

OIL ANALYSIS REPORT

Sample Rating Trend

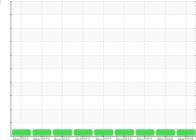




Machine Ic 813018 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)





SAMPLE INFORMATION method GFL0108800 GFL0108874 GFL0101469 Sample Number **Client Info** 22 Mar 2024 Sample Date Client Info 19 Mar 2024 01 Dec 2023 Machine Age hrs **Client Info** 4191 4164 3322 Oil Age hrs Client Info 8113 4164 3322 Oil Changed **Client Info** Changed Changed Not Changd NORMAL Sample Status NORMAL NORMAL CONTAMINATION Fuel WC Method >3.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS >120 5 29 6 Iron ppm ASTM D5185m Chromium ASTM D5185m >20 0 0 ppm <1 0 2 Nickel >5 ppm ASTM D5185m <1 Titanium ppm ASTM D5185m >2 0 0 0 Silver ASTM D5185m >2 0 0 0 ppm Aluminum ASTM D5185m >20 <1 <1 2 ppm 0 Lead ASTM D5185m >40 0 0 ppm ASTM D5185m >330 Copper ppm <1 1 1 0 0 Tin ppm ASTM D5185m >15 <1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium 0 0 0 ASTM D5185m ppm ADDITIVES Boron ppm ASTM D5185m 0 2 0 <1 Barium ASTM D5185m 0 0 0 2 ppm 58 57 54 Molybdenum ASTM D5185m 60 ppm 0 Manganese ASTM D5185m 0 0 ppm 0 Magnesium ASTM D5185m 1010 981 946 843 ppm Calcium ppm ASTM D5185m 1070 1089 1119 1053 Phosphorus ASTM D5185m 1150 1056 995 919 ppm 1270 Zinc ppm ASTM D5185m 1232 1249 1134 Sulfur ASTM D5185m 2060 3728 2912 4332 ppm CONTAMINANTS Silicon 4 5 2 ASTM D5185m >25

Potassium	ppm	ASTM D5185m	>20	0	0	1
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	0.2	1	0.4
Nitration	Abs/cm	*ASTM D7624	>20	5.7	10.1	6.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	17.9	22.6	18.8
FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.4	18.7	14.4
Base Number (BN)	ma KOH/a	ASTM D2896	9.8	9.0	4.8	8.2

2

4

ppm

ppm

ASTM D5185m

Sodium

Recommendation Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

DIAGNOSIS

There is no indication of any contamination in the oil

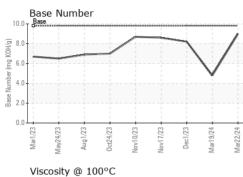
Fluid Condition

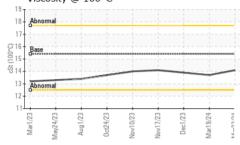
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

