



WEAR	<b>ABNORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Area

**WILLARD HAMMOND**

Machine Id

**[WILLARD HAMMOND] 001 587215-1**

Component

**Port Main Engine**

Fluid

**CHEVRON DELO 400 MULTIGRADE 15W40 (36 GAL)**

**RECOMMENDATION**

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		<b>MW0070926</b>	MW0051350	MW0068067
Sample Date		Client Info		<b>01 May 2024</b>	31 Mar 2024	14 Mar 2024
Machine Age	hrs	Client Info		<b>13681</b>	12794	12386
Oil Age	hrs	Client Info		<b>4043</b>	3180	0
Filter Age	hrs	Client Info		<b>96</b>	708	0
Oil Changed		Client Info		<b>Not Changd</b>	Not Changd	N/A
Filter Changed		Client Info		<b>Not Changd</b>	Not Changd	N/A
Sample Status				<b>ABNORMAL</b>	ABNORMAL	ABNORMAL

**WEAR**

Bearing and/or bushing wear is indicated.

Iron	ppm	ASTM D5185m	>75	<b>15</b>	16	13
Chromium	ppm	ASTM D5185m	>8	<b>&lt;1</b>	<1	0
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	<1	0
Titanium	ppm	ASTM D5185m	>3	<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m	>2	<b>1</b>	0	0
Aluminum	ppm	ASTM D5185m	>15	<b>4</b>	3	3
Lead	ppm	ASTM D5185m	>18	<b>▲ 34</b>	▲ 47	▲ 31
Copper	ppm	ASTM D5185m	>80	<b>▲ 71</b>	▲ 83	62
Tin	ppm	ASTM D5185m	>14	<b>1</b>	<1	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

