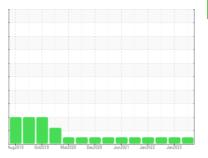


OIL ANALYSIS REPORT

Sample Rating Trend





NORMAL

Machine Id **1926700**

Component Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

Fluid

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		PCA0101171	PCA0076939	PCA0067307
Sample Date		Client Info		28 Aug 2023	28 Jan 2023	01 Apr 2022
Machine Age	mls	Client Info		351566	40000	244423
Oil Age	mls	Client Info		0	40000	40000
Oil Changed		Client Info		N/A	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	57	66	41
Chromium	ppm	ASTM D5185m	>20	1	1	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		2	6	32
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	6	6	6
Lead	ppm	ASTM D5185m	>40	<1	3	1
Copper	ppm	ASTM D5185m	>330	9	11	11
Tin	ppm	ASTM D5185m	>15	2	2	1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 2	2	history1 2	history2 11
	ppm ppm				2 0	
Boron Barium Molybdenum		ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	2 0 68	2 0 56	11 0 37
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	2 0 68 <1	2 0 56 <1	11 0 37 <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	2 0 68 <1 956	2 0 56 <1 726	11 0 37 <1 645
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	2 0 68 <1 956 1159	2 0 56 <1 726 1237	11 0 37 <1 645 1385
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	2 0 68 <1 956 1159 980	2 0 56 <1 726 1237 924	11 0 37 <1 645 1385 938
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	2 0 68 <1 956 1159 980 1255	2 0 56 <1 726 1237 924 1184	11 0 37 <1 645 1385 938 1172
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	2 0 50 0 950 1050 995	2 0 68 <1 956 1159 980	2 0 56 <1 726 1237 924	11 0 37 <1 645 1385 938
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	2 0 50 950 1050 995 1180	2 0 68 <1 956 1159 980 1255	2 0 56 <1 726 1237 924 1184 2656 history1	11 0 37 <1 645 1385 938 1172 2391 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 method	2 0 50 0 950 1050 995 1180 2600	2 0 68 <1 956 1159 980 1255 3213 current 6	2 0 56 <1 726 1237 924 1184 2656 history1 6	111 0 37 <1 645 1385 938 1172 2391 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN 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 method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base	2 0 68 <1 956 1159 980 1255 3213 current 6 20	2 0 56 <1 726 1237 924 1184 2656 history1 6 14	111 0 37 <1 645 1385 938 1172 2391 history2 6 18
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 method	2 0 50 0 950 1050 995 1180 2600 limit/base	2 0 68 <1 956 1159 980 1255 3213 current 6	2 0 56 <1 726 1237 924 1184 2656 history1 6	111 0 37 <1 645 1385 938 1172 2391 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base	2 0 68 <1 956 1159 980 1255 3213 current 6 20	2 0 56 <1 726 1237 924 1184 2656 history1 6 14	111 0 37 <1 645 1385 938 1172 2391 history2 6 18
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25 >20	2 0 68 <1 956 1159 980 1255 3213 current 6 20 2	2 0 56 <1 726 1237 924 1184 2656 history1 6 14 5	11 0 37 <1 645 1385 938 1172 2391 history2 6 18 18 17
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 TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	2 0 68 <1 956 1159 980 1255 3213 <i>current</i> 6 20 2 2 <i>current</i> 0.8 10.0	2 0 56 <1 726 1237 924 1184 2656 history1 6 14 5 <i>history1</i>	111 0 37 <1 645 1385 938 1172 2391 history2 6 18 17 history2 0.7 11.2
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	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	2 0 68 <1 956 1159 980 1255 3213 <i>current</i> 6 20 2 2 <i>current</i> 0.8	2 0 56 <1 726 1237 924 1184 2656 history1 6 14 5 history1 1	111 0 37 <1 645 1385 938 1172 2391 history2 6 18 17 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	2 0 50 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	2 0 68 <1 956 1159 980 1255 3213 <i>current</i> 6 20 2 2 <i>current</i> 0.8 10.0	2 0 56 <1 726 1237 924 1184 2656 history1 6 14 5 history1 1 1 1 1.1.1	111 0 37 <1 645 1385 938 1172 2391 history2 6 18 17 history2 0.7 11.2
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 50 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20	2 0 68 <1 956 1159 980 1255 3213 <u>current</u> 6 20 2 2 <u>current</u> 0.8 10.0 22.8	2 0 56 <1 726 1237 924 1184 2656 history1 6 14 5 <u>history1</u> 1 1 1.1.1 24.8	111 0 37 <1 645 1385 938 1172 2391 history2 6 18 17 history2 0.7 11.2 25.1



Abnorma

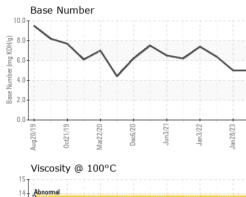
Dct21

Vug20/19

Mar22/20

Dec6/20

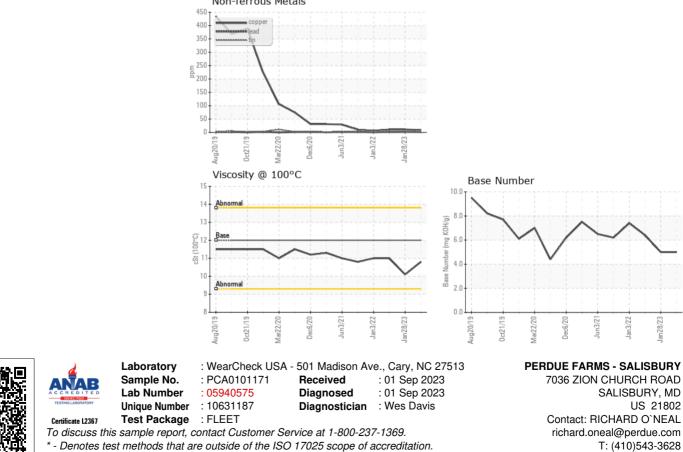
OIL ANALYSIS REPORT



Jan3/22

Jan28/23

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	10.8	10.1	11.0
	001		12.00	10.0	10.1	1110
GRAPHS	001		12.00	10.0	10.1	11.0
GRAPHS Ferrous Alloys			12.00	10.0	10.1	11.0
GRAPHS Ferrous Alloys					10.1	11.0
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys						
GRAPHS Ferrous Alloys	\wedge		~			
GRAPHS Ferrous Alloys	\wedge		~			
GRAPHS Ferrous Alloys	Dec6/20					



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

Contact/Location: RICHARD O`NEAL - PERSALMD

F: (410)341-2164