



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL



Area
Store 2 - Beaver [RO#146800]
Machine Id
JOHN DEERE 450D FF450DX913485
Component
Hydraulic System
Fluid
HITACHI HYDRAULIC SUPER EX 46HN (148 GAL)

RECOMMENDATION

Recommend drain oil if not already done. Reduce drain interval to 2000 hours or drain and flush and use recommended zinc free oil.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LEC0046808	LEC0042043	LEC0022291
Sample Date		Client Info		10 Jan 2024	06 Sep 2023	15 Jul 2021
Machine Age	hrs	Client Info		12393	11840	11375
Oil Age	hrs	Client Info		12393	805	340
Filter Age	hrs	Client Info		0	805	340
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				ABNORMAL	ABNORMAL	NORMAL

WEAR

All component wear rates are normal.

PQ		ASTM D8184	>50	16	12	17
Iron	ppm	ASTM D5185m	>32	9	8	6
Chromium	ppm	ASTM D5185m	>9	0	0	0
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	<1	0
Lead	ppm	ASTM D5185m	>28	4	3	4
Copper	ppm	ASTM D5185m	>50	52	49	51
Tin	ppm	ASTM D5185m	>5	1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

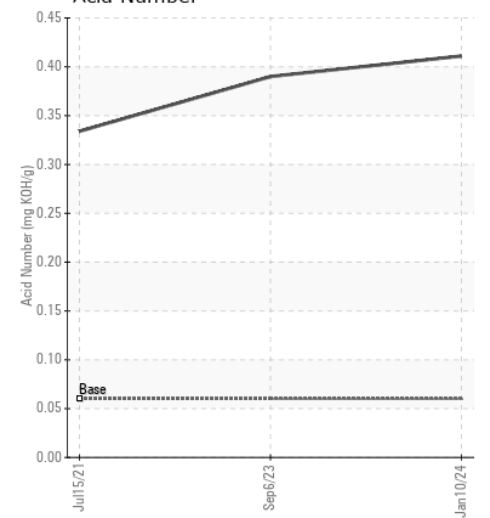
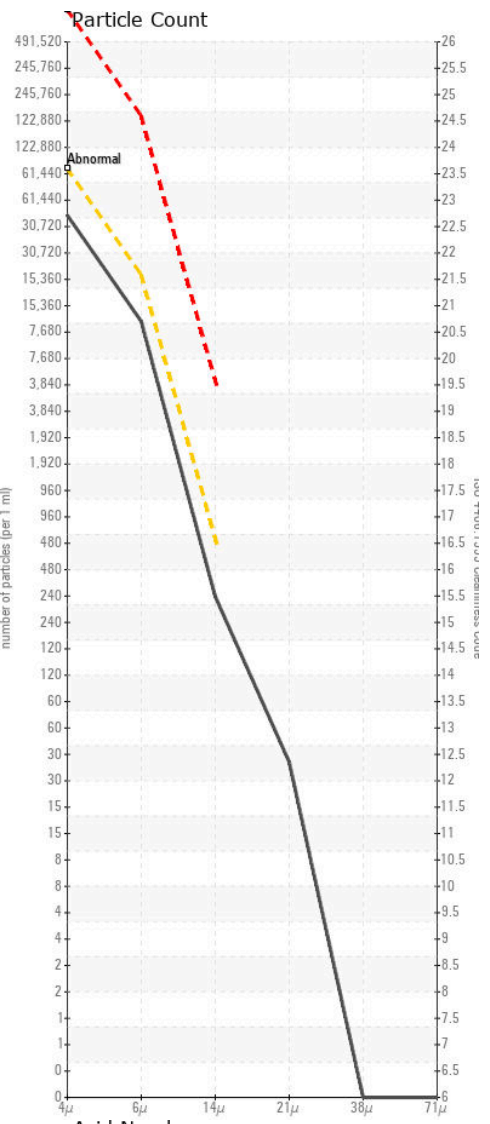
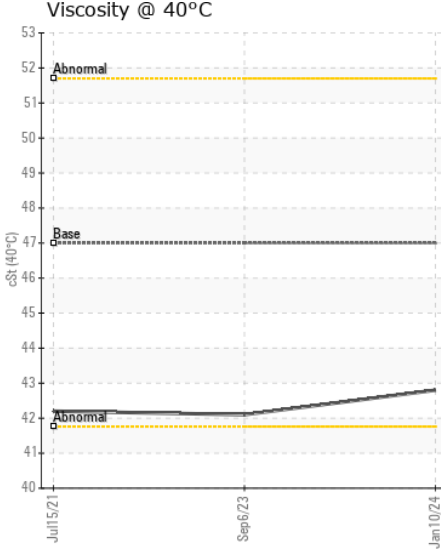
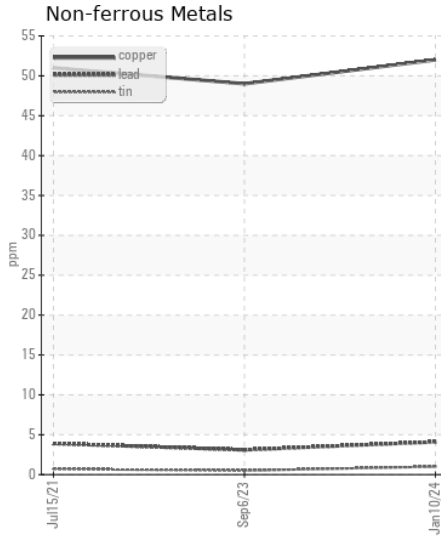
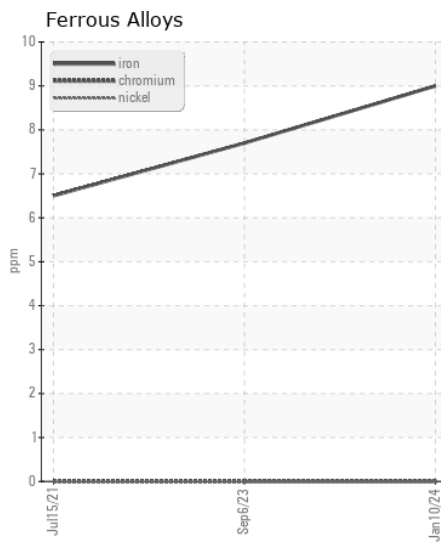
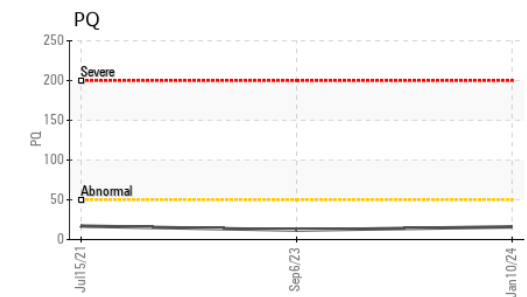
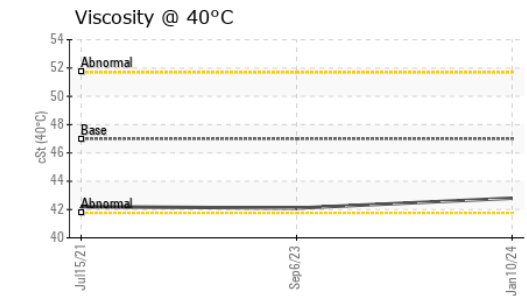
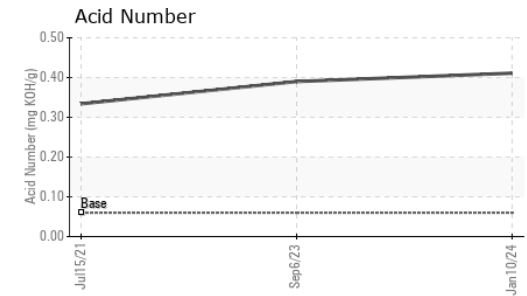
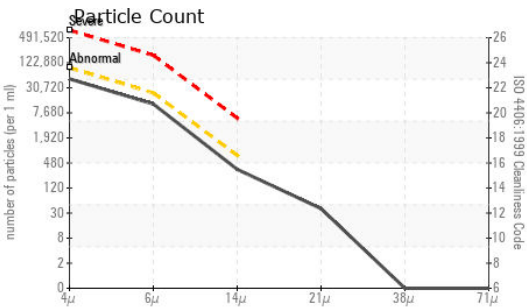
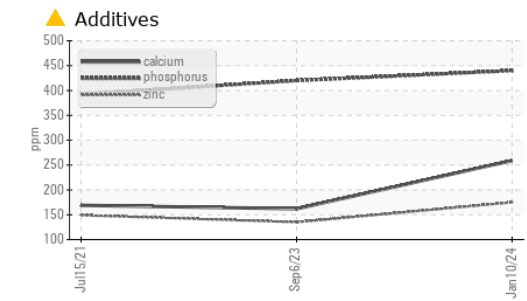
The amount and size of particulates present in the system are acceptable.

