

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

NORMAL

### Area {UNASSIGNED} 2320680 (S/N V090599a)

Component 1 Diesel Engine

Fluid PETRO CANADA DURON ADVANCED 10W30 (8 QTS)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

Metal levels are typical for a new component breaking in.

#### 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.

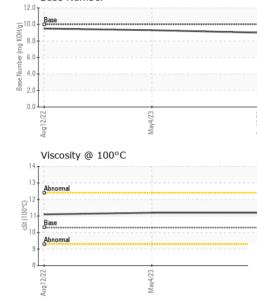
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		PCA0108121	PCA0093037	PCA0073675				
Sample Date		Client Info		18 Oct 2023	04 May 2023	12 Aug 2022				
Machine Age	hrs	Client Info		52	52	52				
Oil Age	hrs	Client Info		52	52	52				
Oil Changed		Client Info		N/A	N/A	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	3	5	12				
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1				
Nickel	ppm	ASTM D5185m	>4	0	0	<1				
Titanium	ppm	ASTM D5185m		0	0	0				
Silver	ppm	ASTM D5185m	>3	0	0	<1				
Aluminum	ppm	ASTM D5185m	>20	1	<1	2				
Lead	ppm	ASTM D5185m	>40	0	0	1				
Copper	ppm	ASTM D5185m	>330	0	<1	11				
Tin	ppm	ASTM D5185m	>15	0	<1	<1				
Vanadium	ppm	ASTM D5185m		0	0	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES		method	limit/base	current	history1	history2				
ADDITIVES Boron	ppm		limit/base	current 12	history1 10	history2 435				
	ppm ppm									
Boron		ASTM D5185m	0	12	10	435				
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	12 0	10 0	435 3				
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	12 0 60	10 0 62	435 3 77				
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	12 0 60 0	10 0 62 <1	435 3 77 7				
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	12 0 60 0 883	10 0 62 <1 949	435 3 77 7 356				
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	12 0 60 0 883 1005	10 0 62 <1 949 1102	435 3 77 7 356 1414				
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 1010 1070 1150	12 0 60 0 883 1005 952	10 0 62 <1 949 1102 1071	435 3 77 7 356 1414 1015				
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	12 0 60 0 883 1005 952 1203	10 0 62 <1 949 1102 1071 1295	435 3 77 7 356 1414 1015 1173				
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	0 0 60 0 1010 1070 1150 1270 2060	12 0 60 0 883 1005 952 1203 3019	10 0 62 <1 949 1102 1071 1295 3890	435 3 77 7 356 1414 1015 1173 4009				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	12 0 60 0 883 1005 952 1203 3019 current	10 0 62 <1 949 1102 1071 1295 3890 history1	435 3 77 7 356 1414 1015 1173 4009 history2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN 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>	0 0 60 1010 1070 1150 1270 2060	12 0 60 0 883 1005 952 1203 3019 current 3	10 0 62 <1 949 1102 1071 1295 3890 history1 4	435 3 77 7 356 1414 1015 1173 4009 history2 12				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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	0 0 60 1010 1070 1150 1270 2060 limit/base >25	12 0 60 0 883 1005 952 1203 3019 current 3 0	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1	435 3 77 7 356 1414 1015 1173 4009 history2 12 5				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	12 0 60 0 883 1005 952 1203 3019 current 3 0 0	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 20 imit/base >20	12 0 60 0 883 1005 952 1203 3019 current 3 0 0	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1 <1 kistory1	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3 3 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	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 20 imit/base >20	12 0 60 0 883 1005 952 1203 3019 <u>current</u> 3 0 0 0 <u>current</u>	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1 <1 history1 0.1	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3 3 history2 0.1				
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	12 0 60 0 883 1005 952 1203 3019 current 3 0 0 0 0 current 0.1 5.4 17.0	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1 <1 history1 0.1 5.9	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3 3 history2 0.1 5.2				
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	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20 >3	12 0 60 0 883 1005 952 1203 3019 current 3 0 0 0 0 current 0.1 5.4 17.0	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1 <1 0.1 5.9 17.2	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3 3 history2 0.1 5.2 20.9				
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 ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 3 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	12 0 60 0 883 1005 952 1203 3019 Current 3 0 0 0 Current 0.1 5.4 17.0 Current	10 0 62 <1 949 1102 1071 1295 3890 history1 4 1 <1 ×1 0.1 5.9 17.2 history1	435 3 77 7 356 1414 1015 1173 4009 history2 12 5 3 history2 0.1 5.2 20.9 history2				



Base Number

# **OIL ANALYSIS REPORT**

VISUAL



		VISUAL		methoa	iimit/base		nistory i	nistory∠
		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
May4/23	0ct18/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Ma	0	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	10.3	11.2	11.2	11.1
		GRAPHS						
		Ferrous Alloys						
/23		10-						
May4/23		nickel						
		8						
		Ed 6						
		4						
		2						
		2	1					
					23			
		ug12/	May4/23		0ct18/23			
		Non-ferrous Meta			0			
		<sup>12</sup> T	a15					
		10- copper lead						
		****** tin						
		8						
		E 6						
		4						
		2						
		52	23		23			
		Aug12/22	May4/23		0ct18/23			
		⊲ Viscosity @ 100°			0			
		<sup>14</sup>			12.0	Base Number		
		13			10.0	Base		
		Abnormal	1					
					Q 8.0	1		
		(2-001) 11- Base			0.8 K0H(g) 8ase Number (mg K0H(g)	+		
		3 Base			4.0			
					ise of			
		Abnormal						
		9-			2.0	•		
		8	23		2.0	22	23	
		8	May4/23 +		2.0	ug12/22	May4/23	
			May4/23		2.0	Aug12/22	May4,/23	
d	Laboratory	: WearCheck USA -	501 Madi		2.0 0.0 EXENT		PERDUE FAI	RMS - DILLO
NAB	Laboratory Sample No.	: WearCheck USA - : PCA0108121	501 Madi Received	d :081	ry, NC 27513 Nov 2023		PERDUE FAI	<b>RMS - DILLO</b> HWY 9 WES
	Laboratory Sample No. Lab Number	: WearCheck USA - : PCA0108121 : 06001408	501 Madi Received Diagnos	d : 08 l ed : 09 l	ry, NC 27513 Nov 2023 Nov 2023		PERDUE FAI	<b>RMS - DILLO</b> HWY 9 WES DILLON, S
	Laboratory Sample No. Lab Number Unique Number	: WearCheck USA - : PCA0108121 : 06001408 : 10729768	501 Madi Received	d : 08 l ed : 09 l	ry, NC 27513 Nov 2023		PERDUE FAI 2047	HWY 9 WES DILLON, S US 2953
ificate 12367 discuss this	Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - : PCA0108121 : 06001408 : 10729768	501 Madia Received Diagnos Diagnos	d : 08   ed : 09   tician : We	ry, NC 27513 Nov 2023 Nov 2023 s Davis		PERDUE FAI 2047 Contact: H	<b>RMS - DILLO</b> HWY 9 WES DILLON, S

Contact/Location: KEVIN HOOKS - PERDILSC