

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **100120** 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.

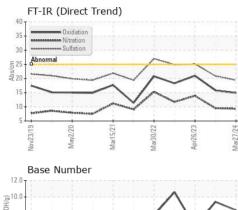
Fluid Condition

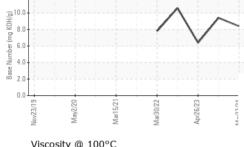
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

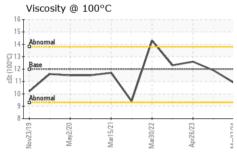
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		PCA0110679	PCA0097395	PCA0083832	
Sample Date		Client Info		27 Mar 2024	05 Sep 2023	26 Apr 2023	
Machine Age	mls	Client Info		111171	101011	95243	
Oil Age	mls	Client Info		3572	5768	1086	
Oil Changed		Client Info		Changed	Changed	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	CONTAMINATION		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			
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>100	25	37	57	
Chromium	ppm	ASTM D5185m		<1	<1	1	
Nickel	ppm	ASTM D5185m	>4	0	<1	<1	
Titanium	ppm	ASTM D5185m	- 1	48	11	55	
Silver	ppm	ASTM D5185m	>3	0	0	0	
Aluminum	ppm	ASTM D5185m		2	3	6	
Lead	ppm	ASTM D5185m	>40	- <1	2	2	
Copper	ppm	ASTM D5185m		13	10	28	
Tin	ppm	ASTM D5185m		<1	2	2	
Vanadium	ppm	ASTM D5185m	10	<1	0	0	
Cadmium	ppm	ASTM D5185m		0	<1	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current	history1 5	history2 18	
	ppm ppm						
Boron Barium		ASTM D5185m	2	77	5	18	
Boron	ppm	ASTM D5185m ASTM D5185m	2 0	77 0	5 0	18 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	77 0 24	5 0 54	18 0 34	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	77 0 24 <1	5 0 54 1	18 0 34 <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	77 0 24 <1 600	5 0 54 1 907	18 0 34 <1 736	
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	77 0 24 <1 600 1610	5 0 54 1 907 1161	18 0 34 <1 736 1721	
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	77 0 24 <1 600 1610 1044	5 0 54 1 907 1161 1042	18 0 34 <1 736 1721 1019	
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	77 0 24 <1 600 1610 1044 1205	5 0 54 1 907 1161 1042 1289	18 0 34 <1 736 1721 1019 1283	
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 50 950 1050 995 1180 2600	77 0 24 <1 600 1610 1044 1205 4405 current 5	5 0 54 1 907 1161 1042 1289 3274 history1 7	18 0 34 <1 736 1721 1019 1283 3959	
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	77 0 24 <1 600 1610 1044 1205 4405 current	5 0 54 1 907 1161 1042 1289 3274 history1	18 0 34 <1 736 1721 1019 1283 3959 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 limit/base	77 0 24 <1 600 1610 1044 1205 4405 <u>current</u> 5	5 0 54 1 907 1161 1042 1289 3274 history1 7	18 0 34 <1 736 1721 1019 1283 3959 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 ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base	77 0 24 <1 600 1610 1044 1205 4405 <u>current</u> 5 2	5 0 54 1 907 1161 1042 1289 3274 history1 7 4	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 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 ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	77 0 24 <1 600 1610 1044 1205 4405 <u>current</u> 5 2 2 <1	5 0 54 1 907 1161 1042 1289 3274 history1 7 4 3 3 history1 1.3	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 2 history2 history2 1.8	
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 Imit/base >25 >20	77 0 24 <1 600 1610 1044 1205 4405 <i>current</i> 5 2 <1 <i>current</i>	5 0 54 1 907 1161 1042 1289 3274 history1 7 4 3 3 <i>history1</i>	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 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 ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	77 0 24 <1 600 1610 1044 1205 4405 <i>current</i> 5 2 <1 <i>current</i> 0.7	5 0 54 1 907 1161 1042 1289 3274 history1 7 4 3 3 history1 1.3	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 2 history2 history2 1.8	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc 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	77 0 24 <1 600 1610 1044 1205 4405 <i>current</i> 5 2 <1 2 <1 <i>current</i> 0.7 9.3	5 0 54 1 907 1161 1042 1289 3274 history1 7 4 3 3 <i>history1</i> 1.3 9.5	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 3 2 history2 1.8 13.9	
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 D5185m	2 0 50 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20	77 0 24 <1 600 1610 1044 1205 4405 <i>current</i> 5 2 <1 <i>current</i> 0.7 9.3 19.4	5 0 54 1 907 1161 1042 1289 3274 history1 7 4 3 3 history1 1.3 9.5 20.9	18 0 34 <1 736 1721 1019 1283 3959 history2 7 3 2 <u>history2</u> 1.8 13.9 25.1	



