

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **TORO 30881/4500-D 115626 (S/N A181121144)** Hydrostatic Fluid TRC UTF RED (8 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		TR06159113	TR05868629	TR05454810
Sample Date		Client Info		23 Apr 2024	05 Jun 2023	25 Jan 2022
Machine Age	hrs	Client Info		2669	2200	1640
Oil Age	hrs	Client Info		1854	1403	825
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	33	36	32
Chromium	ppm	ASTM D5185m	>10	0	<1	<1
Nickel	ppm	ASTM D5185m		0	<1	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m		<1	0	<1
Aluminum	ppm	ASTM D5185m	>50	4	4	4
Lead	ppm	ASTM D5185m	>50	9	8	6
Copper	ppm	ASTM D5185m	>200	14	13	10
Tin	ppm	ASTM D5185m	>10	0	<1	<1
Antimony	ppm	ASTM D5185m				2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 83	history1 91	history2 102
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	83	91	102
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	83 0	91 0 <1 <1	102 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	83 0 0	91 0 <1	102 0 1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	83 0 0 <1	91 0 <1 <1	102 0 1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		83 0 0 <1 8	91 0 <1 <1 8 2734 1214	102 0 1 <1 15
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	4200	83 0 0 <1 8 2654	91 0 <1 <1 8 2734 1214 1536	102 0 1 <1 2995 1363 1639
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 ASTM D5185m	4200 1100	83 0 0 <1 8 2654 1158	91 0 <1 <1 8 2734 1214	102 0 1 <1 15 2995 1363
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	4200 1100	83 0 0 <1 8 2654 1158 1418	91 0 <1 <1 8 2734 1214 1536	102 0 1 <1 2995 1363 1639
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	4200 1100 2000	83 0 0 <1 8 2654 1158 1418 6169	91 0 <1 <1 8 2734 1214 1536 6213	102 0 1 <1 15 2995 1363 1639 6486
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 ASTM D5185m	4200 1100 2000 limit/base	83 0 0 <1 8 2654 1158 1418 6169 current	91 0 <1 <1 8 2734 1214 1536 6213 history1	102 0 1 <1 2995 1363 1639 6486 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	4200 1100 2000 limit/base >50	83 0 0 <1 8 2654 1158 1418 6169 current 12	91 0 <1 <1 8 2734 1214 1536 6213 history1 13	102 0 1 <1 5 2995 1363 1639 6486 history2
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 method ASTM D5185m	4200 1100 2000 limit/base >50 >20 limit/base	83 0 0 <1 8 2654 1158 1418 6169 <u>current</u> 12 4	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2	102 0 1 <1 15 2995 1363 1639 6486 history2 15 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	4200 1100 2000 limit/base >50 >20 limit/base >10000	83 0 0 <1 8 2654 1158 1418 6169 <u>current</u> 12 4 0 <u>current</u>	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2 2 2	102 0 1 <1 2995 1363 1639 6486 history2 15 3 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	4200 1100 2000 limit/base >50 >20 limit/base >10000	83 0 0 <1 8 2654 1158 1418 6169 <u>current</u> 12 4 0 0	91 0 <1 8 2734 1214 1536 6213 history1 13 2 2 2 history1	102 0 1 <1 2995 1363 1639 6486 history2 15 3 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	4200 1100 2000 limit/base >50 >20 limit/base >10000	83 0 0 <1 8 2654 1158 1418 6169 Current 12 4 0 Current 5297 162 19	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2 2 2 history1 2470 116 13	102 0 1 <1 2995 1363 1639 6486 history2 15 3 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	4200 1100 2000 limit/base >50 >20 limit/base >20 limit/base >200 >2500 >2500 >2500 >320	83 0 0 <1 8 2654 1158 1418 6169 <u>current</u> 12 4 0 <u>current</u> 5297 162	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2 2 2 history1 2470 116	102 0 1 <1 15 2995 1363 1639 6486 history2 15 3 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium PtLUID CLEANLIN Particles >4µm Particles >21µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	4200 1100 2000 limit/base >50 >20 limit/base >20 limit/base >10000 >2500 >320 >320 >80 >20	83 0 0 <1 8 2654 1158 1418 6169 Current 12 4 0 Current 5297 162 19 5 0	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2 2 2 history1 2470 116 13 4 0	102 0 1 <1 15 2995 1363 1639 6486 history2 15 3 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	4200 1100 2000 limit/base >50 >20 limit/base >20 limit/base >10000 >2500 >320 >320 >80 >20	83 0 0 <1 8 2654 1158 1418 6169 Current 12 4 0 Current 5297 162 19 5	91 0 <1 <1 8 2734 1214 1536 6213 history1 13 2 2 2 history1 2470 116 13 4	102 0 1 <1 5 2995 1363 1639 6486 history2 15 3 0 history2



