

# **OIL ANALYSIS REPORT**

Sample Rating Trend





## Component

Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- 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.

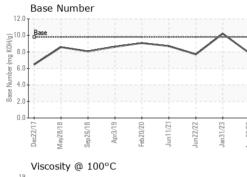
## Fluid Condition

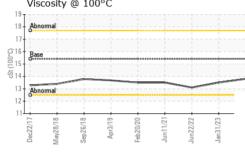
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

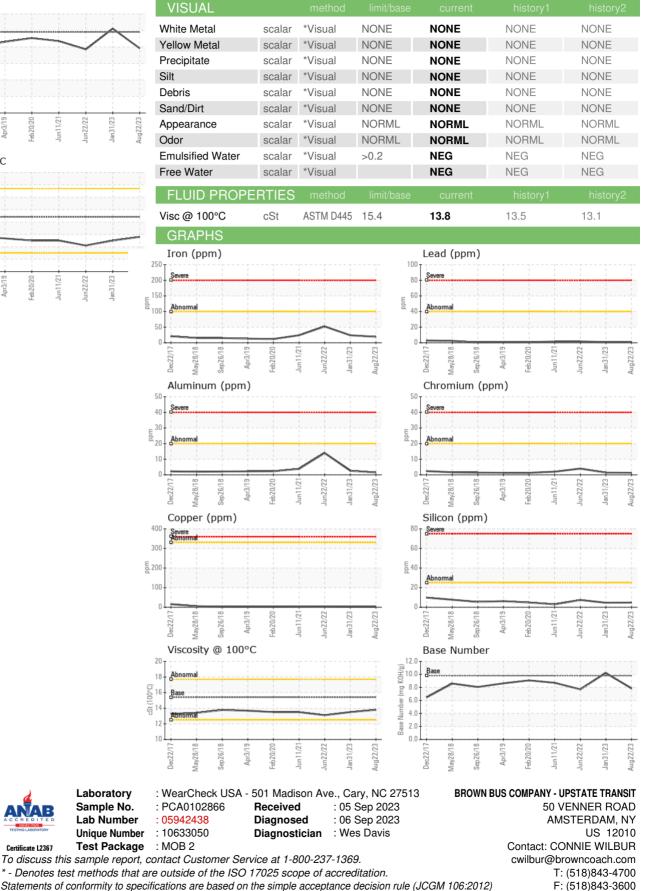
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0102866	PCA0082322	PCA0076590
Sample Date		Client Info		22 Aug 2023	31 Jan 2023	22 Jun 2022
Machine Age	mls	Client Info		179712	179712	164804
Oil Age	mls	Client Info		13138	14908	18118
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	19	24	52
Chromium	ppm	ASTM D5185m		1	1	4
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	3	14
Lead	ppm	ASTM D5185m	>40	1	<1	2
Copper	ppm	ASTM D5185m	>330	1	2	4
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 3	history2 3
	ppm ppm					
Boron		ASTM D5185m	0	0	3	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	3 0	3 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 65	3 0 57	3 0 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 65 <1	3 0 57 <1	3 0 65 2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 65 <1 1079	3 0 57 <1 907	3 0 65 2 977
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	0 0 65 <1 1079 1163	3 0 57 <1 907 1029	3 0 65 2 977 1114
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	0 0 65 <1 1079 1163 1087	3 0 57 <1 907 1029 951	3 0 65 2 977 1114 1016
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	0 0 65 <1 1079 1163 1087 1336	3 0 57 <1 907 1029 951 1165	3 0 65 2 977 1114 1016 1315
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	0 0 65 <1 1079 1163 1087 1336 3721 current 5	3 0 57 <1 907 1029 951 1165 3359 history1 5	3 0 65 2 977 1114 1016 1315 3376 history2 7
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	0 0 60 1010 1070 1150 1270 2060	0 0 65 <1 1079 1163 1087 1336 3721 current	3 0 57 <1 907 1029 951 1165 3359 history1	3 0 65 2 977 1114 1016 1315 3376 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	0 0 65 <1 1079 1163 1087 1336 3721 current 5	3 0 57 <1 907 1029 951 1165 3359 history1 5	3 0 65 2 977 1114 1016 1315 3376 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 <b>limit/base</b>	0 0 65 <1 1079 1163 1087 1336 3721 current 5 2	3 0 57 <1 907 1029 951 1165 3359 history1 5 2	3 0 65 2 977 1114 1016 1315 3376 history2 7 9
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	0 0 65 <1 1079 1163 1087 1336 3721 current 5 2 0	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0	3 0 65 2 977 1114 1016 1315 3376 history2 7 9 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25	0 0 65 <1 1079 1163 1087 1336 3721 current 5 2 0 0	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0 0 history1	3 0 65 2 977 1114 1016 1315 3376 history2 7 9 1 1 history2
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	0 0 65 <1 1079 1163 1087 1336 3721 current 5 2 0 0 current 0.4	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0 history1 0.4	3 0 65 2 977 1114 1016 1315 3376 history2 7 9 1 1 history2 0.7
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> >3 >20	0 0 65 <1 1079 1163 1087 1336 3721 <i>current</i> 5 2 0 <i>current</i> 0.4 10.2	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0 history1 0.4 10.2	3 0 65 2 977 1114 1016 1315 3376 history2 7 9 1 1 history2 0.7 13.5
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 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	0 0 65 <1 1079 1163 1087 1336 3721 <i>current</i> 5 2 0 <i>current</i> 0.4 10.2 21.0	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0 history1 0.4 10.2 20.3	3 0 65 2 977 1114 1016 1315 3376 <b>history2</b> 7 9 1 <b>history2</b> 0.7 13.5 23.6
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	0 0 65 <1 1079 1163 1087 1336 3721 <i>current</i> 5 2 0 <i>current</i> 0.4 10.2 21.0	3 0 57 <1 907 1029 951 1165 3359 history1 5 2 0 history1 0.4 10.2 20.3 history1	3 0 65 2 977 1114 1016 1315 3376 history2 7 9 1 1 history2 0.7 13.5 23.6 history2



# **OIL ANALYSIS REPORT**







Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Contact/Location: CONNIE WILBUR - BROAMS