



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Area
Store 9 - Marietta

Machine Id
KENWORTH 1047

Component
Diesel Engine

Fluid
SHELL ROTELLA T 15W40 (10 GAL)

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LEC0048654	LEC0045851	LEC0042869
Sample Date		Client Info		11 Apr 2024	05 Nov 2023	06 Sep 2023
Machine Age	mls	Client Info		542371	526383	515504
Oil Age	mls	Client Info		10000	10000	10000
Filter Age	mls	Client Info		10000	10000	10000
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	21	34	36
Chromium	ppm	ASTM D5185m	>20	<1	<1	1
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m		1	0	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	3	4	3
Lead	ppm	ASTM D5185m	>40	2	4	4
Copper	ppm	ASTM D5185m	>330	12	8	8
Tin	ppm	ASTM D5185m	>15	1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

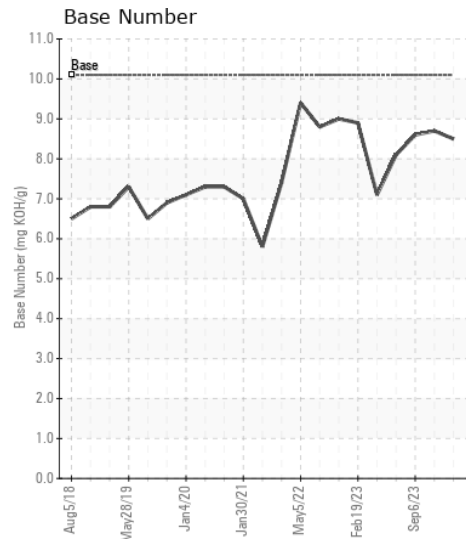
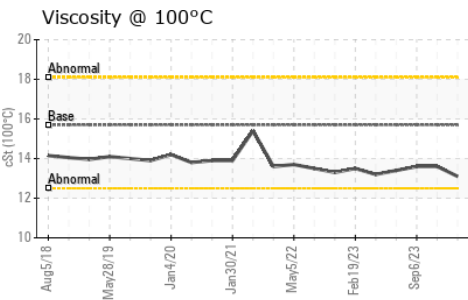
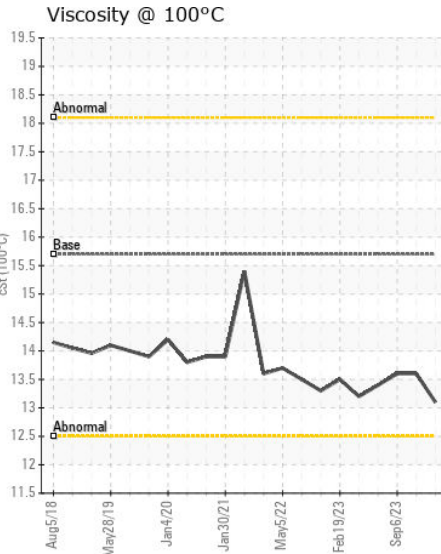
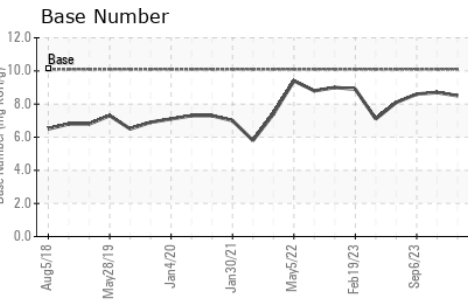
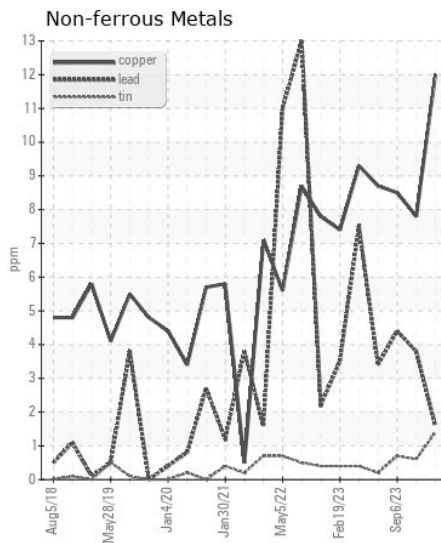
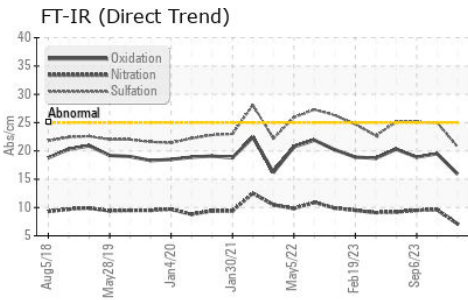
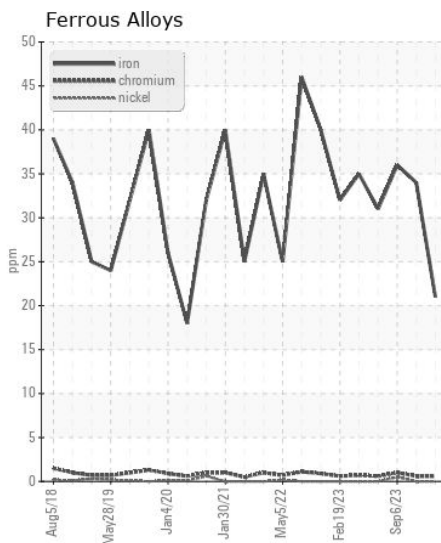
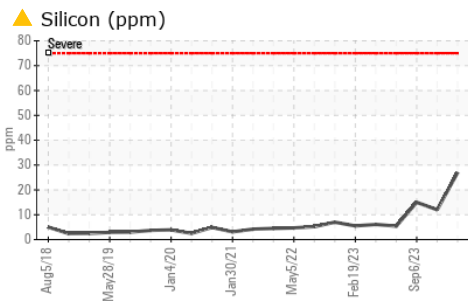
Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>120	▲ 27	12	15
Potassium	ppm	ASTM D5185m	>20	4	1	4
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.7	0.8
Nitration	Abs/cm	*ASTM D7624	>20	7.1	9.6	9.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.7	25.0	25.1
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	>0.2	NEG	NEG	NEG

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m		11	18	3
Boron	ppm	ASTM D5185m	316	91	200	221
Barium	ppm	ASTM D5185m	0.0	0	0	0
Molybdenum	ppm	ASTM D5185m	1.2	71	129	132
Manganese	ppm	ASTM D5185m		2	<1	<1
Magnesium	ppm	ASTM D5185m	24	425	691	742
Calcium	ppm	ASTM D5185m	2292	1802	1545	1638
Phosphorus	ppm	ASTM D5185m	1064	1135	730	742
Zinc	ppm	ASTM D5185m	1160	1278	910	950
Sulfur	ppm	ASTM D5185m	4996	3363	2418	3147
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.9	19.5	18.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	8.5	8.7	8.6
Visc @ 100°C	cSt	ASTM D445	15.7	13.1	13.6	13.6



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LEC0048654 **Received** : 17 Apr 2024
Lab Number : 06151727 **Tested** : 18 Apr 2024
Unique Number : 10981805 **Diagnosed** : 19 Apr 2024 - Sean Felton
Test Package : CONST (Additional Tests: TBN)

HALL DRILLING LLC
 PO BOX 249
 ELLENBORO, WV
 US 26346

Contact: CHRIS PETROVICH
 chrispetrovich@halldrilling.com
 T: (304)869-3404
 F: (304)869-3408

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)