

OIL ANALYSIS REPORT

Sample Rating Trend

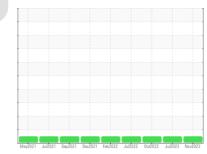




Machine Id **4652M** Component **Diesel Engine** Fluid

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

SAMPLE INFORMATION method





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.

				current	Thistory I	
Sample Number		Client Info		GFL0089156	GFL0086645	GFL0057225
Sample Date		Client Info		24 Nov 2023	18 Jul 2023	05 Oct 2022
Machine Age	hrs	Client Info		16864	15907	13580
Oil Age	hrs	Client Info		2600	13580	12855
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
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	14	17	51
Chromium	ppm	ASTM D5185m	>20	<1	1	1
Nickel		ASTM D5185m	>2	2	0	0
Titanium	ppm	ASTM D5185m		2	0	0
	ppm					
Silver	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum	ppm	ASTM D5185m	>20	2	2	4
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm		>330	2	<1	2
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 4	history2 3
	ppm ppm		0			
Boron		ASTM D5185m	0	4	4	3
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	4 0	4 0	3 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 55	4 0 55	3 0 60
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 55 <1 909	4 0 55 <1 903	3 0 60 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 0 55 <1 909 1046	4 0 55 <1 903 1003	3 0 60 <1 905 1123
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	4 0 55 <1 909 1046 1092	4 0 55 <1 903 1003 956	3 0 60 <1 905 1123 1004
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	4 0 55 <1 909 1046 1092 1251	4 0 55 <1 903 1003 956 1225	3 0 60 <1 905 1123 1004 1228
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	4 0 55 <1 909 1046 1092 1251 2999	4 0 55 <1 903 1003 956 1225 3380	3 0 60 <1 905 1123 1004 1228 3106
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	4 0 55 <1 909 1046 1092 1251 2999 current	4 0 55 <1 903 1003 956 1225 3380 history1	3 0 60 <1 905 1123 1004 1228 3106 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 0 1010 1070 1150 1270 2060	4 0 555 <1 909 1046 1092 1251 2999 current 3	4 0 55 <1 903 1003 956 1225 3380 history1 3	3 0 60 <1 905 1123 1004 1228 3106 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	4 0 55 <1 909 1046 1092 1251 2999 current 3 4	4 0 55 <1 903 1003 956 1225 3380 history1 3 5	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060	4 0 555 <1 909 1046 1092 1251 2999 current 3	4 0 55 <1 903 1003 956 1225 3380 history1 3	3 0 60 <1 905 1123 1004 1228 3106 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2	4 0 55 <1 903 1003 956 1225 3380 history1 3 5	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2 2	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3 3 bistory1	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2 2 current 0.5	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3 3 bistory1 0.4	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8 history2 1
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2 2 current 0.5 7.2	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3 5 3 1 0.4 6.9	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8 8 history2 1 1 12.8
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 TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 20 20 20 20 20 20 2	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2 2 current 0.5 7.2 19.7 current	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3 history1 0.4 6.9 19.7 history1	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8 history2 1 1 12.8 26.3 history2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 imit/base >20 20 20 20 20 20 20 20 20 20 20 20 20 2	4 0 55 <1 909 1046 1092 1251 2999 current 3 4 2 2 current 0.5 7.2 19.7	4 0 55 <1 903 1003 956 1225 3380 history1 3 5 3 history1 0.4 6.9 19.7	3 0 60 <1 905 1123 1004 1228 3106 history2 7 8 8 8 8 history2 1 1 12.8 26.3



Bas

Abnorma

Sep 18/71 Dec1/71

12

Mav12/21

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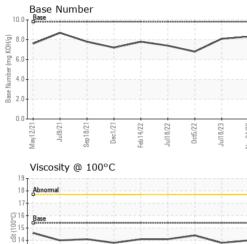
scalar

*Visual

NONE

VISUAL

White Metal



Jul18/22

eb14/22



NONE

NONE

NONE



Sterling Heights, MI :06017730 Diagnosed : 29 Nov 2023 : Jonathan Hester US 48313 : 10756874 Diagnostician Test Package : FLEET Contact: Frank Wolak To discuss this sample report, contact Customer Service at 1-800-237-1369. fwolak@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (586)825-9514 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Nov24/23 -

: 27 Nov 2023

0.0

Mav12/21

Jul9/21

Sep18/21

Dec1/21

Feb 14/22 lul18/22

GFL Environmental - 415 - Michigan East

Certificate L2367

12 11

Laboratory

Sample No.

Lab Number

Unique Number

Mav12/21

Jul9/21 Sep 18/21

: GFL0089156

Dec1/21

eb14/22 ul18/22

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

Received

Jul18/23 Jov24/23

6200 Elmridge

F: