

# **OIL ANALYSIS REPORT**

# Sample Rating Trend

# NORMAL

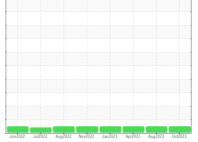


# 712016 MACK LR64

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)



# DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

# Contamination

There is no indication of any contamination in the oil

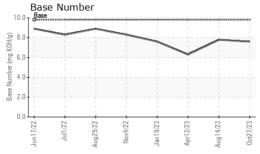
## **Fluid Condition**

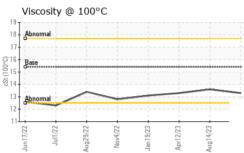
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0094677	GFL0089335	GFL0056610
Sample Date		Client Info		27 Oct 2023	14 Aug 2023	12 Apr 2023
Machine Age	hrs	Client Info		4511	3904	2948
Oil Age	hrs	Client Info		607	956	655
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	6	7
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	2
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	1	1	2
Tin	ppm	ASTM D5185m	>15	1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	nnm	ASTM D5185m		0	0	0
Caumium	ppm	ASTIVI DSTOSIII		U	U	U
ADDITIVES	ррпп	method	limit/base	current	history1	history2
	ppm		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 3	history1 <1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 3 19	history1 <1 0	history2 2 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 3 19 61	history1 <1 0 58	history2 2 0 58
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m	0 0 60 0	current 3 19 61 <1	history1 <1 0 58 <1	history2 2 0 58 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method  ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 3 19 61 <1 882	history1 <1 0 58 <1 985	history2 2 0 58 <1 930
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc	ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070	current 3 19 61 <1 882 982	history1 <1 0 58 <1 985 1101	history2 2 0 58 <1 930 1086
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150	current  3 19 61 <1 882 982 927	history1 <1 0 58 <1 985 1101 1004	history2 2 0 58 <1 930 1086 979
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  3 19 61 <1 882 982 982 927 1131 3595 current	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1	history2  2  0  58  <1  930  1086  979  1240  3499  history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  3 19 61 <1 882 982 927 1131 3595 current 4	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4	history2 2 0 58 <1 930 1086 979 1240 3499
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current  3 19 61 <1 882 982 927 1131 3595  current 4	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4	history2 2 0 58 <1 930 1086 979 1240 3499 history2 3 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current  3 19 61 <1 882 982 927 1131 3595 current 4	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current  3 19 61 <1 882 982 927 1131 3595  current 4	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4	history2 2 0 58 <1 930 1086 979 1240 3499 history2 3 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current  3 19 61 <1 882 982 927 1131 3595 current 4 5 current 0.3	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4 7	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3  <1  5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current  3 19 61 <1 882 982 927 1131 3595 current 4 5 current	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4 7	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3  <1  5  history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m  method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current  3 19 61 <1 882 982 927 1131 3595 current 4 5 current 0.3	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4 7 history1 0.2	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3  <1  5  history2  0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current  3 19 61 <1 882 982 982 927 1131 3595 current 4 4 5 current 0.3 7.4	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4 7 history1 0.2 6.9	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3  <1  5  history2  0.2  7.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m  method  *ASTM D5185m ASTM D7844  *ASTM D7624  *ASTM D7415	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	current  3 19 61 <1 882 982 927 1131 3595 current 4 4 5 current 0.3 7.4 18.8	history1  <1 0 58 <1 985 1101 1004 1253 3428 history1 4 7 history1 0.2 6.9 18.7	history2  2  0  58  <1  930  1086  979  1240  3499  history2  3  <1  5  history2  0.2  7.2  17.6



# **OIL ANALYSIS REPORT**

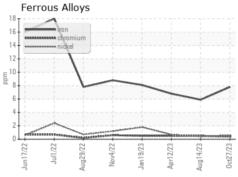


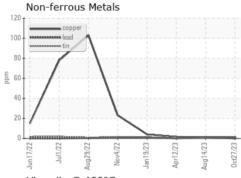


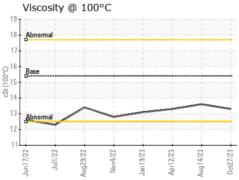
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

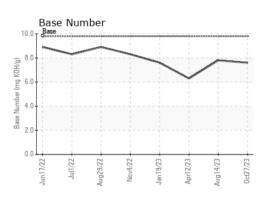
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.6	13.3

# **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0094677 : 05993974 : 10722334

Received Diagnosed

: 31 Oct 2023 : 31 Oct 2023 Diagnostician : Wes Davis

GFL Environmental - 001 - Raleigh(CNG)

3741 Conquest Drive Garner, NC US 27529

Contact: Craig Johnson craig.johnson@gflenv.com

T: (919)662-7100 F: (919)662-7130

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)