

OIL ANALYSIS REPORT

Sample Rating Trend

DEGRADATION



Component

Diesel Engine

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

DIAGNOSIS

Recommendation

The oil is near the end of it's useful service life, recommend schedule an oil change. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN level is low. The condition of the oil is acceptable for the time in service.

AL)		Jun2023	Jun2023	Sep2023 Dec2023	Feb2024	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0106845	GFL0092114	GFL0084665
Sample Date		Client Info		09 Feb 2024	05 Dec 2023	28 Sep 2023
Machine Age	hrs	Client Info		2392	1828	15030
Oil Age	hrs	Client Info		600	600	0
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINAT	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 METAL	S	method	limit/base	current	history1	history2
ron	ppm	ASTM D5185m	>100	13	23	16
Chromium	ppm	ASTM D5185m	>20	1	2	1
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	20	56	16
Lead	ppm	ASTM D5185m	>40	<1	0	1
Copper	ppm	ASTM D5185m	>330	<1	2	4
Γin	ppm	ASTM D5185m	>15	<1	<1	1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	8	8	5
Barium	ppm	ASTM D5185m	0	0	0	0
Volybdenum	ppm	ASTM D5185m	60	56	60	57
Manganese	ppm	ASTM D5185m	0	<1	<1	2
Magnesium	ppm	ASTM D5185m	1010	573	608	634
Calcium	ppm	ASTM D5185m	1070	1623	1710	1683
Phosphorus	ppm	ASTM D5185m	1150	737	721	701
Zinc	ppm	ASTM D5185m	1270	1001	1050	989
Sulfur	ppm	ASTM D5185m	2060	2524	2560	2456
		and a discount	11 1. 1			
CONTAMINAN	TS	method	limit/base	current	history1	history2
	TS ppm	ASTM D5185m	limit/base	current 7	history1 9	history2 9
Silicon						
Silicon Sodium	ppm	ASTM D5185m		7	9	9
Silicon Sodium	ppm ppm	ASTM D5185m ASTM D5185m	>25	7 7 67	9 9	9
Silicon Sodium Potassium INFRA-RED	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>25 >20	7 7 67	9 9 178	9 8 63
Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	>25 >20 limit/base	7 7 67 current	9 9 178 history1	9 8 63 history2
Silicon Sodium Potassium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>25 >20 limit/base >3	7 7 67 current 0	9 9 178 history1 0	9 8 63 history2 0
Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	>25 >20 limit/base >3 >20	7 7 67 <u>current</u> 0 11.4 23.1	9 9 178 history1 0 11.3	9 8 63 history2 0 11.1
Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7415	>25 >20 limit/base >3 >20 >30	7 7 67 <u>current</u> 0 11.4 23.1	9 9 178 history1 0 11.3 23.9	9 8 63 history2 0 11.1 23.2

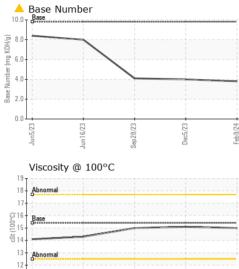


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Jun16/23

OIL ANALYSIS REPORT

VISUAL



		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
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Sep28/23	Dec5/23 Feb9/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Sep 2	Feb	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	1 1	Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	15.0	15.1	15.0
		GRAPHS						
		Ferrous Alloys						
23	23	iron						
Sep 28/23	Dec5/23 съса <i>та</i>	25 - chromium		~				
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		틆 15-	\checkmark					
		10-						
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		5 -		and and an and a state of the s				
					ALL DECEMBER OF			
		Jun5/23 Jun 16/23	Sep 28/23	Dec5/23	Feb9/24			
				Ó	ιζ.			
		Non-ferrous Meta	ls					
		copper						
		12 - Lead						
		10		1				
		E 8						
		^C 6-	\mathbf{i}					
		4	1					
		2						
				No. of Concession, Name of				
			8	23	27			
		n5/23 .	28/	SC5	/6 qi			
		Jun5/23 -	Sep 28/23	Dec5/23	Feb 9/24			
		Viscosity @ 100°		Dec5.		Base Number		
		Viscosity @ 100°(Dec5		Base Number		
		Viscosity @ 100°		Dec5	10.0	Base Number		
		Viscosity @ 100°(Dec5	10.0	Base Number		
		Viscosity @ 100°(Decs	10.0	Base Number		
		Viscosity @ 100°(Decs	10.0	Base Number		
		Viscosity @ 100°0		Deci	10.0	Base Number		
		Viscosity @ 100°0		Dech	10.0 8.0 WHOY Buy ga	Base Number		
		Viscosity @ 100°(De55	10.0 (6)HOX (0)HOX (0) (6.0 Mum assess 4.0 2.0	Base Number		
		Viscosity @ 100°0			10.0- (0) HOX Du HOX DU	Base	3/3	5/3
		Viscosity @ 100°(Dec5/23 Dec5	10.0 (6)HOX (0)HOX (0) (6.0 Mum assess 4.0 2.0	Base Number	Sep28/23	Dec5/23
		Viscosity @ 100%	C	Dec5/23 -	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Jun 16/23		
4	Laboratory	Viscosity @ 100°C	C ECUIDAN ECUIDAN D1 Madiso	n Ave., Cary	10.0- 10	Jun 16/23	ronmental - 856	- Houston Sout
	Sample No.	Viscosity @ 100°0	C ECUIDAD	n Ave., Cary ved : 13	10.0- 10	Jun 16/23	ronmental - 856	- Houston Sout ighway 6 Sout
	Sample No. Lab Number	Viscosity @ 100°0	C ECCENT	n Ave., Cary ved : 13 d : 14	NC 27513 Feb 2024	GFL Envi	ronmental - 856	- Houston Sout ighway 6 Sout Houston, T
	Sample No. Lab Number Unique Number	Viscosity @ 100°0 Viscosity @ 100°0 Abnormal Abnormal Control 10 Base Control 10 Control 10 Co	C ECUIDAD	n Ave., Cary ved : 13 d : 14	10.0- 10	GFL Envi	ronmental - 856 8515 H	- Houston Sou t ighway 6 Sout Houston, T US 7708
ertificate L2367	Sample No. Lab Number Unique Number Test Package	Viscosity @ 100°0 Viscosity @ 100°0 Abnormal Abnormal Control 10 Base Control 10 Control 10 Co	C EXERCISE DI Madiso Recei Teste Diagn	n Ave., Cary ved :13 d :14 iosed :15	NC 27513 Feb 2024 Feb 2024 - Don	GFL Envi	ronmental - 856 8515 H Contact: Ap	- Houston Sou t ighway 6 Sout Houston, T

limit/base

current

method

history1

history2