

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

#### **102017** Component **Diesel Engine** Fluid 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

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.

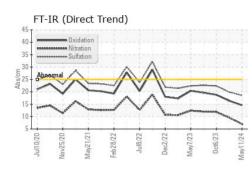
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0121029	PCA0116935	PCA0105816
Sample Date		Client Info		11 May 2024	20 Apr 2024	06 Oct 2023
Machine Age	mls	Client Info		220103	217858	201402
Oil Age	mls	Client Info		10000	10000	5000
Oil Changed		Client Info		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	6	15	14
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	3
Lead	ppm	ASTM D5185m	>40	0	1	2
Copper	ppm	ASTM D5185m	>330	<1	1	<1
Tin	ppm	ASTM D5185m	>15	0	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
				•		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base		-	history2 3
	ppm ppm			current	history1	
Boron		ASTM D5185m	2	current 0	history1 2	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0	current O O	history1 2 0	3
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 0 0 61	history1 2 0 65	3 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current 0 0 61 <1	history1 2 0 65 <1	3 0 61 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current 0 0 61 <1 1010	history1 2 0 65 <1 1007	3 0 61 <1 955
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	current     0     0     61     <1     1010     1134	history1 2 0 65 <1 1007 1235	3 0 61 <1 955 1343
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	Current 0 0 61 <1 1010 1134 1080	history1 2 0 65 <1 1007 1235 1100	3 0 61 <1 955 1343 926
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	2 0 50 950 1050 995 1180	Current 0 0 61 <1 1010 1134 1080 1325	history1 2 0 65 <1 1007 1235 1100 1326 3432 history1	3 0 61 <1 955 1343 926 1254 3259 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	current     0     0     61     <1     1010     1134     1080     1325     3731     current     3	history1     2     0     65     <1     1007     1235     1100     1326     3432     history1     3	3 0 61 <1 955 1343 926 1254 3259 history2 3
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 ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b>	current     0     0     61     <1     1010     1134     1080     1325     3731     current     3     2	history1     2     0     65     <1     1007     1235     1100     1326     3432     history1     3     4	3 0 61 <1 955 1343 926 1254 3259 history2 3 4
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 <b>limit/base</b>	current     0     0     61     <1     1010     1134     1080     1325     3731     current     3	history1     2     0     65     <1     1007     1235     1100     1326     3432     history1     3	3 0 61 <1 955 1343 926 1254 3259 history2 3
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 <b>Imit/base</b> >25 >20	current   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 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 TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	current   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current   0   current   0.5	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1   1	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 2 2 history2 1.5
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 TS 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	current   0   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current   0   current   0.5   7.0	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1   3   4   <1   history1   1   9.6	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 2 history2 1.5 11.9
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	current   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current   0   current   0.5	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1   1	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 2 2 history2 1.5
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 TS 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	current   0   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current   0   current   0.5   7.0	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1   3   4   <1   history1   1   9.6	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 2 history2 1.5 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 ppm TS 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	current   0   0   61   <1   1010   1134   1080   1325   3731   current   3   2   0   current   0.5   7.0   18.6	history1   2   0   65   <1   1007   1235   1100   1326   3432   history1   3   4   <1   history1   1   9.6   19.9	3 0 61 <1 955 1343 926 1254 3259 history2 3 4 2 2 history2 1.5 11.9 22.4

