



WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL



Machine Id
JOHN DEERE 220DW 1FF220DWVDD041195

Component
Hydraulic System

Fluid
HITACHI HYDRAULIC SUPER EX 46HN (45 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		JR0201486	JR0175887	JR0118459
Sample Date		Client Info		02 Feb 2024	05 Jun 2023	11 Mar 2022
Machine Age	hrs	Client Info		3446	3020	2803
Oil Age	hrs	Client Info		3446	3020	0
Filter Age	hrs	Client Info		426	255	0
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL

WEAR

All component wear rates are normal.

PQ		ASTM D8184	>50	21	16	17
Iron	ppm	ASTM D5185m	>32	15	12	17
Chromium	ppm	ASTM D5185m	>9	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum	ppm	ASTM D5185m	>9	0	<1	<1
Lead	ppm	ASTM D5185m	>28	0	0	<1
Copper	ppm	ASTM D5185m	>50	5	5	6
Tin	ppm	ASTM D5185m	>5	0	<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

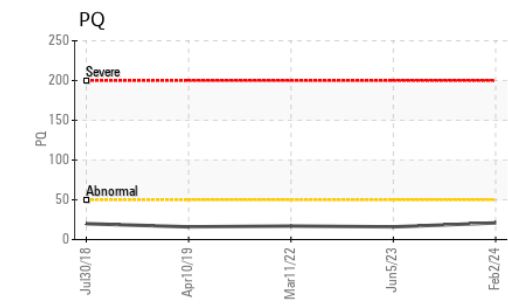
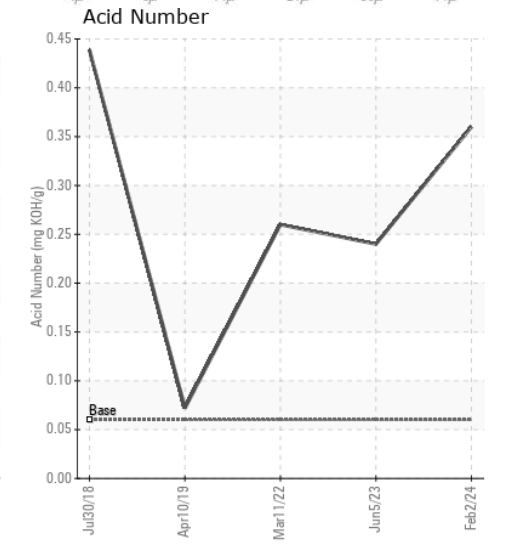
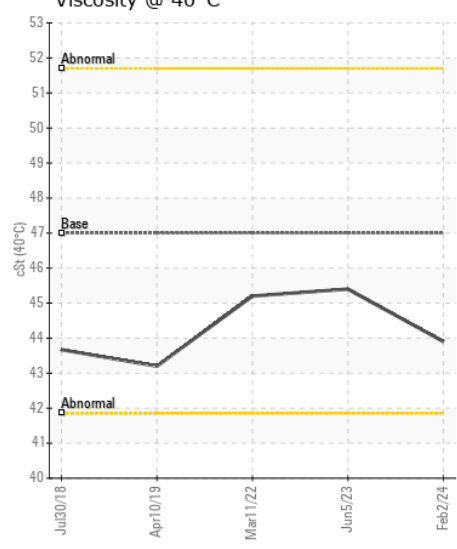
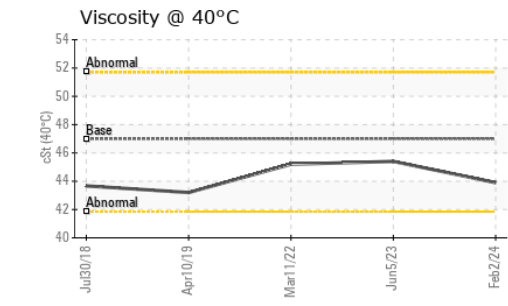
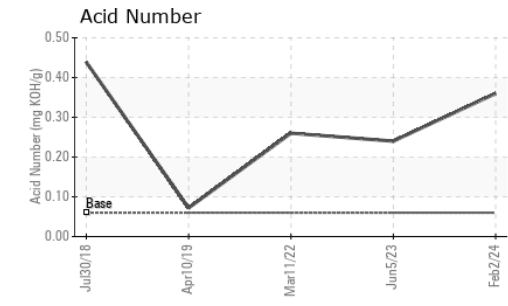
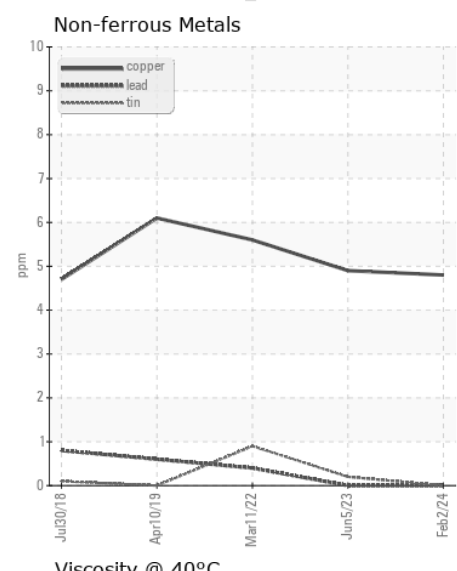
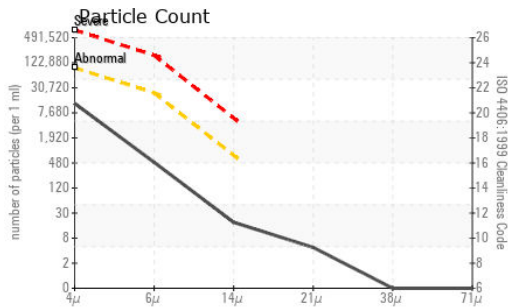
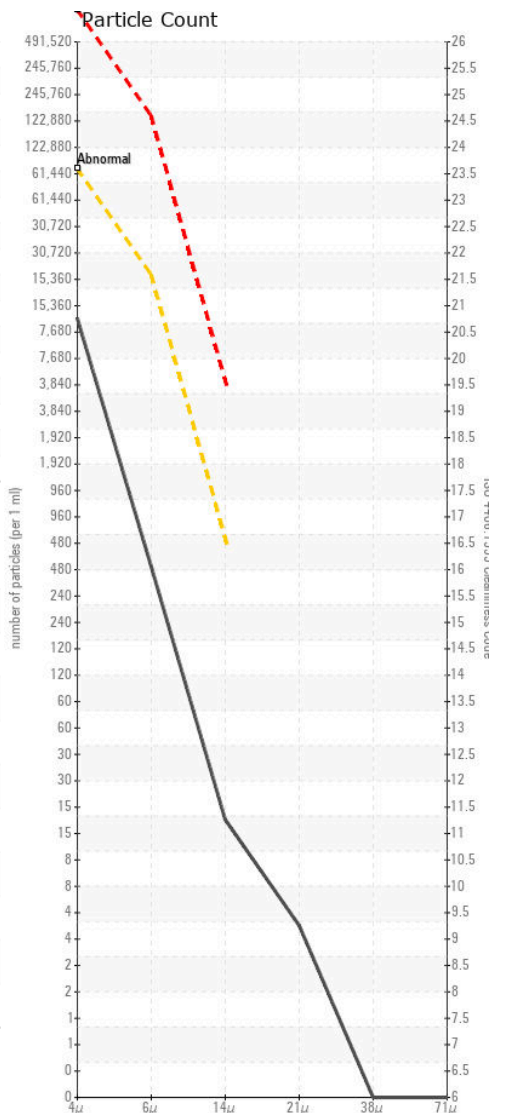
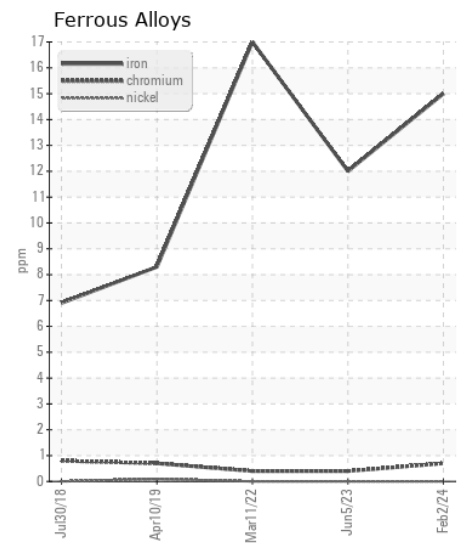
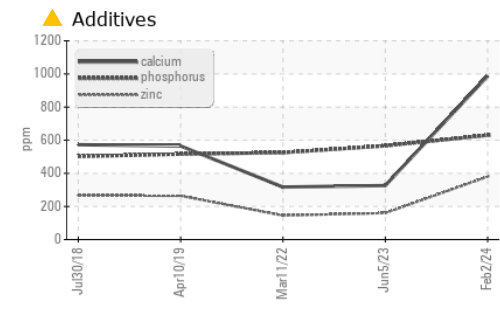
The amount and size of particulates present in the system are acceptable.

