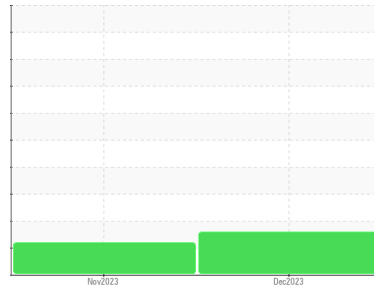




OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Machine Id
DOOSAN CPC Engine (S/N P1409080006)

Component
1 Natural Gas Engine

Fluid
CHEVRON HDAX LOW ASH 15W40 (12 GAL)

DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates (2 to 100 microns in size) present in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KL0013163	KL0011508	---
Sample Date	Client Info		05 Dec 2023	20 Nov 2023	---
Machine Age	hrs	Client Info	36830	35644	---
Oil Age	hrs	Client Info	36830	36544	---
Oil Changed	Client Info		N/A	N/A	---
Sample Status			ABNORMAL	ABNORMAL	---

CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.1	NEG	NEG	---

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>50	7	10	---
Chromium	ppm	ASTM D5185m	>4	2	3	---
Nickel	ppm	ASTM D5185m	>2	<1	<1	---
Titanium	ppm	ASTM D5185m		<1	<1	---
Silver	ppm	ASTM D5185m	>3	0	0	---
Aluminum	ppm	ASTM D5185m	>9	2	<1	---
Lead	ppm	ASTM D5185m	>30	<1	<1	---
Copper	ppm	ASTM D5185m	>35	5	15	---
Tin	ppm	ASTM D5185m	>4	0	<1	---
Vanadium	ppm	ASTM D5185m		0	0	---
Cadmium	ppm	ASTM D5185m		0	<1	---

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<1	4	---
Barium	ppm	ASTM D5185m		0	<1	---
Molybdenum	ppm	ASTM D5185m		5	10	---
Manganese	ppm	ASTM D5185m		<1	<1	---
Magnesium	ppm	ASTM D5185m		0	13	---
Calcium	ppm	ASTM D5185m		1396	1538	---
Phosphorus	ppm	ASTM D5185m	270	318	359	---
Zinc	ppm	ASTM D5185m	320	440	457	---
Sulfur	ppm	ASTM D5185m		3360	2970	---

CONTAMINANTS

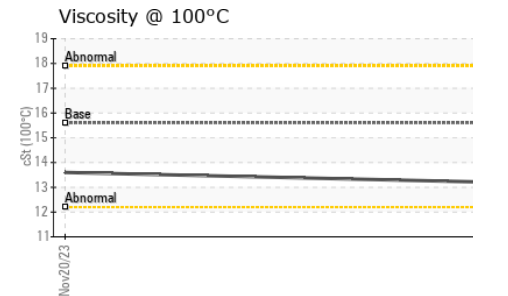
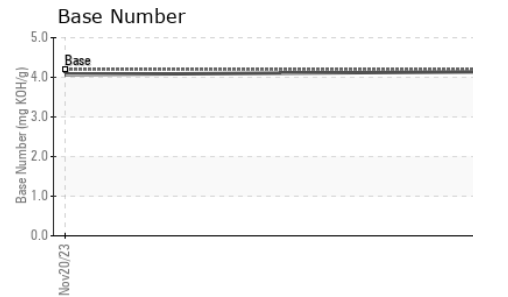
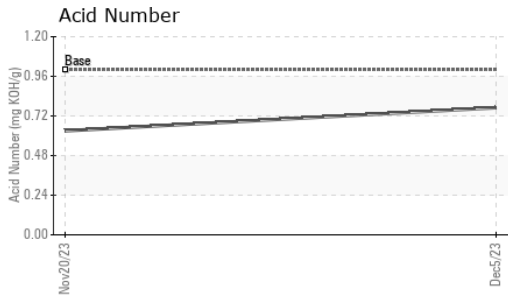
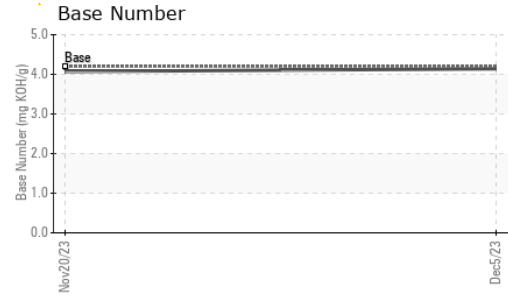
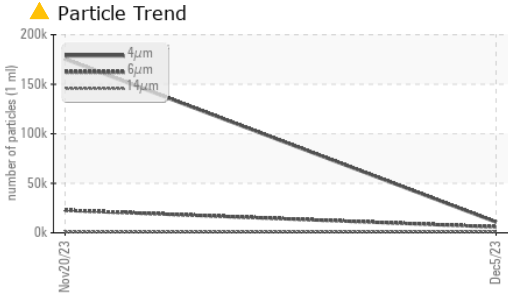
	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>+100	4	3	---
Sodium	ppm	ASTM D5185m		0	0	---
Potassium	ppm	ASTM D5185m	>20	2	2	---

INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0	0	---
Nitration	Abs/cm	*ASTM D7624	>20	5.5	6.4	---
Sulfation	Abs.1mm	*ASTM D7415	>30	14.7	15.7	---



OIL ANALYSIS REPORT



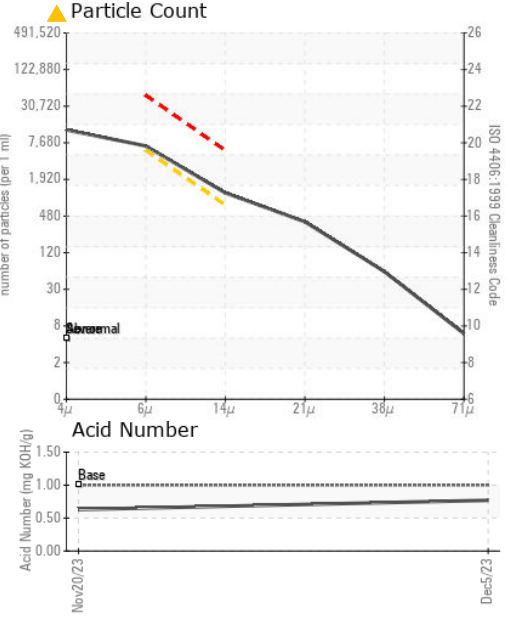
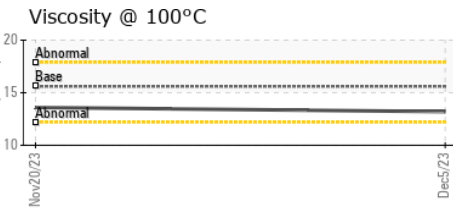
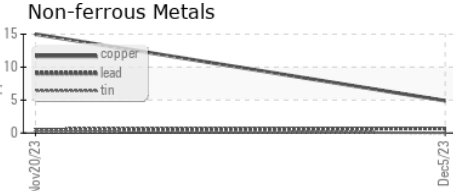
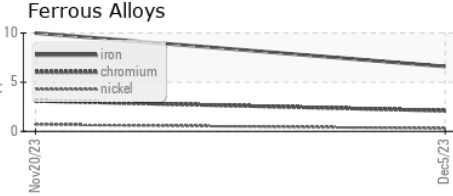
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		10883	175447	---
Particles >6µm	ASTM D7647	>5000	▲ 5929	▲ 22743	---
Particles >14µm	ASTM D7647	>640	▲ 1009	▲ 718	---
Particles >21µm	ASTM D7647	>160	▲ 340	153	---
Particles >38µm	ASTM D7647	>40	52	7	---
Particles >71µm	ASTM D7647	>10	5	2	---
Oil Cleanliness	ISO 4406 (c)	>19/16	▲ 20/17	▲ 22/17	---

FLUID DEGRADATION	method	limit/base	current	history1	history2	
Oxidation	Abs./1mm	*ASTM D7414	>25	10.1	11.4	---
Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.77	0.63	---
Base Number (BN)	mg KOH/g	ASTM D2896	4.2	4.14	4.07	---

VISUAL	method	limit/base	current	history1	history2	
White Metal	scalar	*Visual	NONE	NONE	---	
Yellow Metal	scalar	*Visual	NONE	NONE	---	
Precipitate	scalar	*Visual	NONE	NONE	---	
Silt	scalar	*Visual	NONE	NONE	---	
Debris	scalar	*Visual	NONE	NONE	---	
Sand/Dirt	scalar	*Visual	NONE	NONE	---	
Appearance	scalar	*Visual	NORML	NORML	---	
Odor	scalar	*Visual	NORML	NORML	---	
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	---
Free Water	scalar	*Visual		NEG	NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D445	15.6	13.2	13.6	---

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0013163 **Received** : 08 Dec 2023
Lab Number : 06030045 **Diagnosed** : 12 Dec 2023
Unique Number : 10779836 **Diagnostician** : Wes Davis
Test Package : MOB 2 (Additional Tests: PrtCount)

INNOVATIVE SOLUTIONS
 14026 COUNTY RD 3
 WIGGINS, CO
 US 80654
 Contact: STEVEN DEIKER
 sdeiker@innovate-solve.com

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)