



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	ATTENTION

Area
Store 9 - Marietta

Machine Id

1131

Component

Diesel Engine

Fluid

SHELL ROTELLA T 15W40 (--- GAL)

RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LEC0049553	---	---
Sample Date		Client Info		01 May 2024	---	---
Machine Age	hrs	Client Info		533	---	---
Oil Age	hrs	Client Info		400	---	---
Filter Age	hrs	Client Info		400	---	---
Oil Changed		Client Info		Changed	---	---
Filter Changed		Client Info		Changed	---	---
Sample Status				ABNORMAL	---	---

WEAR

Metal levels are typical for a new component breaking in.

Iron	ppm	ASTM D5185m	>100	44	---	---
Chromium	ppm	ASTM D5185m	>20	4	---	---
Nickel	ppm	ASTM D5185m	>4	0	---	---
Titanium	ppm	ASTM D5185m		<1	---	---
Silver	ppm	ASTM D5185m	>3	<1	---	---
Aluminum	ppm	ASTM D5185m	>20	21	---	---
Lead	ppm	ASTM D5185m	>40	3	---	---
Copper	ppm	ASTM D5185m	>330	37	---	---
Tin	ppm	ASTM D5185m	>15	2	---	---
Vanadium	ppm	ASTM D5185m		0	---	---
White Metal	scalar	*Visual	NONE	NONE	---	---
Yellow Metal	scalar	*Visual	NONE	NONE	---	---

CONTAMINATION

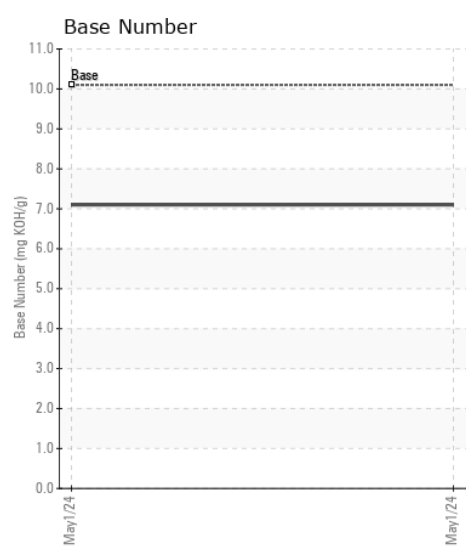
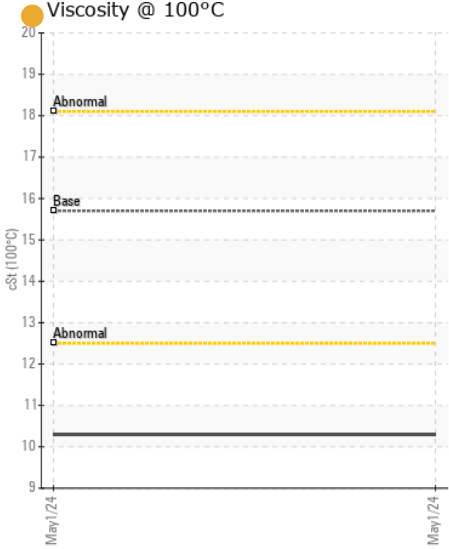
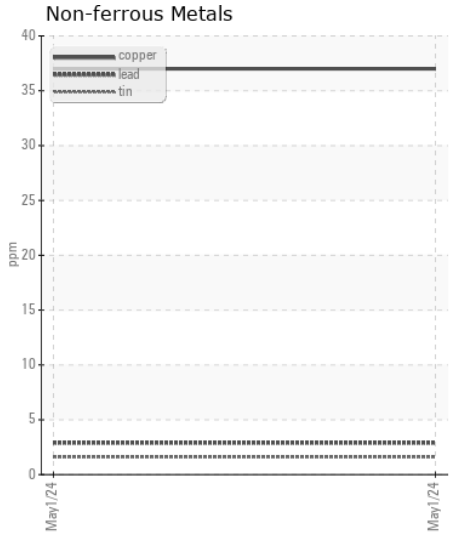
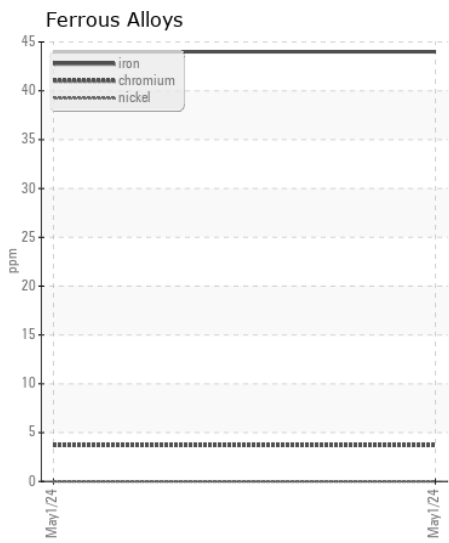
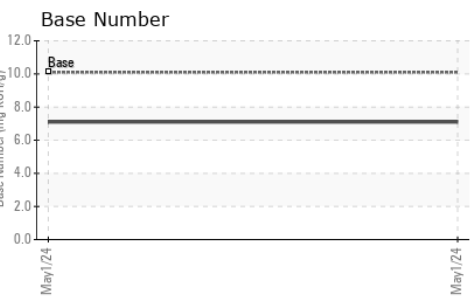
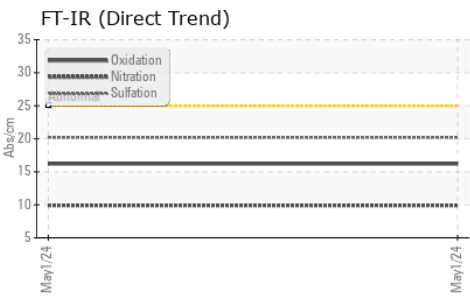
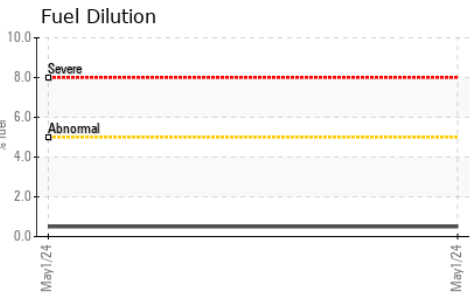
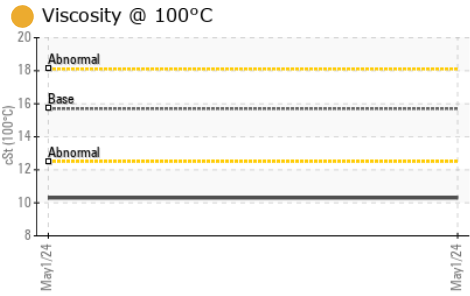
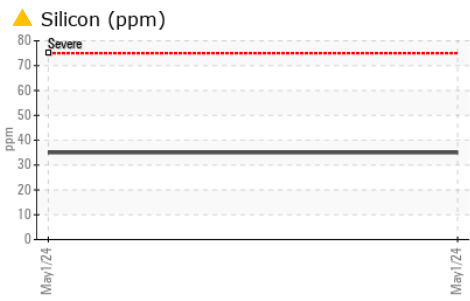
Fuel content negligible. Elemental level of silicon (Si) above normal indicating ingress of seal material.

Silicon	ppm	ASTM D5185m	>120	▲ 35	---	---
Potassium	ppm	ASTM D5185m	>20	67	---	---
Fuel	%	ASTM D3524	>5	0.5	---	---
Water		WC Method	>0.2	NEG	---	---
Glycol		WC Method		NEG	---	---
Soot %	%	*ASTM D7844	>3	0.4	---	---
Nitration	Abs/cm	*ASTM D7624	>20	9.9	---	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.2	---	---
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	>0.2	NEG	---	---

FLUID CONDITION

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		5	---	---
Boron	ppm	ASTM D5185m	316	64	---	---
Barium	ppm	ASTM D5185m	0.0	7	---	---
Molybdenum	ppm	ASTM D5185m	1.2	12	---	---
Manganese	ppm	ASTM D5185m		5	---	---
Magnesium	ppm	ASTM D5185m	24	680	---	---
Calcium	ppm	ASTM D5185m	2292	1321	---	---
Phosphorus	ppm	ASTM D5185m	1064	697	---	---
Zinc	ppm	ASTM D5185m	1160	802	---	---
Sulfur	ppm	ASTM D5185m	4996	3081	---	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	16.2	---	---
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	7.1	---	---
Visc @ 100°C	cSt	ASTM D445	15.7	● 10.3	---	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LEC0049553 **Received** : 13 May 2024
Lab Number : 06176981 **Tested** : 17 May 2024
Unique Number : 11023034 **Diagnosed** : 17 May 2024 - Jonathan Hester
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, 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)