OIL ANALYSIS REPORT







	VISUAL		method	limit/bas	se	current	hist	tory1	histo	ory2
	White Metal	scalar	*Visual	NONE		NONE	NON	E	NONE	-
	Yellow Metal	scalar	*Visual	NONE		NONE	NON	E	NONE	
	Precipitate	scalar	*Visual	NONE		NONE	NON	E	NONE	
~	Silt	scalar	*Visual	NONE		NONE	NON	E	NONE	
	Debris	scalar	*Visual	NONE		NONE	NON	E	NONE	
"destations	Sand/Dirt	scalar	*Visual	NONE		NONE	NON	E	NONE	_
Apr26/23 •	Appearance	scalar	*Visual	NORML		NORML	NOR	ML	NORN	ΛL
Apri Mar2	Odor	scalar	*Visual	NORML		NORML	NORML NC		NORN	ΛL
	Emulsified Water	scalar	*Visual	>0.2		NEG	NEG		NEG	
	Free Water	scalar	*Visual			NEG	NEG		NEG	
$\backslash \land$	FLUID PROPE	RTIES	method	limit/bas	se	current	hist	tory1	histo	ory2
\mathbf{V}	Visc @ 100°C	cSt	ASTM D445	12.00		10.9	11.9		12.6	
	GRAPHS									
	Iron (ppm) ²⁵⁰ T		· · · · · · · · · · · · · · · · · · ·		100 T	_ead (ppm)				
6/23	200 - Severe				80 -	Severe				
Арг26/23 л.с. т.сл.	E 150-				60-					
-	Abnormal	~		a a a a a a a a a a a a a a a a a a a	[≞] 40 - 1	Abnormal				
	50	\checkmark	-		20-					
		2	m	4	٥Ļ	n 0	1	2	~	4
	Nov23/19 May2/20	Mar30/22	Apr26/23	Mar27/24		May2/20	Mar15/2	Mar30/22	Apr26/23	Mar27/24
~		M	Ap	ĨW	-			Ma	AF	Ma
	Aluminum (ppm)				бот 50т	Chromium (p	pm)			
	40 - Severe	1 1				Severe				
					= 30 -					
Apr26/23 .	E 20 Abnormal			_	ad 20-	Abnormal	1			
Apri	10-				10-					
					٥L			2		
	Nov23/19 May2/20	Mar30/22	Apr26/23	Mar27/24	0100	May2/20	Mar15/21	Mar30/22	Apr26/23	Mar27/24
	—	Ma	Ap	Ma	-		Ma	Ma	Ap	Ma
	Copper (ppm)			Silicon (ppm ⁸⁰)				
	300 -				60 -		1			
	톱 200 -	/			튭 40 -	Abnormal	1] I I		
	100	/	6		20-					
		2		4	٥Ļ			2		4
	Nov23/19 May2/20	Mar30/22	Apr26/23	Mar27/24	500	May2/20	Mar15/21	Mar30/22	Apr26/23 -	Mar27/24 -
			Aş	W				N	Aş	M
	Viscosity @ 100°C				12.0 T	3ase Number				
	14 Abnormal			Base Number (mg KOH/g)	10.0			1	$\langle \rangle$	\sim
	Base	1		Bmj_	8.0 6.0				\sim	
	CSF CSF	$\langle T \rangle$		umbe	4.0				1	
	10 Abnormal	V		ase N	2.0					
	20+13+8	22	23		0.0	20	21	22	23	24
	Nov23/19 May2/20	Mar30/22	Apr26/23	Mar27/24	500	May2/20	Mar15/21	Mar30/22	Apr26/23	Mar27/24
	2 4 2	×	A	×	2	2 4	2	N	A	M
l	MaarObask 104 50	1 M !! -	- Aug. 0-		0					#100
Laboratory Sample No.	: WearCheck USA - 50 : PCA0110679	1 Madiso Rece i		, NC 2751 3 Apr 2024		M	ILLEK T		.EASING LER AVE	
	: 06140813	Teste		3 Apr 2024 3 Apr 2024						
Unique Number				Apr 2024 -		Folton				7601

: 08 Apr 2024 : 10 Apr 2024 - Sean Felton

Unique Number : 10965621 Diagnosed Test Package : MOB 1 (Additional Tests: TBN)

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)

Report Id: MILLAN [WUSCAR] 06140813 (Generated: 04/10/2024 08:41:14) Rev: 1

Certificate 12367

Contact/Location: RON ROBERTS - MILLAN

Page 2 of 2

US 17601

T: (717)945-6205

F: (717)945-5818

Contact: RON ROBERTS

rroberts@millertransgroup.com