0.3	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0 <i>history2</i> 0.6
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	limit/base >25 >20 limit/base >3 >20	55 0 52 <1 501 1758 789 936 2932 current 4 2 2 4 current 0.2 6.9	49 0 40 0 463 1562 756 885 2420 history1 4 0 2 history1 0.3 7.7	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0 0 history2 0.6 8.0
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	Imit/base >25 >20 Imit/base >3 >20 >30	55 0 52 <1 501 1758 789 936 2932 current 4 2 3 4 current 0.2 6.9 22.3	49 0 40 0 463 1562 756 885 2420 history1 4 0 2 <u>history1</u> 0.3 7.7 22.5	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0 history2 0.6 8.0 22.9
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 *ASTM D7844	limit/base >25 >20 limit/base >3 >20 >30 >30 limit/base	55 0 52 <1 501 1758 789 936 2932 current 4 2 2 4 current 0.2 6.9 22.3 current	49 0 40 0 463 1562 756 885 2420 history1 4 0 2 history1 0.3 7.7 22.5 history1	29 0 35 <1 456 1624 643 890 2357 history2 5 1 0 0 history2 0.6 8.0 22.9 history2



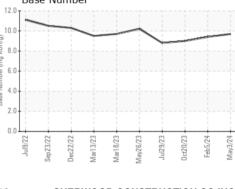
OIL ANALYSIS REPORT





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		12.5	12.2	12.4
GRAPHS						

Ferrous Alloys 18 16 14 12 10 Ο Jul9/22 ep23/22 Mar18/23 ah 5/74 av3/74 Dec22/22 Mar13/23 Mav26/23 Non-ferrous Metals 700 600 lead 500 400 ppm 300 200 100 0 lav26/23 CC/6111 en73/77 Mar13/73 av3/24 CICC20 Viscosity @ 100°C Base Number 18 12.0 17 10. iber (mg KOH/g) 16 8 (cSt (100°C) 6.0 4.0 13 Base 2 (12 11-0.0 May3/24 -Jul9/22 ep23/22 Jul9/22 -eb5/24 Sep23/22 Var18/23 Aav26/23)ec22/22 Dec22/22 Mar13/23



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 SHERWOOD CONSTRUCTION CO INC Sample No. : WC0864416 Received : 13 May 2024 3219 WEST MAY ST Lab Number : 06176887 Tested : 14 May 2024 WICHITA, KS Unique Number : 11022940 Diagnosed : 14 May 2024 - Sean Felton 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:

Report Id: SHEWIC [WUSCAR] 06176887 (Generated: 05/14/2024 17:57:21) Rev: 1

Submitted By: LOUIS BRESHEARS

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