

OIL ANALYSIS REPORT



Machine Id

713048

Component Diesel Engine

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

DIAGNOSIS

Recommendation

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.

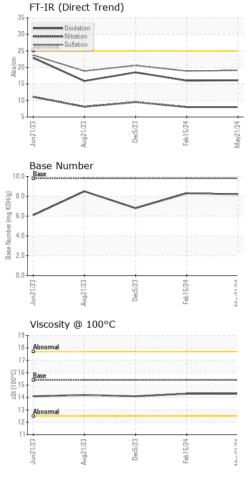
Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0123935	GFL0112980	GFL0098431
Sample Date		Client Info		21 May 2024	15 Feb 2024	05 Dec 2023
Machine Age	hrs	Client Info		3638	3161	2715
Oil Age	hrs	Client Info		3638	3161	2715
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	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
Iron	ppm	ASTM D5185m	>100	5	5	10
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	1	2
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	0	<1	1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
				v	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0			
	ppm ppm			current	history1	history2
Boron		ASTM D5185m	0	current 2	history1 3	history2 0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	current 2 0	history1 3 3	history2 0 12
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 2 0 61	history1 3 3 60	history2 0 12 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 2 0 61 <1	history1 3 3 60 0	history2 0 12 60 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 2 0 61 <1 1016	history1 3 3 60 0 899	history2 0 12 60 <1 949
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 2 0 61 <1 1016 1058	history1 3 3 60 0 899 1033	history2 0 12 60 <1 949 1037
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current 2 0 61 <1 1016 1058 1108	history1 3 60 0 899 1033 1037	history2 0 12 60 <1 949 1037 985
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 2 0 61 <1 1016 1058 1108 1308	history1 3 60 0 899 1033 1037 1156	history2 0 12 60 <1 949 1037 985 1239
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 2 0 61 <1 1016 1058 1108 1308 3512	history1 3 3 60 0 899 1033 1037 1156 3315	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 0 60 1010 1070 1150 1270 2060	current 2 0 61 <1 1016 1058 1108 1308 3512 current	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0	history2 0 12 60 <1 949 1037 985 1239 3188 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base	current 2 0 61 <1 1016 1058 1108 3512 current 2	history1 3 60 0 899 1033 1037 1156 3315 history1 2	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base	current 2 0 61 <1 1016 1058 1108 3512 current 2 3 <1 current current	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 0 2 history1	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 2 0 61 <1 1016 1058 1108 3512 current 2 3 <1 current 0 0.2	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 0 2 history1 0.2	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25	current 2 0 61 <1 1016 1058 1108 3512 current 2 3 <1 current current	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 0 2 history1	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	current 2 0 61 <1 1016 1058 1108 3512 current 2 3 <1 current 0 0.2	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 0 2 history1 0.2	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current 2 0 61 <1 1016 1058 1108 33512 current 2 3 <1 current 0.2 8.0	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 0 2 0 2 0 2 0.2 8.0	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2 0.3 9.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 >3	current 2 0 61 <1 1016 1058 1108 3512 current 2 3 <1 0.2 8.0 19.1	history1 3 60 0 899 1033 1037 1156 3315 history1 2 0 2 history1 0.2 8.0 18.9	history2 0 12 60 <1 949 1037 985 1239 3188 history2 3 6 4 history2 0.3 9.5 20.6



OIL ANALYSIS REPORT



		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
and an a state of the local division of the		Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE
and a state of the	- Dest	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Dec5/23 -	Feb15/24 - May21/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Dec	Feb15/24 May21/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.3	14.1
		GRAPHS						
		Ferrous Alloys						
	4	35						
Dec5/23	Feb15/24	30 - chromium						
	μ. Fe	25						
		E ²⁰ 15						
	1	15						
		10						
		5						
		0	en .	4				
1		Jun 21/23 Jug 21/23	Dec5/23	Feb 15/24	May21/24			
		, 4		ц.	Ma			
23	24	Non-ferrous Met	als					
Dec5/23	Feb15/24	copper						
	L 2	8 - tin		 				
		6 -						
		Edd						
		4		 				
		2						
			23	4	24			
		Jun21/23 Jug21/23	Dec5/23	eb15/24	lay21/24			
		ج Viscosity @ 100°		LE .	Ň			
		¹⁹ T			10	Base Number		
		18 - Abnormal		· · · · · · · · · · · · · · · · · · ·				
		17-			(B) 8	3.0		
		-16-			<u>o</u>		-	
		Base			P 6	0.0		
		© 15			per (mg	.0		
		() 16 () 15 () 15 () 14			6 Number (mg	i.0 I.0		
		Base 00 15 15 14 13 Abnormal			ase Number (rr	1.0 -		
		12			ß G Burn Jack Market Mar Market Market Marke			
		13 Abnormal 12	23	24	0	1.0 - 2.0 -	53	24
		13 Abnormal 12	Dec5/23	eb 15/24 +	0	1.0 - 2.0 -	Dec5/23	eb 15/24
		13 - Abnormal 12 -	Dec5/23	Feb15/24		1.0 - 1.0 -	Dec5/23 -	Feb15/24
1	Laboratory	13 - Abnormal 12			May21/24	Jun21/23		_
	Laboratory Sample No.	Abnormal 12 11 EZ/12 Umr EZ/12 Umr EZ/12 EZ		n Ave., Cary	May21/24	Jun21/23	rironmental - 9 [.]	471/2491 18 - Hartland HC Industrial Drive
	Sample No. Lab Number	¹³ Abnomal 12 11 EZ/12	01 Madisc	n Ave., Cary i ved : 24	, NC 27513 May 2024 May 2024	GFL Env	rironmental - 9 [.]	8 - Hartland HC
	Sample No. Lab Number Unique Number	: WearCheck USA - 5 : GFL0123935 : 06191652 : 11048404	01 Madiso Rece i	n Ave., Cary i ved : 24	, NC 27513 May 2024	GFL Env	r ironmental - 9 630 E	8 - Hartland HC Industrial Drive Hartland, W US 53029
Certificate L2367	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 5 : GFL0123935 : 06191652 : 11048404	01 Madisc Rece Teste Diagr	n Ave., Cary ived : 24 d : 29 nosed : 29	, NC 27513 May 2024 May 2024 - May 2024 - Ma	GFL Env	r ironmental - 9 630 E Contac	8 - Hartland HC Industrial Drive Hartland, W

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Submitted By: David McCall

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