

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (36 mls)

### 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.

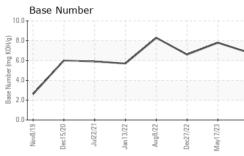
#### Fluid Condition

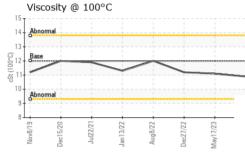
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

- <b>/</b> Nev2019 Dec2020 Judžiz1 Jan2022 Aug2022 Dec2023 Aug2023										
SAMPLE INFORM	<u>/IATIO</u> N	method	limit/base	current	history1	history2				
Sample Number		Client Info		PCA0101877	PCA0095241	PCA0087501				
Sample Date		Client Info		28 Aug 2023	17 May 2023	27 Dec 2022				
Machine Age	mls	Client Info		28393	28393	28393				
Oil Age	mls	Client Info		28393	28393	28393				
Oil Changed		Client Info		N/A	N/A	N/A				
Sample Status				NORMAL	NORMAL	NORMAL				
CONTAMINATI	ON	method	limit/base	current	history1	history2				
Fuel		WC Method	>5	<1.0	<1.0	<1.0				
Glycol		WC Method		NEG	NEG	NEG				
WEAR METALS	S	method	limit/base	current	history1	history2				
Iron	ppm	ASTM D5185m	>110	13	12	17				
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1				
Nickel	ppm	ASTM D5185m	>2	<1	0	0				
Titanium	ppm	ASTM D5185m		0	0	0				
Silver	ppm	ASTM D5185m	>2	0	0	0				
Aluminum	ppm	ASTM D5185m	>25	5	5	6				
Lead	ppm	ASTM D5185m	>45	0	0	0				
Copper	ppm	ASTM D5185m	>85	<1	<1	<1				
Tin	ppm	ASTM D5185m	>4	<1	<1	<1				
Vanadium	ppm	ASTM D5185m		0	0	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES		method	limit/base	current	history1	history2				
Boron	ppm	ASTM D5185m	2	7	13	9				
Barium	ppm	ASTM D5185m	0	0	0	0				
Molybdenum	ppm	ASTM D5185m	50	70	72	65				
	pp									
Manganese	ppm	ASTM D5185m	0	<1	<1	<1				
0		ASTM D5185m ASTM D5185m		<1 1054		<1 853				
Manganese Magnesium Calcium	ppm		0		<1					
Magnesium	ppm ppm	ASTM D5185m	0 950	1054	<1 935	853				
Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m	0 950 1050	1054 1299	<1 935 1167	853 1117				
Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 950 1050 995	1054 1299 1227	<1 935 1167 1083	853 1117 995				
Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 950 1050 995 1180	1054 1299 1227 1519	<1 935 1167 1083 1339	853 1117 995 1186				
Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 950 1050 995 1180 2600	1054 1299 1227 1519 4164	<1 935 1167 1083 1339 3862	853 1117 995 1186 2703				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 950 1050 995 1180 2600 limit/base	1054 1299 1227 1519 4164 current	<1 935 1167 1083 1339 3862 history1	853 1117 995 1186 2703 history2				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 950 1050 995 1180 2600 limit/base	1054 1299 1227 1519 4164 current 5	<1 935 1167 1083 1339 3862 history1 4	853 1117 995 1186 2703 history2 6				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 950 1050 995 1180 2600 limit/base >30	1054 1299 1227 1519 4164 <i>current</i> 5 2 11	<1 935 1167 1083 1339 3862 history1 4 0	853 1117 995 1186 2703 history2 6 0				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 950 1050 995 1180 2600 <b>limit/base</b> >30	1054 1299 1227 1519 4164 <i>current</i> 5 2 11	<1 935 1167 1083 1339 3862 history1 4 0 5	853 1117 995 1186 2703 history2 6 0 10				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED Soot %	ppm 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	0 950 1050 995 1180 2600 <b>limit/base</b> >30 >20 <b>limit/base</b>	1054 1299 1227 1519 4164 <i>current</i> 5 2 11 <i>current</i>	<1 935 1167 1083 1339 3862 history1 4 0 5 history1	853 1117 995 1186 2703 history2 6 0 10 10 history2				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 950 1050 995 1180 2600 <b>limit/base</b> >30 >20 <b>limit/base</b> >3	1054 1299 1227 1519 4164 5 2 2 11 current 0.4	<1 935 1167 1083 1339 3862 history1 4 0 5 history1 0.4	853 1117 995 1186 2703 history2 6 0 10 history2 0.5				
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm 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 ASTM D5185m ASTM D7844	0 950 1050 995 1180 2600 <b>limit/base</b> >30 220 <b>limit/base</b> >3 >20	1054 1299 1227 1519 4164 <b>current</b> 5 2 11 <b>current</b> 0.4 9.9 21.0	<1 935 1167 1083 1339 3862 history1 4 0 5 history1 0.4 8.4	853 1117 995 1186 2703 history2 6 0 10 history2 0.5 10.1				
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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624	0 950 1050 995 1180 2600 imit/base >30 20 imit/base >3 >20 >30 >30	1054 1299 1227 1519 4164 <b>current</b> 5 2 11 <b>current</b> 0.4 9.9 21.0	<1 935 1167 1083 1339 3862 history1 4 0 5 history1 0.4 8.4 20.1	853 1117 995 1186 2703 history2 6 0 10 history2 0.5 10.1 21.4				