Silicon	ppm	ASTM D5185m	>11	3	1	2
Potassium	ppm	ASTM D5185m	>20	0	0	0
Water		WC Method	>0.075	NEG	NEG	NEG
Particles >4µm		ASTM D7647	>80000	11301	21878	3434
Particles >6µm		ASTM D7647	>20000	438	5090	172
Particles >14µm		ASTM D7647	>640	16	407	6
Particles >21µm		ASTM D7647	>160	4	96	1
Particles >38µm		ASTM D7647	>40	0	4	0
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>23/21/16	21/16/11	22/20/16	19/15/10
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	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	1	1	0
Boron	ppm	ASTM D5185m		2	0	3
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		1	<1	<1
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		13	1	0
Calcium	ppm	ASTM D5185m		987	326	317
Phosphorus	ppm	ASTM D5185m	827	630	566	525
Zinc	ppm	ASTM D5185m	0	▲ 380	▲ 160	▲ 145
Sulfur	ppm	ASTM D5185m	13	1947	467	323
Acid Number (AN)	mg KOH/g	ASTM D8045	0.06	0.36	0.24	0.26
Visc @ 40°C	cSt	ASTM D445	47	43.9	45.4	45.2



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0201486 **Received** : 09 Feb 2024
Lab Number : 06084694 **Tested** : 12 Feb 2024
Unique Number : 10872139 **Diagnosed** : 12 Feb 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: PQ)

JRE - ASHEVILLE
 101 BRUCE DRIVE
 ASHEVILLE, NC
 US 28806
 Contact: Randy Warren
 randy.warren@jamesriverequipment.com
 T: (528)667-0176
 F: (828)667-4865

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)