

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

#### 309677 Component Diesel Engine Fluid PETRO CANADA DURON SHP 10W30 (--- GAL)

### 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 INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0125177	PCA0121409	PCA0093255
Sample Date		Client Info		21 Jun 2024	01 Apr 2024	17 Mar 2023
Machine Age	mls	Client Info		183458	182112	166510
Oil Age	mls	Client Info		183458	182112	15000
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	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 METALS	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>100	37	14	17
-	ppm			-		
Chromium Nickel	ppm	ASTM D5185m	>20	0	0	<1 <1
	ppm		>4	0		
Titanium Silver	ppm	ASTM D5185m ASTM D5185m	>3	6 <1	12 0	31 <1
	ppm					
Aluminum	ppm	ASTM D5185m	>20 >40	2	3	6
Lead	ppm	ASTM D5185m		<1	0	2
Copper	ppm	ASTM D5185m	>330	<1	0	1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m				0
	pp			U	Ū	Ũ
ADDITIVES	pp	method	limit/base	current	history1	history2
	ppm		limit/base 2			-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	2	current	history1 20	history2 25
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	2 0	current 16 0	history1 20 0	history2 25 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 16 0 53	history1 20 0 48	history2 25 0 37
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current 16 0 53 <1	history1 20 0 48 <1	history2 25 0 37 <1 740 1463
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current           16           0           53           <1           916           1156           925	history1 20 0 48 <1 821 1235 1023	history2 25 0 37 <1 740
ADDITIVES 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           16           0           53           <1           916           1156	history1 20 0 48 <1 821 1235	history2 25 0 37 <1 740 1463
ADDITIVES 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 ASTM D5185m	2 0 50 0 950 1050 995	current           16           0           53           <1           916           1156           925	history1 20 0 48 <1 821 1235 1023	history2           25           0           37           <1           740           1463           1016
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180	current           16           0           53           <1           916           1156           925           1245	history1 20 0 48 <1 821 1235 1023 1195	history2           25           0           37           <1           740           1463           1016           1235
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method 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           16           0           53           <1           916           1156           925           1245           3768	history1 20 0 48 <1 821 1235 1023 1195 3547	history2           25           0           37           <1           740           1463           1016           1235           4104
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	current           16           0           53           <1           916           1156           925           1245           3768           current	history1         20         0         48         <1         821         1235         1023         1195         3547         history1	history2           25           0           37           <1           740           1463           1016           1235           4104           history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600	current           16           0           53           <1           916           1156           925           1245           3768           current           4	history1           20           0           48           <1           821           1235           1023           1195           3547           history1           3	history2           25           0           37           <1           740           1463           1016           1235           4104           history2           4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2	history1           20           0           48           <1           821           1235           1023           1195           3547           history1           3           2	history2           25           0           37           <1           740           1463           1016           1235           4104           history2           4           7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20	current           16           0           53           <1           916           1156           925           1245           3768           current           4           2           1	history1           20           0           48           <1           821           1235           1023           1195           3547           history1           3           2           <1	history2           25           0           37           <1           740           1463           1016           1235           4104           history2           4           7           2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm	method         ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 -20 <b>imit/base</b>	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2         1         current         4         2         1         current	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Silicon Sodium Potassium INFRA-RED Soot %	ppm	method         ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >25 >20 <b>limit/base</b>	current           16           0           53           <1           916           1156           925           1245           3768           current           4           2           1           current           0.3	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1         history1         3         2         <1         0.5	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2         1
ADDITIVES 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	method         ASTM D5185m         ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3 >20	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2         1         current         0.3         6.2	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1         0.5         8.4	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2         1         10.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7624         *ASTM D7415         method	2 0 50 0 950 1050 995 1180 2600 2600 25 20 220 20 1 init/base >3 20 30 3	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2         1         current         0.3         6.2         17.9         current	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1         0.5         8.4         18.5         history1	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2         1         10.3         20.7         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method       ASTM D5185m       ASTM D7185m       ASTM D7844       *ASTM D7624       *ASTM D7415       method       *ASTM D7414	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 20 <b>imit/base</b> >3 >20 >30	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2         1         current         0.3         6.2         17.9         current         13.7	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1         0.5         8.4         18.5         history1         14.8	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2         1         10.3         20.7         history2         16.6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7624         *ASTM D7415         method	2 0 50 0 950 1050 995 1180 2600 2600 25 20 220 20 1 init/base >3 20 30 3	current         16         0         53         <1         916         1156         925         1245         3768         current         4         2         1         current         0.3         6.2         17.9         current         13.7         9.3	history1         20         0         48         <1         821         1235         1023         1195         3547         history1         3         2         <1         0.5         8.4         18.5         history1	history2         25         0         37         <1         740         1463         1016         1235         4104         history2         4         7         2         history2         1         10.3         20.7         history2         16.6         8.0