# **OIL ANALYSIS REPORT**





		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	$\sim$	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
722 -	723 -		scalar	*Visual	NORML	NORML	NORML	NORML
Jan 13/22 Aug 8/22	Dec27/22 May17/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	~	Emulsified Water		*Visual	>0.2	NEG	NEG	NEG
		Free Water		*Visual	>0.2	NEG	NEG	NEG
		-	scalar	· · · · · · · · · · · · · · · · · · ·	11			
		FLUID PRO		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	12.00	10.9	11.1	11.2
		GRAPHS						
		Ferrous Alloys						
	3 2	80 70						
Jan 13/22 Aug 8/22	Dec27/22 May17/23	60 - nickel						
Ja 4	ă ÿ	50						
		툍 40						
		30						
		20-	-					
		10-	$\sim$	$\sim$				
			and it is not all the supervision of the supervisio					
				//22 .	3/23 -			
		Nov8/19 Dec15/20 Jul22/21	Jan 13/22 Aug8/22	Dec27/22 May17/23	Aug28/23			
		Non-ferrous Me	,	L 2	4			
		14 <sub>T</sub> 1						
		12 - copper						
		second tin						
		10-						
		<sup>-</sup> 6-						
		4						
		2						
		C C C C C C C C C C C C C C C C C C C	STATISTICS.					
		Nov8/19 - Jul22/21	Jan 13/22 Aug8/22	ec27/22 lay17/23	4ug28/23			
		Nov Dec1 Jul2	Jan1 Aug	Dec2 May1	Aug2			
		Viscosity @ 10	0°C			Base Number		
		15			9.0	T ::		
		14 - Abnormal			8.0	1	$\wedge$	$\wedge$
		13			(07.0 HOX but but but but but but but but but but			$\checkmark$
		(0,012 - Base (0,011) 33 11-			<u> </u>			
		0 57 11	$\checkmark$					
		1 I I I I I I I I I I I I I I I I I I I			Jan 3.0	/		
		10 - Abnormal			e 2.0	-		
		9			1.0			
			2	3 5	0.0	6 0 1	2+	3 3 5
			C) (1) (2) (3) (3) (3) (3) (3) (3) (3) (3) (3) (3	12	28/2	Nov8/19 . Dec15/20 . Jul22/21 .	Jan 13/22 Aug 8/22	Dec27/22 May17/23 Aug28/23
		ov8/19 5 c15/20 +	n13/5 1g8/5	1 62	2B			
		Nov8/19 +	Jan 13/22 Aug 8/22	Dec27/22 May17/23	Aug28/23	Dec	Jar Aı	May Aug
	Laboratory			-			,	
4	Laboratory Sample No.	: WearCheck USA	A - 501 Madi	son Ave., Ca	ry, NC 27513	3 NW WHI	TE & CO - BEAU	IFORT DIVISION
ANAB	Sample No.	: WearCheck USA : PCA0101877	- 501 Madia Received	son Ave., Ca d : 12 \$	ry, NC 27513 Sep 2023	3 NW WHI	TE & CO - BEAL 491 YENMAS	<b>IFORT DIVISION</b> SEE HIGHWAY
	Sample No. Lab Number	: WearCheck USA : PCA0101877 : 05948680	A - 501 Madia Received Diagnos	son Ave., Ca d : 12 \$ ed : 14 \$	ry, NC 27513	3 NW WHI	TE & CO - BEAL 491 YENMAS	<b>IFORT DIVISION</b> SEE HIGHWAY ARNVILLE, SC
TETRE LIAMONEANY	Sample No.	: WearCheck USA : PCA0101877 : 05948680 er : 10644639	- 501 Madia Received	son Ave., Ca d : 12 \$ ed : 14 \$	ry, NC 27513 Sep 2023 Sep 2023	3 NW WHI 1	TE & CO - BEAL 491 YENMASS V	IFORT DIVISION SEE HIGHWAY ARNVILLE, SC US 29944 ENT BULLOCK
	Sample No. Lab Number Unique Number Test Packag	: WearCheck USA : PCA0101877 : 05948680 er : 10644639	A - 501 Madia Received Diagnos Diagnost	son Ave., Ca d : 12 s ed : 14 s tician : We	ry, NC 27513 Sep 2023 Sep 2023 s Davis	3 NW WHI 1	TE & CO - BEAL 491 YENMASS V Contact: VINC	<b>IFORT DIVISION</b> SEE HIGHWAY ARNVILLE, SC US 29944