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Machine Condition MARGINAL

Lubricant Condition NORMAL

Machine Name: 2021 Ram TRX

Analysis Report

Component Information

Machine Type: Gasoline Engine
Sump Size: Unknown
Lubricant: UNKNOWN/5W40
Machine MFG: OTHER
Machine MOD: 1500 TRX
Machine Criticality: Not Specified

Sample Information

Received: 10/28/2024
Report: 10/28/2024
Sample No.: 9625 - 1 - 1 -5
Analyst/Test: MKB / AFPAT2
Sample Source Rating: Not Specified

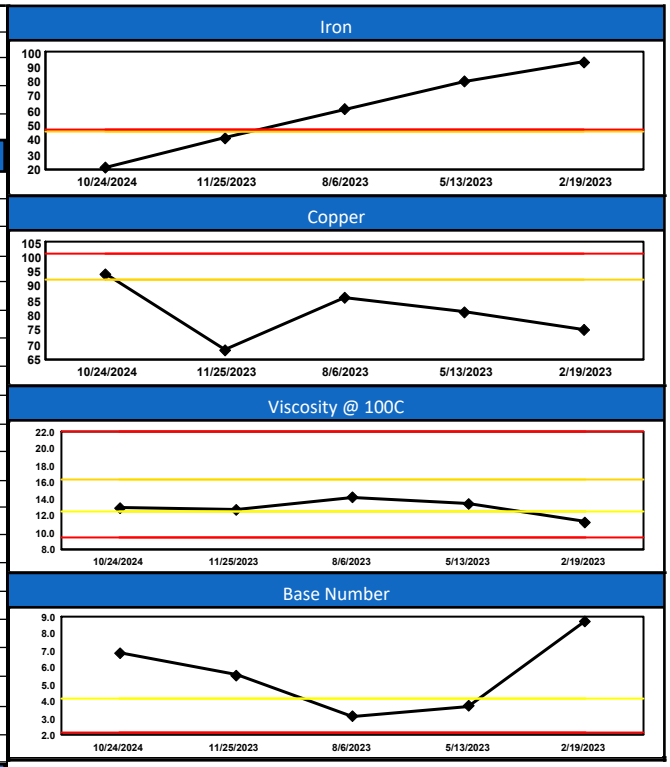
Customer Information

PROBLEMS
Excessive Wear

COMMENTS The high level of wear (copper) suggests that an abnormal wear mode exists. Check this engine for excessive noise, vibration or high temperature.

CUSTOMER NOTES

		NEW OIL	10/24/2024	11/25/2023	8/6/2023	5/13/2023	2/19/2023
Date Sampled		NEW OIL	10/24/2024	11/25/2023	8/6/2023	5/13/2023	2/19/2023
Lab No		1333217	5195607	4728166	4569603	4475194	4340327
Machine / Lube Cond.			M / N	N / N	N / M	N / M	N / M
Lube Hours			2969	2864	2784	2856	1715
Machine Hours			23640	20671	17807	15023	12167
ELEMENTAL SPECTROSCOPY (ppm) ASTM D5185 Mod (-) indicates below detection limit							
Wear Metals	Iron	-	21	41	61	80	93
	Copper	-	94	68	86	81	75
	Lead	-	-	-	-	-	-
	Aluminum	-	3	3	4	2	-
	Tin	-	-	-	-	-	-
	Nickel	-	-	-	-	-	-
	Chromium	-	-	-	-	-	-
	Titanium	-	-	-	-	-	-
	Vanadium	-	-	-	-	-	-
	Silver	2	-	-	-	-	-
Additives	Calcium	2522	2416	2029	1510	1628	1381
	Magnesium	14	892	715	224	250	1064
	Phosphorus	856	815	731	871	891	813
	Zinc	972	982	882	1064	1086	925
	Barium	-	-	-	-	-	-
	Molybdenum	-	686	551	211	174	106
Contaminants	Silicon	5	5	5	9	7	11
	Boron	92	68	82	241	361	197
	Lithium	-	-	-	-	-	-
	Sodium	-	12	10	11	11	12
	Potassium	-	-	-	-	-	-
FTIR SPECTROSCOPY (Indexing Numbers) ASTM E2412							
Oxidation		7	36	45	108	92	16
Glycol		0	0	0	0	0	0
Soot		2	3	3	3	3	3
Fuel Dilution		0	0	0	0	0	0
PARTICLE COUNT (particles per ml) ISO 4406:99							
Pore Block Particle Count Alarm Limits Marginal (21/18/15)							
Pore Block ISO Code		16/15/11	14/13/9	13/11/7	13/12/8	17/15/12	18/17/13
>4 Micron		454	150	42	77	800	2319
>6 Micron		176	58	16	29	311	901
>14 Micron		13	4	1	2	23	68
>25 Micron		6	2	0	1	10	30
>50 Micron		0	0	0	0	1	3
>100 Micron		0	0	0	0	0	0
VISCOSITY (centistokes) ASTM D445 MOD							
Viscosity@100°C		14.2	12.9	12.7	14.2	13.4	11.2
BASE NUMBER (mg KOH/g) † - ASTM D4739 ‡ - IWI-390							
Base Number		8.33 †	6.83 ‡	5.50 ‡	3.09 †	3.71 ‡	8.72 ‡
WATER (%) a-ASTM D6304C b-IWI-134* c-Crackle d-IWI-135* e-IWI-370*							
Water			NEG (c)	NEG (c)	NEG (c)	0.0706 (a)	NEG (c)
FUEL DILUTION BY GC (%) ASTM D7593							
Fuel Dilution		0	1.7	1.9	1.6	1.8	2.1



