

OIL ANALYSIS REPORT

Sample Rating Trend

WEAR

Machine Id 926031-152524

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (--- LTR)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

🔺 Wear

The copper level is marginal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

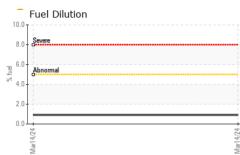
Fluid Condition

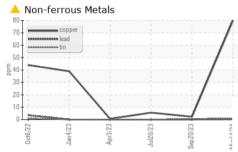
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

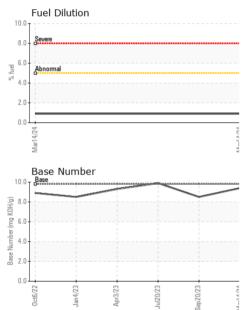
TR)		Oct2022	Jan2023 Apr2023	Jul2023 Sep2023	Mar2024	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0106117	GFL0078654	GFL0082088
Sample Date		Client Info		14 Mar 2024	20 Sep 2023	20 Jul 2023
Machine Age	hrs	Client Info		0	11464	11062
Oil Age	hrs	Client Info		600	500	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	ATTENTION	ATTENTION
CONTAMINATI	ON	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S .	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	77	14	34
Chromium	ppm	ASTM D5185m	>4	2	1	1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	2	<1
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	<u> </u>	2	6
Tin	ppm		>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	17	12	9
Barium	ppm	ASTM D5185m	0	4	0	0
Molybdenum	ppm	ASTM D5185m	60	59	69	70
Manganese	ppm	ASTM D5185m	0	4	<1	<1
Magnesium	ppm	ASTM D5185m	1010	716	1011	1011
	ppiii	AO INI DOTODIII	1010	110	1011	1011
Calcium	ppm	ASTM D5185m	1070	1540	1171	1163
Calcium	ppm			-		
-		ASTM D5185m	1070	1540	1171	1163
Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m	1070 1150	1540 1167	1171 1120	1163 1069
Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270	1540 1167 1392	1171 1120 1344	1163 1069 1268
Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060	1540 1167 1392 3228	1171 1120 1344 3958	1163 1069 1268 3726
Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1070 1150 1270 2060 limit/base	1540 1167 1392 3228 current	1171 1120 1344 3958 history1	1163 1069 1268 3726 history2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1070 1150 1270 2060 limit/base	1540 1167 1392 3228 current 18	1171 1120 1344 3958 history1 5	1163 1069 1268 3726 history2 4
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060 limit/base >30	1540 1167 1392 3228 current 18 27	1171 1120 1344 3958 history1 5 70	1163 1069 1268 3726 history2 4 120
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1070 1150 1270 2060 limit/base >30 >20	1540 1167 1392 3228 current 18 27 3	1171 1120 1344 3958 history1 5 70 3	1163 1069 1268 3726 history2 4 120 0
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	1070 1150 1270 2060 limit/base >30 >20 >5	1540 1167 1392 3228 current 18 27 3 0.9	1171 1120 1344 3958 history1 5 70 3 <1.0	1163 1069 1268 3726 history2 4 120 0 <1.0
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm TS ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	1070 1150 1270 2060 limit/base >30 >20 >5 limit/base	1540 1167 1392 3228 current 18 27 3 0.9 current 1	1171 1120 1344 3958 history1 5 70 3 <1.0 history1	1163 1069 1268 3726 history2 4 120 0 <1.0 history2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm TS ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	1070 1150 1270 2060 imit/base >30 >20 >5 imit/base >3	1540 1167 1392 3228 current 18 27 3 0.9 current	1171 1120 1344 3958 history1 5 70 3 <1.0 history1 0.5	1163 1069 1268 3726 history2 4 120 0 <1.0 history2 0.9
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm TS ppm ppm % % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7824 *ASTM D7415	1070 1150 2060 limit/base >30 >20 >5 limit/base >3 >20	1540 1167 1392 3228 current 18 27 3 0.9 current 1 1 10.2	1171 1120 1344 3958 history1 5 70 3 <1.0 history1 0.5 7.7	1163 1069 1268 3726 history2 4 120 0 <1.0 kistory2 0.9 7.9
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm TS ppm ppm % % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7824 *ASTM D7415	1070 1150 2060 limit/base >30 >20 >5 limit/base >3 >20 >3	1540 1167 1392 3228 current 18 27 3 0.9 current 1 10.2 23.2	1171 1120 1344 3958 history1 5 70 3 <1.0 history1 0.5 7.7 19.3	1163 1069 1268 3726 history2 4 120 0 <1.0 c<1.0 history2 0.9 7.9 19.8



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		VISUAL		method	limit/base	current	history1	history2	
		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	
	Mar14/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
	Mar	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	ERTIES	method	limit/base	current	history1	history2	
	/	Visc @ 100°C	cSt	ASTM D445	15.4	<mark> </mark> 12.3	14.6	14.7	
	/ /	GRAPHS							
	/	Ferrous Alloys							
		⁸⁰ T	,	1	1				
/23	723.	70 - iron			/				
Jul20/23	Sep20/23	chromium							
٦٢	Sei	00			/				
		50							
		틑 40		/					
		30							
				\setminus /					
		20	/	\sim					
		10-							
			. 23.)/23 -	1/24				
		0ct6/22 Jan4/23	Apro/23 Jul20/23	Sep 20/23	Mar14/24				
		🔺 Non-ferrous Meta	ls		_				
	VCIV	⁸⁰		· · · · · · · · · · · · · · · · · · ·	1				
	1IV	70 - copper			-/-				
	-	60 - tin			1				
		50-							
		₫.40-		/					
		30		·····/					
		20							
		10		/					
		0							
			ul20/23	20/23	4/24 -				
		Jan4	Jul20	Sep 20	Mar14				
Jul20/23	Sep20/23	● Viscosity @ 100°	С			Base Number			
٦٢	S.C.	18 - Abnormal			10	0.0 Base		<hr/>	
		17-	1	 		3.0			
					Base Number (mg KOH/g)				
					y Bun	6.0 -			
		C 16 0 15 3 14			ther (
					- Nur	H.O			
		13 Abnormal			Bask	2.0			
		12			· · · · · ·				
		11	23 + 23	23		3 2 0.0	23	23	
		0ct6/22 Jan 4/23	Apro/23 Jul20/23	Sep20/23	Mar14/24	0ct6/22 Jan4/23	Apr3/23 Jul20/23	Sep 20/23	
		-	~	63	2	-	-,	\$	
d	Laboratory	: WearCheck USA - 50				GFL En	vironmental - 15		
NAE	Sample No.		: GFL0106117 Receiv			ved : 21 Mar 2024 7580 PHILIPS H			
	Lab Number		Teste		Mar 2024		J	Jacksonville,	
ISTING LABORATORY	Unique Number								
rtificate L2367		: FLEET (Additional T				Co	ontact: GRANVI		
discuss		, contact Customer Serv						oll@gflenv.c	
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	s test methods that	are outside of the ISO is pecifications are based						1 (904) 252-6	

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

Submitted By: WITH iNDIANA GFL - Chris Smith

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