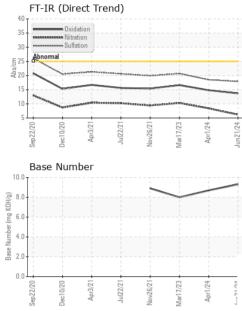
Report Id: MILPHINE [WUSCAR] 06222065 (Generated: 06/28/2024 04:27:35) Rev: 1

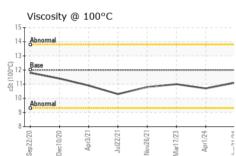
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# **OIL ANALYSIS REPORT**

Unique Number : 11100262





	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			
and the state of the second	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE			
Apr1/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
Apr1/24	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	11.1	10.7	11.0			
	GRAPHS									
	Iron (ppm)			10	Lead (ppm)					
Apr1/24	200 - Severe			81	Severe					
Apr1/24	Abnormal			60						
	Barrier Abnormal			<sup>₽</sup> 4	0 - Abnormal					
	50			20						
	20 +	21+-	23+	24	20	21-21-21-21-21-21-21-21-21-21-21-21-21-2	24			
	Sep22/20	Jul22/21 Nov26/21	Mar17/23 - Apr1/24 -	Jun21/24	Sep22/20 Dec10/20	Jul22/21	Mar17/23 - Apr1/24 - Jun21/24 -			
	∞ □ Aluminum (ppm)	≤	2	7	∽ □ Chromium (µ		4 7			
	<sup>50</sup> T			50	<sup>0</sup> T;;-					
	40 - Severe			40	0 - Severe					
, et	E 30 20 - Abnormal			ала ва	D					
Apr1/24	20 - Abnormal			<sup>2</sup> 2	0 - Abnormal					
A	10			10	D					
	20 0 0	21+	23 - 24 -	24	20	2121212121212121-21-21-21-	24			
	Sep.22/20 Dec10/20 Apr3/21	Jul22/21 Nov26/21	Mar17/23 Apr1/24	Jun21/24	Sep22/20 Dec10/20	Jul22/21	Mar17/23 Apr1/24 Jun21/24			
	∽ □ Copper (ppm)	2	2	7	Silicon (ppm)		2 ī			
	400 Severe			80						
	300 -			60	D					
	툍 200 -			E 41	0					
	100			2	Abnormal					
	/20 /20	3,21-	/23 -		120	3,21+	/24			
	Sep 22/20 Dec 1 0/20 Apr3/21	Jul22/21 Nov26/21	Mar17/23 Apr1/24	Jun21/24	Sep 22/20 Dec10/20	Jul22/21	Mar17/23 Apr1/24 Jun21/24			
	Viscosity @ 100°C	2			Base Numbe	r				
	16 14 Abnormal									
	14 Abnormal			9 0.1 E 6.1						
	0012-Base			L 0.1						
	<sup>3</sup> 10 Abnormal			(B)/HOX Bu) ta 6.1 By to 100 bu (B) ta 4.1 Bus 2.1	1					
	8			0.0						
		Jul22/21. Nov26/21.	Mar17/23 - Apr1/24 -	Jun21/24 .	Sep22/20 -	Jul22/21-	Mar17/23 - Apr1/24 - Jun21/24 -			
	Sepi. Ap	Jul. Novi	Mar	Jun	Sep	Jul Novi	Mar <sup>:</sup> Ap Jun2			
Laboratory		n Ave., Cary, NC 27513				LEASING #118				
Sample No. Lab Number	: PCA0125177	Rece		' Jun 2024						
	: 06222065 Teste					PHILADELPHIA, PA				

: 28 Jun 2024 - Wes Davis



Test Package : MOB 1 (Additional Tests: TBN) Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - 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)

Diagnosed

US 19116 Contact: ROSTY VITER rviter@millertransgroup.com T: (215)552-9832 F: (215)552-9892

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Contact/Location: ROSTY VITER - MILPHINE

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