

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

BM-171 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.

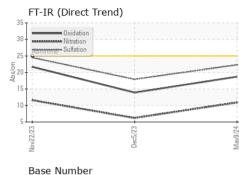
Fluid Condition

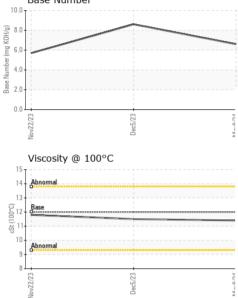
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0105258	PCA0103114	PCA0103096
Sample Date		Client Info		09 May 2024	05 Dec 2023	22 Nov 2023
Machine Age	hrs	Client Info		3227	2310	2216
Oil Age	hrs	Client Info		917	94	1081
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
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	>100	24	8	45
Chromium	ppm		>20	<1	<1	2
Nickel	ppm	ASTM D5185m	>4	0	1	0
Titanium	ppm	ASTM D5185m	- 1	0	0	<1
Silver	ppm	ASTM D5185m	>3	<1	<1	<1
Aluminum	ppm	ASTM D5185m		6	6	30
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m		2	<1	7
Tin	ppm	ASTM D5185m	>15	- <1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	maa	method ASTM D5185m	limit/base			
	ppm ppm			current 3 0	history1 5 0	history2 3 <1
Boron	ppm	ASTM D5185m	2	3	5	3
Boron Barium		ASTM D5185m ASTM D5185m	2 0	3 0	5 0	3 <1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	3 0 64	5 0 58	3 <1 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	3 0 64 <1	5 0 58 <1	3 <1 54 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	3 0 64 <1 939	5 0 58 <1 913	3 <1 54 <1 889
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	3 0 64 <1 939 1088	5 0 58 <1 913 998	3 <1 54 <1 889 1148
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	2 0 50 0 950 1050 995	3 0 64 <1 939 1088 1070	5 0 58 <1 913 998 1005	3 <1 54 <1 889 1148 963
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180	3 0 64 <1 939 1088 1070 1255	5 0 58 <1 913 998 1005 1236	3 <1 54 <1 889 1148 963 1116
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600	3 0 64 <1 939 1088 1070 1255 3319	5 0 58 <1 913 998 1005 1236 3112	3 <1 54 <1 889 1148 963 1116 2594
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	2 0 50 950 1050 995 1180 2600	3 0 64 <1 939 1088 1070 1255 3319 current	5 0 58 <1 913 998 1005 1236 3112 history1	3 <1 54 <1 889 1148 963 1116 2594 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	2 0 50 950 1050 995 1180 2600	3 0 64 <1 939 1088 1070 1255 3319 current 8	5 0 58 <1 913 998 1005 1236 3112 history1 4	3 <1 54 <1 889 1148 963 1116 2594 history2 10
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	2 0 50 0 950 1050 995 1180 2600 limit/base	3 0 64 <1 939 1088 1070 1255 3319 current 8 2	5 0 58 <1 913 998 1005 1236 3112 history1 4 0	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4
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	2 0 50 950 1050 995 1180 2600 limit/base >25	3 0 64 <1 939 1088 1070 1255 3319 current 8 2 10	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89
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	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 >20	3 0 64 <1 939 1088 1070 1255 3319 current 8 2 10 current	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9 9 history1	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89 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	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	3 0 64 <1 939 1088 1070 1255 3319 current 8 2 10 current 0.5	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9 9 history1 0.1	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89 history2 0.5
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	2 0 50 950 1050 995 1180 2600 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	3 0 64 <1 939 1088 1070 1255 3319 current 8 2 10 current 0.5 10.9 22.3	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9 history1 0.1 6.2	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89 history2 0.5 11.6
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 ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20	3 0 64 <1 939 1088 1070 1255 3319 current 8 2 10 current 0.5 10.9 22.3	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9 <u>history1</u> 0.1 6.2 17.9	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89 history2 0.5 11.6 24.5 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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	2 0 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 >20 >30 >30 imit/base	3 0 64 <1 939 1088 1070 1255 3319 Current 8 2 10 Current 0.5 10.9 22.3 Current	5 0 58 <1 913 998 1005 1236 3112 history1 4 0 9 history1 0.1 6.2 17.9 history1	3 <1 54 <1 889 1148 963 1116 2594 history2 10 4 89 history2 0.5 11.6 24.5

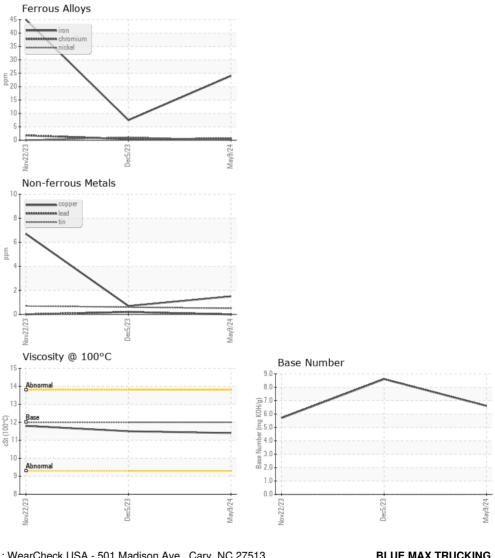


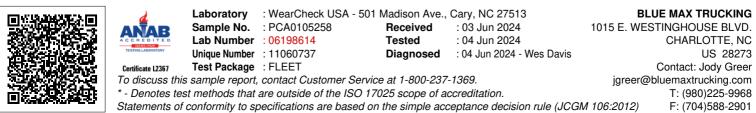
OIL ANALYSIS REPORT





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	12.00	11.4	11.5	11.8
GRAPHS						





Submitted By: Charleston Shop - Joe Nuzzolese