Testing performed by Eurofins TestOil. This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by the ANSI-ANAB National Accreditation Board. Refer to certificate and scope of accreditation L2221. (e) -Estimated sample date. (*) - Not in scope of accreditation. Zack Schmidtke assumes sole responsibility for the application of and reliance upon results and recommendations reported by Eurofins TestOil, whose obligation is limited to good faith performance. Samples tested as received.

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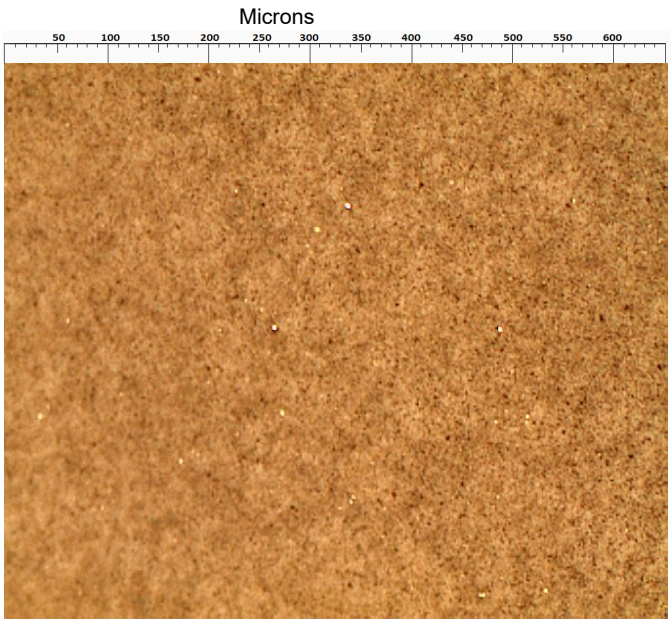
Machine Condition	MARGINAL
Lubricant Condition	NORMAL

Machine Name: 2021 Ram TRX

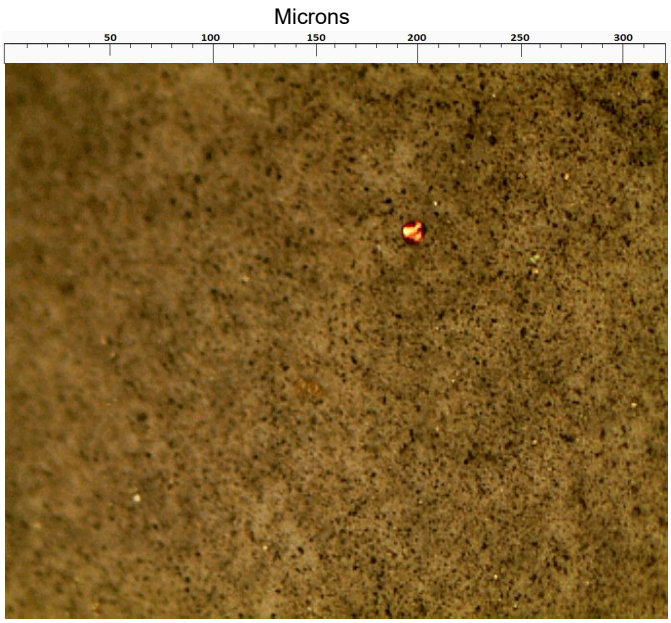
Wear Particle Analysis Report

	Trace	Light	Moderate	Heavy	Max. Size	Particle Composition
Rubbing Wear					5-15	Ferrous,Copper Alloy
Rolling Contact						
Sliding Wear						
Rolling/Sliding Wear						
Cutting Wear						
Chunks						
Spheres						
Corrosion						
Dark Metallic Oxides						
Red Oxides						
Dust/Dirt						
Other Contaminants						
Oxidation By-Products						

Observations:Analytical microscopy did not detect abnormal particles for this sample.



100x Rubbing wear & dust/dirt.



200x Rubbing wear & dust/dirt.

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Lab No. 5195607