

## **OIL ANALYSIS REPORT**





Machine Id 26519

# Component Diesel Engine

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

## 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.

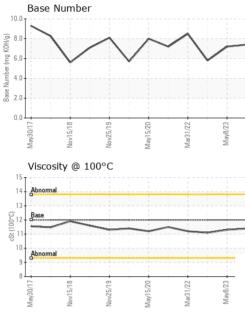
## Fluid Condition

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

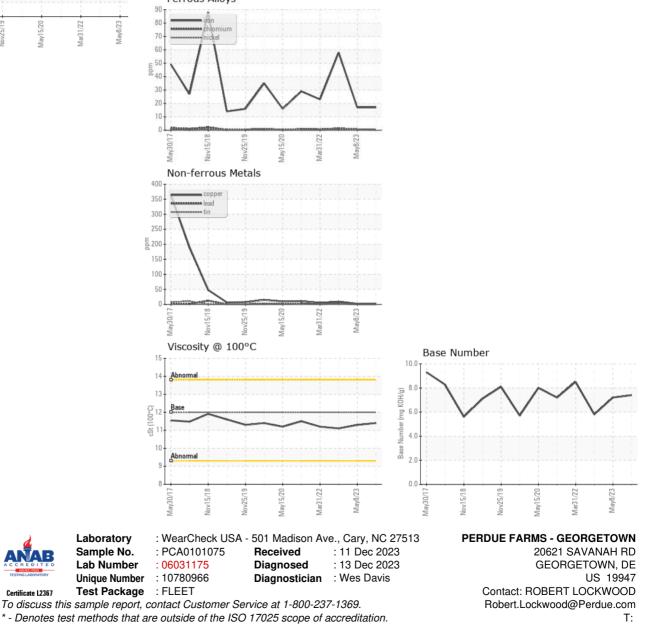
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0101075	PCA0092854	PCA0082273
Sample Date		Client Info		27 Aug 2023	08 May 2023	08 Oct 2022
Machine Age	mls	Client Info		501938	497089	0
Oil Age	mls	Client Info		24849	497089	20000
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>6.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method	20.L	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>100		17	58
-	ppm			17 <1	<1	1
Chromium	ppm		>20 >2	<1	<1	<1
Nickel Titanium	ppm	ASTM D5185m ASTM D5185m	>2	<1	3	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm ppm	ASTM D5185m		4	3	7
Lead		ASTM D5185m	>40	4 <1	<1	4
Copper	ppm	ASTM D5185m		2	2	9
Tin	ppm ppm		>15	2 <1	1	2
Vanadium	ppm	ASTM D5185m	210	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	1.1			•		
ADDITIVES		method			historv1	history2
ADDITIVES	0000		limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	2	<1	2	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	2 0	<1 0	2 0	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	<1 0 59	2 0 56	2 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	<1 0 59 0	2 0 56 <1	2 0 60 <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	<1 0 59 0 907	2 0 56 <1 919	2 0 60 <1 941
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	<1 0 59 0 907 1061	2 0 56 <1 919 1123	2 0 60 <1 941 1237
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	<1 0 59 0 907 1061 1025	2 0 56 <1 919 1123 997	2 0 60 <1 941 1237 985
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	<1 0 59 0 907 1061 1025 1228	2 0 56 <1 919 1123	2 0 60 <1 941 1237
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	2 0 50 0 950 1050 995 1180 2600	<1 0 59 0 907 1061 1025 1228 3014	2 0 56 <1 919 1123 997 1262 3545	2 0 60 <1 941 1237 985 1300 3024
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	<1 0 59 0 907 1061 1025 1228 3014 current	2 0 56 <1 919 1123 997 1262 3545 history1	2 0 60 <1 941 1237 985 1300 3024 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 0 950 1050 995 1180 2600	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4	2 0 56 <1 919 1123 997 1262 3545 history1 4	2 0 60 <1 941 1237 985 1300 3024 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	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b>	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5	2 0 56 <1 919 1123 997 1262 3545 history1 4 7	2 0 60 <1 941 1237 985 1300 3024 history2 7 20
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 <b>imit/base</b> >25	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2
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 ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>Imit/base</b> >25 >20	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3 3 <i>current</i>	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 3 history1	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 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 ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3 <i>current</i> 0.8	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 3 history1 0.5	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 history2 0.9
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 <b>TS</b> 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	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3 <i>current</i> 0.8 8.9	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 4 7 3 <i>history1</i> 0.5 9.0	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 history2 0.9 11.9
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3 3 <i>current</i> 0.8 8.9 20.1	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 3 <u>history1</u> 0.5 9.0 20.5	2 0 60 <1 941 1237 985 1300 3024 <b>history2</b> 7 20 2 2 <b>history2</b> 0.9 11.9 24.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS 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	<1 0 59 0 907 1061 1025 1228 3014 <i>current</i> 4 5 3 <i>current</i> 0.8 8.9	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 4 7 3 <i>history1</i> 0.5 9.0	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 history2 0.9 11.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	<1 0 59 0 907 1061 1025 1228 3014 Current 4 5 3 Current 0.8 8.9 20.1 Current 15.5	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 3 history1 0.5 9.0 20.5 history1 16.3	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 history2 0.9 11.9 24.7 history2 20.7
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 TS ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	2 0 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 20 >20 >30 >30 <b>imit/base</b>	<1 0 59 0 907 1061 1025 1228 3014 Current 4 5 3 Current 0.8 8.9 20.1 Current	2 0 56 <1 919 1123 997 1262 3545 history1 4 7 3 8 history1 0.5 9.0 20.5 history1	2 0 60 <1 941 1237 985 1300 3024 history2 7 20 2 2 history2 0.9 11.9 24.7 kistory2



# **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	11.3	11.1
GRAPHS						
Ferrous Alloys						



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

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