

# **OIL ANALYSIS REPORT**

### Sample Rating Trend





**Diesel Engine** 

PETRO CANADA DURON HP 15W40 (--- LTR)

## 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.

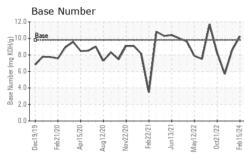
#### Fluid Condition

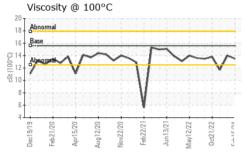
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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		x2019 Feb2020	0 Apr2020 Aug2020 Nov2	020 Feb2021 Jun2021 May2022 Oc	HZ022 Feb20:			
SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2		
Sample Number		Client Info		PCA0113884	PCA0094325	PCA0083689		
Sample Date		Client Info		15 Feb 2024	25 Apr 2023	14 Jan 2023		
Machine Age	hrs	Client Info		13781	14784	6323		
Oil Age	hrs	Client Info		250	500	500		
Oil Changed		Client Info		Changed	Changed	Changed		
Sample Status				NORMAL	MARGINAL	SEVERE		
CONTAMINATIO	ON	method	limit/base	current	history1	history2		
Fuel		WC Method	>5	<1.0	<b>2</b> .1	9.6		
Water		WC Method	>0.2	NEG	NEG	NEG		
Glycol		WC Method		NEG	NEG	NEG		
WEAR METALS	6	method	limit/base	current	history1	history2		
Iron	ppm	ASTM D5185m	>100	5	39	49		
Chromium	ppm	ASTM D5185m	>20	0	1	1		
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1		
Titanium	ppm	ASTM D5185m		0	0	<1		
Silver	ppm	ASTM D5185m	>3	0	0	0		
Aluminum	ppm	ASTM D5185m	>20	2	2	2		
Lead	ppm	ASTM D5185m	>40	0	0	0		
Copper	ppm	ASTM D5185m	>330	<1	1	2		
Tin	ppm	ASTM D5185m	>15	<1	0	<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		8	5	4		
Barium	ppm	ASTM D5185m		0	0	12		
Molybdenum	ppm	ASTM D5185m		51	65	56		
Manganese	ppm	ASTM D5185m		<1	<1	<1		
Magnesium	ppm	ASTM D5185m		911	1083	831		
Calcium	ppm	ASTM D5185m		947	1218	1039		
Phosphorus	ppm	ASTM D5185m		979	1115	862		
Zinc Sulfur	ppm	ASTM D5185m ASTM D5185m		1190 2989	1435 3661	1079 2499		
	ppm		11					
CONTAMINAN		method	limit/base		history1	history2		
Silicon	ppm	ASTM D5185m	>25	3	3	6		
Sodium	ppm	ASTM D5185m	0.6	<1	3	3		
Potassium	ppm	ASTM D5185m	>20	<1	2	0		
INFRA-RED		method	limit/base	current	history1	history2		
Soot %	%	*ASTM D7844	>3	0.2	0.3	0.4		
Nitration	Abs/cm	*ASTM D7624	>20	6.2	11.4	12.2		
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.4	22.4	23.9		
FLUID DEGRAD	ATION	method	limit/base	current	history1	history2		
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	24.7	25.7		
Base Number (BN)		ASTM D2896		10.25	8.64	5.69		
			5.0		0.01	0.00		



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	VISUAL		method	limit/base	current	history1	history2
A /	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$\mathbf{V}\mathbf{V}$	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
· V	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
22 +	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Oct21/22 Feb15/24							
	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		method	limit/base	current	history1	history2
$\sim$	Visc @ 100°C	cSt	ASTM D445	15.6	13.5	14.0	<b>▲</b> 11.7
	GRAPHS						
	Iron (ppm)			100	Lead (ppm)		
22	200 - Severe			80	Severe		
0ct21/22 E-41E /2 A				0	Testestes		
ŏů	E 150 100 - Abnormal			E 40	aa		
				40	TILIIII		
		~~		∧ <sup>20</sup>			
	20202	Z0	22		20	20-	/21 22 22 24
	Dec19/19 Feb21/20 Apr15/20 Aug12/20	Nov22/20 Feb22/21	Jun13/21 May12/22 Oct21/22	Feb15/24	Dec19/19 Feb21/20 Apr15/20	Nov22/20 Feb22/21	Jun13/21 May12/22 Oct21/22 Feb15/24
		2 4		LL.			
	Aluminum (ppm)			50	Chromium (ppr	n) 	
	40 - Severe			40	Severe		
	20 - Abnormal			<sup>30</sup> 20	Abnormal		
			M	10			
	20-10-10-10-10-10-10-10-10-10-10-10-10-10	720	22	24	/19 /20 /20	/20-	/21 /22 /22
	Dec19/19 Feb21/20 Apr15/20 Aug12/20	Nov22/20 Feb22/21	Jun13/21 May12/22 Oct21/22	Feb15/24	Dec19/19 Feb21/20 Apr15/20	Nov22/20 Feb22/21	Jun13/21 May12/22 Oct21/22 Feb15/24
		2 4	-, E O	<u></u>		2 4	, 2 U E
	Copper (ppm)			80	Silicon (ppm)		
	Abnormal						
	300 -			60			
	톱 200 -			톱 40			
	100 - 1			20	Abnormal		
					$\sim$		
		2/20	3/21	5/24	9/19 1/20 5/20	2/20	3/21
	Dec19/19 Feb21/20 Apr15/20 Aug12/20	Nov22/20 Feb22/21	Jun13/21 May12/22 Oct21/22	Feb15/24	Dec19/19 Feb21/20 Apr15/20	Nov22/20 Feb22/21	Jun13/21 May12/22 0ct21/22 Feb15/24
	Viscosity @ 100°C	2	-		Base Number		—
	20 Abnormal Base				Pass	~	$\sim \Lambda$
		$\sim T$	~~~~	(b)H0.0 (b)H0.0 (b)H0.0 (b)H0.0 (b)H0.0 (b)H0.0 (b)H0.0 (c)H0.	~~~	NT	VIT
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				8 2.0			
		20+ /21+	22+	0.0	20+ 20+ 20+	20+	/21+ 22+ 22+ 24+
	20	-	12/	Feb 15/24	Dec19/19 Feb21/20 Apr15/20	Nov22/20 Feb22/21	Jun 13/21 May 12/22 Oct21/22 Feb 15/24
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Contact/Location: DOMINIC WHITE - SCRBURIN