

## **OIL ANALYSIS REPORT**

### (EMN589) **AUTOCAR 10861** Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (7 GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

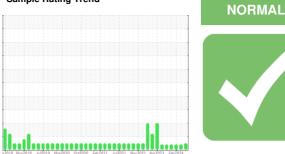
All component wear rates are normal.

#### 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.



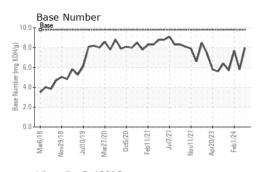


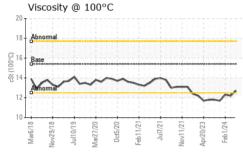
Sample Rating Trend

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116735	GFL0109053	GFL0109086
Sample Date		Client Info		19 Mar 2024	21 Feb 2024	01 Feb 2024
Machine Age	hrs	Client Info		14267	14123	14111
Oil Age	hrs	Client Info		33	0	13959
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ATTENTION	ATTENTION
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	>75	6	12	10
Chromium	ppm	ASTM D5185m	>5	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	1	3	4
Lead	ppm	ASTM D5185m	>25	0	0	<1
Copper	ppm	ASTM D5185m	>100	2	8	8
Tin	ppm	ASTM D5185m	>4	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base		-	
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 8	history1 13	history2 13
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 8 0	history1 13 0	history2 13 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 8 0 57	history1 13 0 57 <1 732	history2 13 0 60
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 8 0 57 0	history1 13 0 57 <1	history2 13 0 60 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current           8           0           57           0           853           1176           1018	history1 13 0 57 <1 732 1023 917	history2 13 0 60 <1 767 1038 939
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           8           0           57           0           853           1176	history1 13 0 57 <1 732 1023 917 1069	history2 13 0 60 <1 767 1038 939 1102
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	0 0 60 0 1010 1070 1150 1270 2060	current           8           0           57           0           853           1176           1018	history1 13 0 57 <1 732 1023 917 1069 2644	history2 13 0 60 <11 767 1038 939 1102 2804
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060	current           8           0           57           0           853           1176           1018           1188           3611           current	history1         13         0         57         <1         732         1023         917         1069         2644         history1	history2         13         0         60         <1         767         1038         939         1102         2804         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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	0 0 60 1010 1070 1150 1270 2060	current           8           0           57           0           853           1176           1018           1188           3611           current           3	history1           13           0           57           <1           732           1023           917           1069           2644           history1           4	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b>	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2	history1           13           0           57           <1           732           1023           917           1069           2644           history1           4           4	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current           8           0           57           0           853           1176           1018           1188           3611           current           3	history1           13           0           57           <1           732           1023           917           1069           2644           history1           4	history2           13           0           60           <1           767           1038           939           1102           2804           history2           7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	current         8         0         57         0         853         1176         1018         1188         3611         current         3         2         0         current         3         2         0         current	history1         13         0         57         <1         732         1023         917         1069         2644         history1         4         4         4         4         4         history1	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         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	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2           0           current           0           current           0.4	history1         13         0         57         <1         732         1023         917         1069         2644         history1         4         4         4         0         history1         0.5	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         history2         0         0.4
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 <b>TS</b> ppm ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2           0           current           0           current           0.4           6.9	history1           13           0           57           <1           732           1023           917           1069           2644           history1           4           4           5           0           0           1023           917           1069           2644           history1           0           0.5           7.7	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         history2         0         0.4         6.8
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	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2           0           current           0           current           0.4	history1         13         0         57         <1         732         1023         917         1069         2644         history1         4         4         4         0         history1         0.5	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         history2         0         0.4
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 <b>TS</b> ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2           0           current           0           current           0.4           6.9	history1           13           0           57           <1           732           1023           917           1069           2644           history1           4           4           5           0           0           1023           917           1069           2644           history1           0           0.5           7.7	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         history2         0         0.4         6.8
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 <b>TS</b> ppm ppm ppm	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	current           8           0           57           0           853           1176           1018           1188           3611           current           3           2           0           current           0.4           6.9           17.9	history1         13         0         57         <1         732         1023         917         1069         2644         history1         4         4         0.5         7.7         18.2	history2         13         0         60         <1         767         1038         939         1102         2804         history2         7         3         6         history2         0.4         6.8         18.2

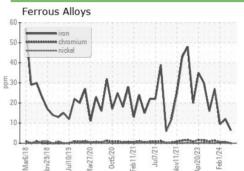


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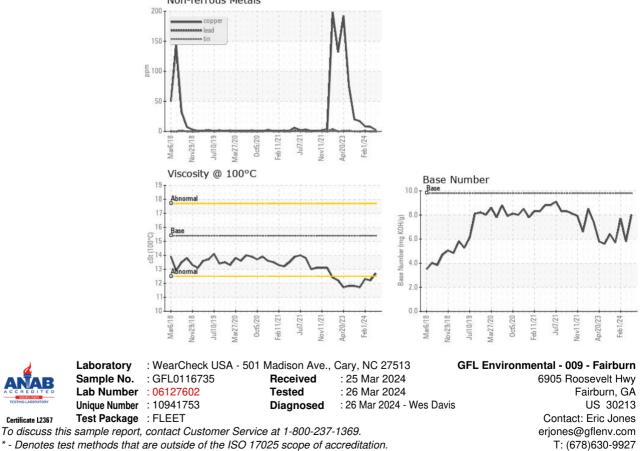




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.7	12.2	12.3
GRAPHS						







\* - 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)

Certificate L2367

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