**CONTAMINATION**

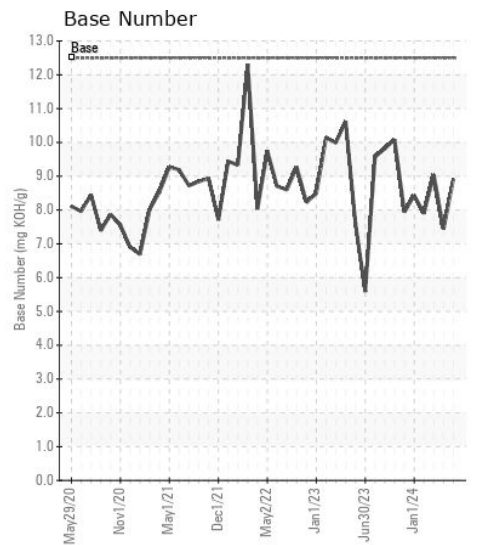
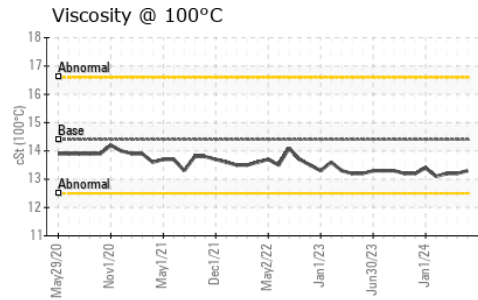
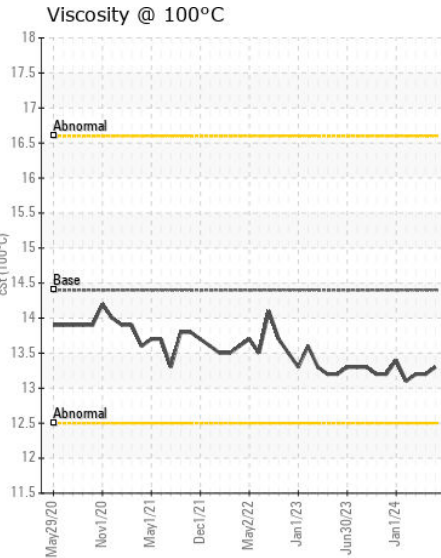
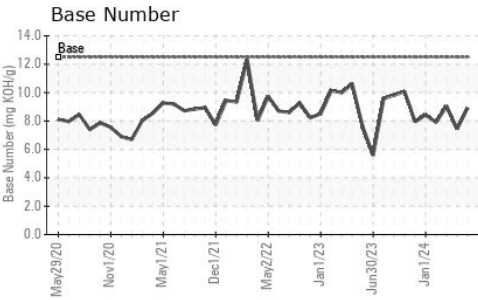
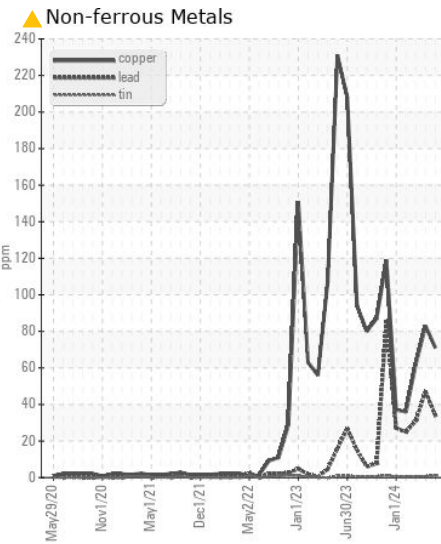
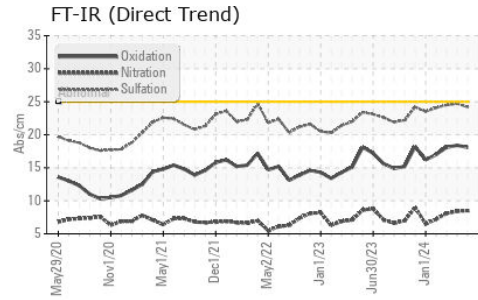
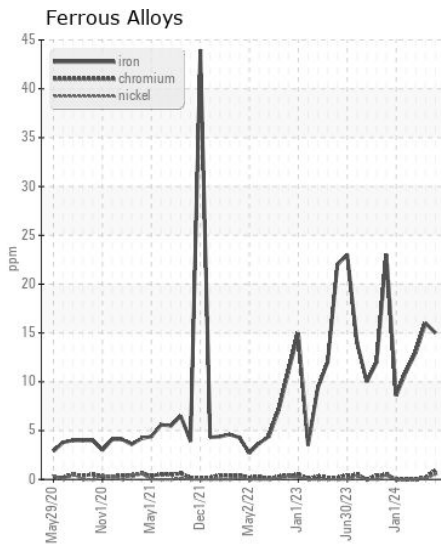
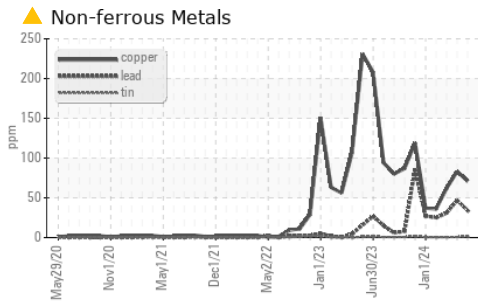
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>20	<b>8</b>	7	7
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	0	1
Fuel		WC Method	>4.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.1	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844		<b>0.4</b>	0.4	0.3
Nitration	Abs/cm	*ASTM D7624	>20	<b>8.5</b>	8.4	8.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>24.2</b>	24.7	24.5
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	<b>NEG</b>	NEG	NEG

**FLUID CONDITION**

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

Sodium	ppm	ASTM D5185m	>75	<b>2</b>	<1	2
Boron	ppm	ASTM D5185m	151	<b>252</b>	282	277
Barium	ppm	ASTM D5185m	0.4	<b>&lt;1</b>	<1	0
Molybdenum	ppm	ASTM D5185m	250	<b>113</b>	135	116
Manganese	ppm	ASTM D5185m		<b>2</b>	2	2
Magnesium	ppm	ASTM D5185m	0	<b>556</b>	752	646
Calcium	ppm	ASTM D5185m	2046	<b>1422</b>	1949	1512
Phosphorus	ppm	ASTM D5185m	1043	<b>571</b>	832	687
Zinc	ppm	ASTM D5185m	943	<b>717</b>	1048	814
Sulfur	ppm	ASTM D5185m	5012	<b>2282</b>	3561	2826
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>18.1</b>	18.4	18.1
Base Number (BN)	mg KOH/g	ASTM D2896	12.5	<b>8.92</b>	7.44	9.04
Visc @ 100°C	cSt	ASTM D445	14.4	<b>13.3</b>	13.2	13.2



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513

**Sample No.** : MW0070926

**Lab Number** : 06193047

**Unique Number** : 11049799

**Test Package** : MAR 2

**Received** : 28 May 2024

**Tested** : 31 May 2024

**Diagnosed** : 31 May 2024 - Sean Felton

**INGRAM BARGE**

900 S 3RD ST

PADUCAH, KY

US 42003

Contact: CHARLES COPELAND

charles.copeland@ingrambarga.com

T: (270)415-4467

F: (615)695-3697

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)