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			VISUAL		method				history2
	_	1	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
			Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		\vee	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
Nov10/23 Nov17/23	Dec1/23	Mar19/24 Mar22/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Nov1 Nov1	Der	Mar'	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	I		Free Water	scalar	*Visual		NEG	NEG	NEG
			FLUID PROP	ERTIES	method	limit/base	current	history1	history2
			Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.7	13.9
			GRAPHS						
	1		Ferrous Alloys						
1/23	/23)/24 -	25 - iron		Λ				
Nov1 0/23 Nov1 7/23	Dec1/23	Mar1 9/24	nickel		/				
			20		/				
			la 15		1				
			10	$\mathbf{\lambda}$	/				
			5			· · · · · · · · · · · · · · · · · · ·			
			Mar1/23 - Aug1/23 - Oct24/23 -	Nov10/23 -	Nov17/23 - Dec1/23 - Mar19/24 -	2/24			
			Mar1/23 May24/23 Aug1/23 Oct24/23	Nov1	Nov1 Dec Mar1	Mar22/24			
			Non-ferrous Meta	als					
			100 T						
			copper						
			80 - Copper						
			nessesses lead						
			80 - tin 60 -						
			80						
			80 - tin 60 -						
			80						
			80 - Lead 60 - Lead 40 - Lead						
			80 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 =	EZ/0	7/23 5/23 9/24	2/24			
			80 - Lead 60 - Lead 40 - Lead	Nov10/23	Nov17/23 Dec1/23 Mar19/24	Mai22/24			
			R0 60 40 0 CZ/Hz/WW Viscosity @ 100°		Nov17/23 Dec1/23 Mar19/24	Mar2224	Base Number		
			R0 60 40 20 CZ/hZ/MW Viscosity @ 100° 19		Nov117/23 Dec1/23 Mar19/24		Base Number		
			R0 60 40 0 EZ/IrEW Viscosity @ 100° 19 Abnormal		Nev17/23 Dec1/23 Dec1/23 Mar19/24	10.0	Base		
			R0 60 40 20 0 EZ/Fz/eW Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10		Nov17/23	10.0	Base		
			R0 60 40 20 0 EZ/Fz/eW Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10		Nov17/23 Dec1/23 Mar19/24	10.0	Base		
			R0 60 40 20 0 EZ/Fz/eW Viscosity @ 100° 19 10 10 10 10 10 10 10 10 10 10		Nov17/23 Dec1/23 Mar19/24	10.0	Base		
			B0 60 60 40 20 0 EZ/H2 ^{MW} Viscosity @ 100° 10 Base 17 16 17 16 16 10 15 14 14 10 15 14 14 14 15 14 14 14 14 14 14 14 14 14 14		Nov17/23 Dec1/23 Mar19/24 Mar19/24	10.0	Base		
			R0 60 40 40 20 0 CZ/hZ/W Viscosity @ 100° 13 60 0 CZ/hZ/W Viscosity @ 100°		Nevi7/23 Det//23 Mart19/24	10.0 8.6 6.0 10.0 KOH			
			80 60 40 20 0 EZ/I/EW Viscosity @ 100° 19 Abnomal 12 Abnomal 12		Nov17/23 Dec1/23 Dec1/23 Mar19/24	10.0 (b)HOX b(), b(), b(), b(), b(), b(), b(), b(),	D - Base		
			B0 60 40 20 0 CZ/FZ/MW Viscosity @ 100° 10 10 10 10 10 10 10 10 10 10	c	2 2	10.0 (0)HOX Bull 30 Bull 30 Bu	Base.		1/23
			80 60 40 20 0 EZ/I/EW Viscosity @ 100° 19 Abnomal 12 Abnomal 12	c	Nov17/23 Nov17/23 Nov17/23 Nov17/23 Nov17/23 Nov17/23 Dec1/23 Nov17/24 Nov12/24	10.0 (b)HOX b(), b(), b(), b(), b(), b(), b(), b(),	D - Base	0ct24Z3	Dec1/23 Dec1/23 Mar19/24
		opratory	R0 40 40 40 40 40 40 40 40 40 4	C EZO[1/00	Nov17/23	10.0 8.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0	Mar/23 May24/23 Aug1/23	0ct24/23	~ .
		poratory nple No.	Ba Ba Ba Ba Ba Ba Ba CC/FC/FC/BA Viscosity @ 100° Base CC/FC/FC/BA Viscosity @ 100° Base CC/FC/FC/FC/FC/FC/FC/FC/FC/FC/FC/FC/FC/F	C EZO[1/00	n Ave., Cary	10.0 (0)HOX Bull addument 4.0 +277272mW 2, NC 277513	Mar/23 May24/23 Aug1/23		5 - Michigan Eas
	Sar	nple No.	wearCheck USA - 56	C EZODINON 01 Madisc	ed : 27	10.0 (0)HOX Bull address 2.0 +277272mW 2, NC 27513 6 Mar 2024 7 Mar 2024	GFL Em	EZU1000 EZU1000 Vironmental - 415	5 - Michigan Ea 6200 Elmridg ling Heights, N
	Sar Lab Unio	mple No. Number	⁸⁰ ⁶⁰ ⁶⁰ ⁶⁰ ⁶⁰ ⁶⁰ ⁶⁰ ⁶⁰ ⁶	C EZODIANON 01 Madisco Rece Teste	ed : 27	10.0 (0)Hoy Bull addition (0)Hoy Bull addition (0)Hoy Bull addition (0)Hoy Bull addition (0) (0)Hoy Bull addition (0)Hoy Bull addition	GFL Em	EZUDAN EZUDAN Vironmental - 419 Ster	5 - Michigan Ea 6200 Elmridg

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

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