

## **OIL ANALYSIS REPORT**

#### Area ARIZONA GROUPING Machine Id 2015 MACK 2696 Component

Diesel Engine Fluid NAPA Motor Oil 15W40 (9 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### 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.

Sample Rating Trend



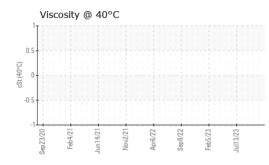
NORMAL

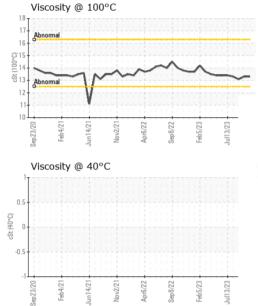
### 2020 Feb2021 Jun2021 Nov2021 Apr2027 Sep2022 Feb2023 Jul0023

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0857165	WC0857172	WC0838563
Sample Date		Client Info		13 Nov 2023	09 Oct 2023	05 Sep 2023
Machine Age	hrs	Client Info		16900	16730	16601
Oil Age	hrs	Client Info		1209	1039	910
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	19	17	15
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	1	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	4	4
Lead	ppm	ASTM D5185m	>40	3	2	1
Copper	ppm	ASTM D5185m	>330	7	9	<1
Tin	ppm	ASTM D5185m	>15	1	1	<1
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base	-	-	-
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1 19	history2 27
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base	current 18 0	history1 19 0	history2 27 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 18 0 24	history1 19 0 23	history2 27 0 23
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 18 0 24 <1	history1 19 0 23 <1	history2 27 0 23 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 18 0 24 <1 642	history1 19 0 23 <1 599	history2 27 0 23 <1 700
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current           18           0           24           <1           642           1482	history1 19 0 23 <1 599 1397	history2 27 0 23 <1 700 1783
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current           18           0           24           <1           642           1482           858	history1 19 0 23 <1 599 1397 760	history2 27 0 23 <1 700 1783 888
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current           18           0           24           <1           642           1482           858           1009	history1 19 0 23 <1 599 1397 760 920	history2 27 0 23 <1 700 1783 888 1044
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		Current 18 0 24 <1 642 1482 858 1009 3113	history1 19 0 23 <1 599 1397 760 920 2796	history2 27 0 23 <1 700 1783 888 1044 3997
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current           18           0           24           <1           642           1482           858           1009           3113           current	history1           19           0           23           <1           599           1397           760           920           2796           history1	history2 27 0 23 <1 700 1783 888 1044 3997 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current           18           0           24           <1           642           1482           858           1009           3113           current           7	history1           19           0           23           <1           599           1397           760           920           2796           history1           7	history2           27           0           23           <1           700           1783           888           1044           3997           history2           7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base	current           18           0           24           <1           642           1482           858           1009           3113           current           7           15	history1           19           0           23           <1           599           1397           760           920           2796           history1           7           15	history2           27           0           23           <1           700           1783           888           1044           3997           history2           7           18
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base >25 >20	current           18           0           24           <1           642           1482           858           1009           3113           current           7           15           5	history1           19           0           23           <1           599           1397           760           920           2796           history1           7           5	history2           27           0           23           <1           700           1783           888           1044           3997           history2           7           18           2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base >25 >20 limit/base	current           18           0           24           <1           642           1482           858           1009           3113           current           7           15           5           current	history1         19         0         23         <1         599         1397         760         920         2796         history1         7         55         history1	history2         27         0         23         <1         700         1783         888         1044         3997         history2         7         18         2         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base >25 >20 limit/base >4	current           18           0           24           <1           642           1482           858           1009           3113           current           7           15           5           current           0.5	history1           19           0           23           <1           599           1397           760           920           2796           history1           7           5           history1           0           0.5	history2         27         0         23         <1         700         1783         888         1044         3997         history2         7         18         2         history2         0         0.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base >25 >20 limit/base >4 >20	current         18         0         24         <1         642         1482         858         1009         3113         current         7         15         5         current         0.5         10.4	history1           19           0           23           <1           599           1397           760           920           2796           history1           7           15           5           history1           0.5           9.5	history2         27         0         23         <1         700         1783         888         1044         3997         history2         7         18         2         history2         0         5         9.6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	Imit/base >25 >20 Imit/base >20 >4 >20 >4 >20 >30	current         18         0         24         <1         642         1482         858         1009         3113         current         7         15         5         current         0.5         10.4         25.4	history1         19         0         23         <1         599         1397         760         920         2796         history1         7         15         5         history1         0.5         9.5         23.7	history2         27         0         23         <1         700         1783         888         1044         3997         history2         7         18         2         history2         0.5         9.6         23.5



# **OIL ANALYSIS REPORT**



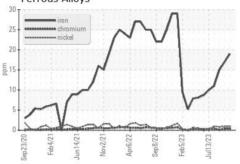


Sep 8/22

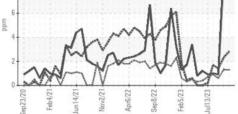
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		13.3	13.3	13.1
GRAPHS						

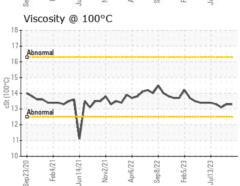
Ferrous Alloys

10









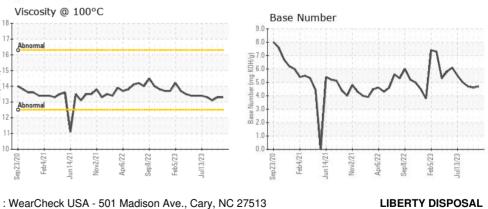
Received

Diagnosed

: 20 Nov 2023

: 28 Nov 2023

Diagnostician : Angela Borella



6401 S EASTERN AVE OKLAHOMA CITY, OK US 73149 Contact: CATHY ROSA c.rosa@ldi89.com Т: F:



Feb4/21

un14/21

Jov2/21

Apr6/22

Test Package : FLEET (Additional Tests: KV40) Certificate L2367 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)

: WC0857165

: 06013101

: 10752245

Laboratory Sample No.

Lab Number

Unique Number