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Abnormal		FLUID DEGRAD		method	limit/base	current	history1	history
		Acid Number (AN)	mg KOH/g	ASTM D8045		1.93	1.12	1.02
Base		VISUAL		method	limit/base	current	history1	history
Abnormal		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
53 53	24	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Jan 25/22 Jun 5/23	Apr23/24	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
7	4	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Particle Trend		Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Abnormal 4µm		Odor	scalar	*Visual	NORML	NORML	NORML	NORML
α		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPER	TIES	method	limit/base	current	history1	history
-		Visc @ 40°C	cSt	ASTM D445	55	44.3		
	2	Visc @ 100°C	cSt	ASTM D445		7.2	7.2	7.4
Jan 25/22 Jun 5/23	Apr23/24	Viscosity Index (VI)	Scale	ASTM D2270	157	123		
	4	SAMPLE IMAGE		method	limit/base	current	history1	history
Viscosity @ 100°C				meanou				History
Abnormal		Color						po los -
Base		Color						no image
							No.	
Abnormal					4		1 Carl	
		Bottom				AT STON		no image
3								
Jan 25/22 Jun 5/23	Apr23/24	GRAPHS						_
-, -, -, -, -, -, -, -, -, -, -, -, -, -								
						Particle Count		
Viscosity @ 40°C		Ferrous Alloys			491,520	Particle Count		
Viscosity @ 40°C		Ferrous Alloys			491,520	I		
Abnormal		Ferrous Alloys				Severe		
Viscosity @ 40°C Abnormal Base		Ferrous Alloys	5		122,880 30,720	Severe Abnormal		
Abnormal Base		Ferrous Alloys	lun5/23		122,880 30,720	Severe Abnormal		
Abnormal		Ferrous Alloys	Jun5/23		122,880 30,720	Severe	•	
Abnomal Base Abnomal		Ferrous Alloys			122,880 30,720 100 7,680 7,680 7,680 7,680 7,680 8,00 8,00 8,00 8,00 1,920 8,00 8,00 8,00 8,00 8,00 8,00 8,00 8,	Severe Abnormal		
Abnomal Base Abnomal		Ferrous Alloys			122,880 30,720 +72(22/dV +72(22/dV +7680 +7680 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1	Severe		
Abnomal Base		Ferrous Alloys			122,880 30,720 100 7,680 7,680 7,680 7,680 7,680 8,00 8,00 8,00 8,00 1,920 8,00 8,00 8,00 8,00 8,00 8,00 8,00 8,	Severe		
Abnormal Base Abnormal 72/92 Ump	RC cc4	Ferrous Alloys	S		122.880 30,720 (m 7,680 HZCE2UTY Hat 1,920 septime to a septime to a 120 30 30 720 HzCE2UTY Hat 1,920 10 30 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Severe		
Abnormal Base Abnormal ZZYRGZWER Particle Trend	VCC-V	Ferrous Alloys	S		122.880 30,720 (m 7,680 HZCE2UTY Hat 1,920 septime to a septime to a 120 30 30 720 HzCE2UTY Hat 1,920 10 30 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Severe		
Abnormal Abnormal Abnormal Particle Trend	acccA	Ferrous Alloys			122,880 30,720 +72(22/dV +72(22/dV +7680 +7680 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1,9200 +1	Abnormal	14μ 21μ	
Abnormal Base Abnormal 77/1974 Particle Trend	Procession of the second se	Ferrous Alloys	S		122.880 30.720 (m 7.680 b7/cc2/dv 480 1.920 480 120 120 8 b7/cc2/dv 480 120 8 b7/cc2/dv 480 120 120 120 120 120 120 120 120 120 12	Severe Abnormal	14μ 21μ	
Abnormal Abnormal Abnormal Particle Trend	Backer A	Ferrous Alloys	S		122.880 30.720 (m 7.680 b7/cc2/dv 480 1.920 480 120 120 8 b7/cc2/dv 480 120 8 b7/cc2/dv 480 120 120 120 120 120 120 120 120 120 12	Severe Abnormal	14μ 21μ	
Abnormal Abnormal Abnormal Particle Trend	Participant and the second sec	Ferrous Alloys	S		122.880 30.720 (m 7.680 b7/cc2/dv 480 1.920 480 120 120 8 b7/cc2/dv 480 120 8 b7/cc2/dv 480 120 120 120 120 120 120 120 120 120 12	Severe Abnormal	14μ 21μ	
Abnomal Base Abnomal Particle Trend	Scc. A	Ferrous Alloys	S		122.880 30.720 (m 7.680 b7/cc2/dv 480 1.920 480 120 120 8 b7/cc2/dv 480 120 8 b7/cc2/dv 480 120 120 120 120 120 120 120 120 120 12	Severe Abnormal	14μ 21μ	
Abnomal Base Abnomal Particle Trend		Ferrous Alloys	S		122.880 30,720 (m 7,680 HZCE2UTY Hat 1,920 septime to a septime to a 120 30 30 720 HzCE2UTY Hat 1,920 10 30 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Severe Abnormal	14μ 21μ	

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