Silicon	ppm	ASTM D5185m	>11	3	3	2
Potassium	ppm	ASTM D5185m	>20	1	<1	0
Water		WC Method	>0.075	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>80000	43539	26117	10378
Particles >6µm		ASTM D7647	>20000	10862	6025	1437
Particles >14µm		ASTM D7647	>640	297	218	81
Particles >21µm		ASTM D7647	>160	34	27	18
Particles >38µm		ASTM D7647	>40	0	0	1
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>23/21/16	23/21/15	22/20/15	21/18/14
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	>0.075	NEG	NEG	NEG

FLUID CONDITION

Zinc level above manufacturer's recommendations. The AN level is acceptable for this fluid.

Sodium	ppm	ASTM D5185m	>21	0	<1	<1
Boron	ppm	ASTM D5185m		0	0	1
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		<1	<1	1
Manganese	ppm	ASTM D5185m		<1	0	<1
Magnesium	ppm	ASTM D5185m		8	0	5
Calcium	ppm	ASTM D5185m		259	162	169
Phosphorus	ppm	ASTM D5185m	827	440	420	392
Zinc	ppm	ASTM D5185m	0	▲ 175	▲ 135	149
Sulfur	ppm	ASTM D5185m	13	1016	966	707
Acid Number (AN)	mg KOH/g	ASTM D8045	0.06	0.411	0.39	0.334
Visc @ 40°C	cSt	ASTM D445	47	42.8	42.1	42.2



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LEC0046808 **Received** : 11 Jan 2024
Lab Number : 06057977 **Diagnosed** : 12 Jan 2024
Unique Number : 10829359 **Diagnostician** : Doug Bogart
Test Package : CONST (Additional Tests: PQ)

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