

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id BM-46

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (--- 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

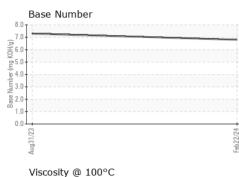
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

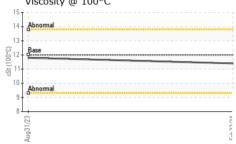
			Aug2023	Feb2024		
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0110738	PCA0103168	
Sample Date		Client Info		22 Feb 2024	31 Aug 2023	
Machine Age	hrs	Client Info		7555	6517	
Oil Age	hrs	Client Info		1038	919	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>100	36	34	
Chromium	ppm ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>20	<1	0	
Titanium	ppm	ASTM D5185m	~	0	<1	
Silver	ppm	ASTM D5185m	>3	۰ <1	0	
Aluminum	ppm	ASTM D5185m	>20	14	18	
Lead	ppm	ASTM D5185m	>40	<1	<1	
Copper	ppm		>330	2	2	
Tin	ppm	ASTM D5185m	>15	- <1	<1	
Vanadium	ppm	ASTM D5185m	10	0	<1	
Cadmium	ppm	ASTM D5185m		0	0	
				0	0	
	le le		limit/base			historv2
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	2	current 4	history1 <1	
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	2 0	current 4 0	history1 <1 0	
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 4 0 64	history1 <1 0 62	
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current 4 0 64 <1	history1 <1 0 62 <1	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current 4 0 64 <1 982	history1 <1 0 62 <1 1065	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	Current 4 0 64 <1 982 1131	history1 <1 0 62 <1 1065 1237	   
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	2 0 50 0 950 1050 995	Current 4 0 64 <1 982 1131 1082	history1 <1 0 62 <1 1065 1237 1072	   
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180	current           4           0           64           <1           982           1131           1082           1330	history1 <1 0 62 <1 1065 1237 1072 1383	
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	2 0 50 950 1050 995 1180 2600	Current 4 0 64 <1 982 1131 1082 1330 3391	<1         0         62         <1         1065         1237         1072         1383         3660	
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	2 0 50 950 1050 995 1180 2600	current 4 0 64 <1 982 1131 1082 1330 3391 current	history1         <1         0         62         <1         1065         1237         1072         1383         3660         history1	      history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600	current           4           0           64           <1           982           1131           1082           1330           3391           current           11	<1         0         62         <1         1065         1237         1072         1383         3660         history1         11	     history2
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	2 0 50 950 1050 995 1180 2600 <b>limit/base</b> >25	current           4           0           64           <1           982           1131           1082           1330           3391           current           11           3	history1         <1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3	      history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sidium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20	current           4           0           64           <1           982           1131           1082           1330           3391           current           11           3           18	kistory1         <1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22	     history2  
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 <b>TS</b>	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25 -20 <b>limit/base</b>	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current	<1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1	      history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25 >20 <b>limit/base</b>	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1	<1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9	     history2  
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur 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	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1         10.5	history1         <1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9         9.9	      history2    history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25 >20 <b>limit/base</b>	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1	<1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9	     history2   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1         10.5	history1         <1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9         9.9	     history2   history2
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           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20 >30	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1         10.5         21.5	<1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9         9.9         21.0	     history2  history2  history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7844         *ASTM D7624         *ASTM D7415         method	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20 >30	current         4         0         64         <1         982         1131         1082         1330         3391         current         11         3         18         current         1         10.5         21.5         current	kistory1         <1         0         62         <1         1065         1237         1072         1383         3660         history1         11         3         22         history1         0.9         9.9         21.0         history1	     history2  history2  history2  history2

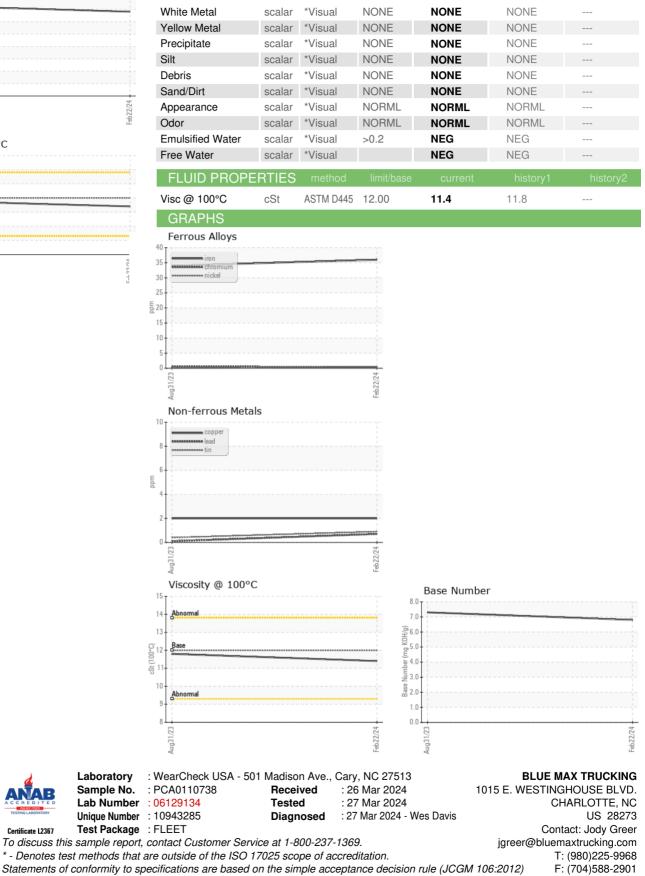


# **OIL ANALYSIS REPORT**

VISUAL







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Certificate L2367

Submitted By: Charleston Shop - Joe Nuzzolese