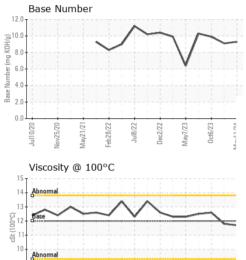


8 Jul10/20

lov25/20 /lav21/21

# **OIL ANALYSIS REPORT**





-eb28/22

118/22

Dec2/22 Mav7/23

	VISUAL		method	d lim	iit/base	current		histor	y1		histor	y2
	White Metal	scalar	*Visual	NON	NE	NONE	N	ONE		N	ONE	
	Yellow Metal	scalar *Visual		NO	NONE NONE		NONE			NONE		
	Precipitate	scalar *Visual			NONE NONE		NONE		NONE			
-	Silt								NONE			
		scalar *Visual			NONE NONE		NONE					
	Debris	scalar *Visual			NONE NONE		NONE		NONE			
	Sand/Dirt	scalar			NONE NON		NONE		NONE			
May7/23 0ct6/23 May11/24	Appearance	scalar	calar *Visual		NORML NORM		NORML		NORML			
Ma 00	Odor	scalar *Visual N		NOF	ORML NORML		NORML		NORML			
	Emulsified Water scalar *Visual >0		>0.2	0.2 <b>NEG</b>		NEG		NEG				
	Free Water	scalar	*Visual		NEG		NEG			NEG		
M	FLUID PROPE	RTIES	method	d lim	iit/base	current		histor	y1		histor	y2
V	Visc @ 100°C	cSt	t ASTM D445		12.00 <b>11.7</b>		11.8		12.6			
	GRAPHS											
	Iron (ppm)					Lead (ppm)						
	250			1111	100-	Sminn	111			111		
0ct6/23	200 - Severe				80.	Severe						
May7/23 0ct6/23	Abnormal				Ed 60.							
	abnormal				<sup>ස</sup> 40·	Abnormal						-
	50 -				20							
		$\sim$			- 0-			$\sim$	~		-	
	Juli 0/20 Jov25/20 Aay21/21	Jul8/22	uecz/zz May7/23	0ct6/23 ay11/24		Jul10/20 Jov25/20 Aay21/21	8/22	Jul8/22	Dec2/22	May7/23	0ct6/23	1/24
	Jui10/20 Nov25/20 May21/21	inn d	May	0ct6/23 May11/24		Jul10/20 Nov25/20 May21/21	Feb28/22	Jul	Deci	May	Oct	May11/24
	Aluminum (ppm)			~		Chromium (	որայ					~
	50 <sub>T</sub>				50-		Jpin)					
	40 Severe	1 1			40	Severe						
23	E 30 20 - Abnormal				E 30	Abnormal						
May7/23 0ct6/23 ^^11.0.4				-		- 0						
		$\sim$			10.							
		12	3 1	23	- 0·	21	22	2.	12	2	5	4
	Jul10/20 Nov25/20 May21/21	Jul8/22	uecc/zz May7/23	0ct6/23 May11/24		Jul10/20 Nov25/20 May21/21	Feb28/22	Jul8/22	Dec2/22	May7/23	0ct6/23	May11/24
	2 2 4	, c		Ma				,		$\geq$	0	Ma
	Copper (ppm) Silicon						)					
	400 Severe				80-	Severe						
	300 -				60-							
	톱 200 -				틢 40 -							
	8200				8.40	Abnormal						
	100				20							
	0			_	. 0.	~~~				$\Rightarrow$	-	-
	Jui10/20 Nov25/20 May21/21	Jul8/22	Nay7/23	0ct6/23 ay11/24		Jul10/20 Nov25/20 May21/21	Feb28/22	Jul8/22	Dec2/22	May7/23	0ct6/23	1/24
	Juli 0/20 Nov25/21 May21/2 Feb28/22	7	May	0ct6/23 May11/24		Jul1 Nov2 Mayź	Feb 2	Jul	Dec	May	00	May11/24
	Viscosity @ 100°C					Base Numbe	r					_
	16 <sub>1</sub>				12.0							
	14 Abnormal				품 10.0-			$\wedge$	-		-	
		$\sim$			BE 8.0		$\sim$			$\mathcal{N}$		
	12-00112 tzg	-			-0.0					v		
	70 - Abnormal			_	(B)/H0.0 Base Number (mg KOH(g) 4.0 2.0							
					뾽 2.0·							
	20+20+20+20+20+20+20+20+20+20+20+20+20+2	22	23	23 +	. 0.0	20-20-21-21-	22	22	22	23	23	24
	Jui10/20 Nov25/20 May21/21	Jul8/22	uecc/zz May7/23	0ct6/23 May11/24		Jul10/20 Nov25/20 May21/21	Feb28/22	Jul8/22	Dec2/22	May7/23	0ct6/23	May11/24
	L M. A.		- 2	Ma		L Nc	÷	-	1	2	-	Ma
Laboratory	: WearCheck USA - 501	Madiso	n Ave., C	ary, NC	27513	Ν	ILLE	R TRL	јск і	EAS	ING #	<i>‡</i> 114
Sample No.	: PCA0121029	Recei		07 Jun				PAU				
	: 06202460 Tested : 11 Jun 2024										ISHIP	
Unique Number									-		JS 08	
	: MOB 1 (Additional Tests: TBN )									act: E	ED DA	VIS
	contact Customer Service at 1-800-237-1369.						Contact: ED DAVIS edavis@millertransgroup.com					
										(050)		

To discuss this sample report, contact Customer 1369 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Report Id: MILLOG [WUSCAR] 06202460 (Generated: 06/11/2024 13:31:25) Rev: 1

Certificate L2367

Contact/Location: ED DAVIS - MILLOG

T: (856)214-3521

F: (856)214-3663