

# **OIL ANALYSIS REPORT**

# Sample Rating Trend



## PETRO CANADA DURON XL SYN BLEND 15W40 (--- GAL)

DOOSAN LCV6WKUB LP 918 (S/N 486918UFAC678)

### DIAGNOSIS

Component Diesel Engine

Fluid

### 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.

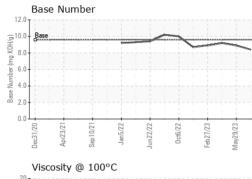
### Fluid Condition

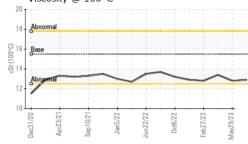
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0837190	WC0816191	WC0734236
Sample Date		Client Info		10 Aug 2023	29 May 2023	16 Mar 2023
Machine Age	hrs	Client Info		9530	9040	8318
Oil Age	hrs	Client Info		490	722	218
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	5	6	3
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	0	0	<1
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>30	0	<1	0
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method			history1	history2
ADDITIVES Boron	maa		limit/base			history2 12
	ppm ppm	ASTM D5185m		4	history1 9 0	history2 12 0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	1	4 0	9 0	12
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60	4 0 57	9 0 57	12 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60	4 0 57 0	9 0	12 0
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1	4 0 57 0 988	9 0 57 <1	12 0 60 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010	4 0 57 0	9 0 57 <1 930	12 0 60 <1 927
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070	4 0 57 0 988 1100	9 0 57 <1 930 1054	12 0 60 <1 927 1059
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 60 1 1010 1070 1150	4 0 57 0 988 1100 1064	9 0 57 <1 930 1054 950	12 0 60 <1 927 1059 1011
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	1 1 60 1 1010 1070 1150 1270	4 0 57 0 988 1100 1064 1373	9 0 57 <1 930 1054 950 1171	12 0 60 <1 927 1059 1011 1238
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 ASTM D5185m	1 60 1 1010 1070 1150 1270 2060 <b>limit/base</b>	4 0 57 0 988 1100 1064 1373 4207	9 0 57 <1 930 1054 950 1171 3484	12 0 60 <1 927 1059 1011 1238 3731
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	1 60 1 1010 1070 1150 1270 2060 <b>limit/base</b>	4 0 57 0 988 1100 1064 1373 4207 current	9 0 57 <1 930 1054 950 1171 3484 history1	12 0 60 <1 927 1059 1011 1238 3731 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 imit/base >15	4 0 57 0 988 1100 1064 1373 4207 current 1	9 0 57 <1 930 1054 950 1171 3484 history1 2	12 0 60 <1 927 1059 1011 1238 3731 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 imit/base >15	4 0 57 0 988 1100 1064 1373 4207 current 1 0	9 0 57 <1 930 1054 950 1171 3484 history1 2 1	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 Vinit/base >20 Vinit/base	4 0 57 0 988 1100 1064 1373 4207 current 1 0 0 0	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 <1 <1 history1	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 <b>limit/base</b> >20 <b>limit/base</b> >3	4 0 57 0 988 1100 1064 1373 4207 current 1 0 0 0 0 current 0.2	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 2 1 <1 <1 0.2	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 <b>limit/base</b> >20 <b>limit/base</b> >3	4 0 57 0 988 1100 1064 1373 4207 current 1 0 0 0	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 <1 <1 history1	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060  limit/base >15 20 limit/base >3 >20	4 0 57 0 988 1100 1064 1373 4207 <i>current</i> 1 0 0 0 <i>current</i> 0.2 4.9	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 2 1 <1 <1 history1 0.2 5.4	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0 history2 0.1 4.7 17.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	1 1 1 60 1 1010 1070 1150 1270 2060  Imit/base >3 >20 >30 S00 S00 S00 S00 S00 S00 S00 S00 S00 S	4 0 57 0 988 1100 1064 1373 4207 <i>current</i> 1 0 0 <i>current</i> 0.2 4.9 16.7 <i>current</i>	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 <1 <1 istory1 0.2 5.4 18.3 history1	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0 history2 0.1 4.7 17.4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 imit/base >15 >20 imit/base >3 >20 >30 imit/base	4 0 57 0 988 1100 1064 1373 4207 current 1 0 0 0 current 0.2 4.9 16.7	9 0 57 <1 930 1054 950 1171 3484 history1 2 1 <1 <1 0.2 5.4 18.3	12 0 60 <1 927 1059 1011 1238 3731 history2 3 <1 0 history2 0.1 4.7 17.4



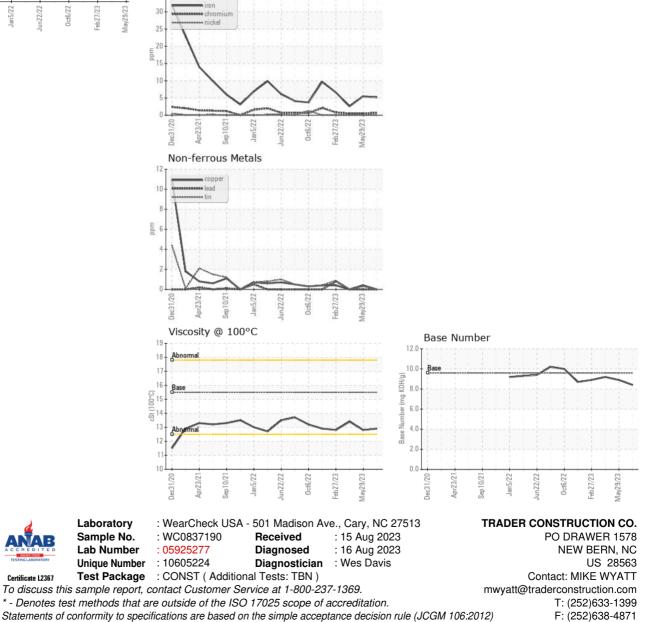
# **OIL ANALYSIS REPORT**





VISUAL		method				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	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	TIES	method	limit/base	current	history1	history2
I LOID I NOI LIN		method	mmbase	Gunchi	matory	THStoryz
Visc @ 100°C	cSt	ASTM D445	15.5	12.9	12.8	13.4
CRADUS						

Ferrous Alloys



Contact/Location: MIKE WYATT - TRANEW