

OIL ANALYSIS REPORT

Sample Rating Trend

الافة ال

NORMAL

722021-310026

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.

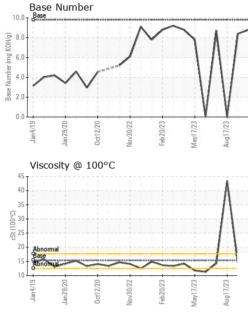
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2					
Sample Number		Client Info		GFL0098596	GFL0095116	GFL0090641					
Sample Date		Client Info		06 Nov 2023	03 Oct 2023	17 Aug 2023					
Machine Age	hrs	Client Info		26441	19587	19427					
Oil Age	hrs	Client Info		0	600	600					
Oil Changed		Client Info		Changed	Changed	Changed					
Sample Status				NORMAL	NORMAL	SEVERE					
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 METALS method limit/base current history1 history2											
Iron	ppm	ASTM D5185m	>110	23	24	1 33					
Chromium	ppm	ASTM D5185m	>4	<1	<1	<u> </u>					
Nickel	ppm	ASTM D5185m	>2	0	0	1					
Titanium	ppm	ASTM D5185m		<1	0	0					
Silver	ppm	ASTM D5185m	>2	0	0	0					
Aluminum	ppm	ASTM D5185m	>25	2	10	10					
Lead	ppm	ASTM D5185m	>45	2	2	13					
Copper	ppm	ASTM D5185m	>85	1	1	29					
Tin	ppm	ASTM D5185m	>4	<1	0	3					
Vanadium	ppm	ASTM D5185m		0	0	0					
Cadmium	ppm	ASTM D5185m		0	0	0					
ADDITIVES		method	limit/base	current	history1	history2					
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 <1	history2 0					
	ppm ppm	ASTM D5185m									
Boron		ASTM D5185m	0	2	<1	0					
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	<1 0	0 0					
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 57	<1 0 62	0 0 56					
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 57 <1	<1 0 62 <1	0 0 56 2					
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 57 <1 919	<1 0 62 <1 1014 1072 1038	0 0 56 2 864 964 900					
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	2 0 57 <1 919 1008	<1 0 62 <1 1014 1072	0 0 56 2 864 964					
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	2 0 57 <1 919 1008 924	<1 0 62 <1 1014 1072 1038	0 0 56 2 864 964 900					
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	2 0 57 <1 919 1008 924 1211	<1 0 62 <1 1014 1072 1038 1342	0 0 56 2 864 964 900 1129					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 57 <1 919 1008 924 1211 2870	<1 0 62 <1 1014 1072 1038 1342 3180	0 0 56 2 864 964 900 1129 2818					
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 57 <1 919 1008 924 1211 2870 current	<1 0 62 <1 1014 1072 1038 1342 3180 history1	0 0 56 2 864 964 900 1129 2818 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	2 0 57 <1 919 1008 924 1211 2870 current 5	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4	0 0 56 2 864 964 900 1129 2818 history2 13					
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	2 0 57 <1 919 1008 924 1211 2870 <u>current</u> 5 6	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6	0 0 56 2 864 964 900 1129 2818 history2 13 36					
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	0 0 0 1010 1070 1150 1270 2060 limit/base >30	2 0 57 <1 919 1008 924 1211 2870 current 5 6 6 <1	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1	0 0 56 2 864 964 900 1129 2818 history2 13 36 5					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 >30 limit/base >30	2 0 57 <1 919 1008 924 1211 2870 current 5 6 <1 current	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1 history1	0 0 56 2 864 964 900 1129 2818 history2 13 36 5 5 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 20 limit/base	2 0 57 <1 919 1008 924 1211 2870 current 5 6 <1 current 1.2	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1 4 6 <1 history1 0.7	0 0 56 2 864 964 900 1129 2818 history2 13 36 5 5 history2					
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 limit/base >30 20 limit/base >30	2 0 57 <1 919 1008 924 1211 2870 current 5 6 <1 5 6 <1 1.2 8.9	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1 4 6 <1 0.7 8.3	0 0 56 2 864 964 900 1129 2818 history2 13 36 5 history2 9.3 26.9					
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 >30 imit/base >3 20	2 0 57 <1 919 1008 924 1211 2870 <u>current</u> 5 6 <1 <u>current</u> 1.2 8.9 21.6	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1 4 6 <1 0.7 8.3 20.7	0 0 56 2 864 964 900 1129 2818 history2 13 36 5 5 history2 ● 9.3 26.9 59.2					
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 22060 2060 2060 2060 200 200 200 200 2	2 0 57 <1 919 1008 924 1211 2870 Current 5 6 <1 5 6 <1 Current 1.2 8.9 21.6 Current	<1 0 62 <1 1014 1072 1038 1342 3180 history1 4 6 <1 history1 0.7 8.3 20.7 history1	0 0 56 2 864 964 900 1129 2818 history2 13 36 5 history2 9.3 26.9 59.2 history2					

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836



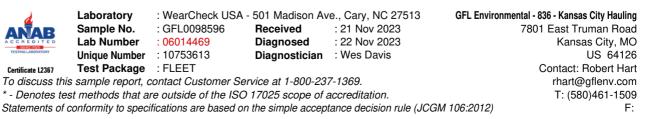
OIL ANALYSIS REPORT

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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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.5	43.5
GRAPHS						
Ferrous Alloys						
140 iron	1111					
120 - chromium		1201200				
100						
80-						
60 -	AA	A A 1	1.11			
40	$\Lambda \Lambda$	$\Lambda \Lambda I$				
	/ / 1	VI	L			
~ ~						
Jan 4,19	122	123	3			
Jan 4/19 Jan 29/20 Oct1 2/20	Nov30/22 Feb20/23	May17/23 -	- Ppc			
Non-ferrous Meta	ls					
30 copper						
25 - needed lead		A 1				
20-		A . I				
<u>م</u> 15-						
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0	2	AN	E			
Jan4/19 - Jan29/20 - Oct12/20 -	Nov30/22 Feb20/23	May17/23 .				
Viscosity @ 100°C		M	t.			
⁴⁵ []			10.0	Base Number		
40 -				0	~	< · · ·
35			€ 8.0	•		NIT
			KOH		1	
30			B 6.0		1	
ಸ್ <u>ರ</u> 25			4.0	nA/	****	111
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15 Base			² 2.0			111
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Vov30/22

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lav17/23

Oct12/20 -

an 29/20

Report Id: GFL836 [WUSCAR] 06014469 (Generated: 11/22/2023 16:39:03) Rev: 1

Certificate L2367

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Unique Number : 10753613

Test Package : FLEET

Laboratory Sample No.

Lab Number

an4/19

an29/20

: GFL0098596

: 06014469

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Oct12/20

Vov30/22

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836

0.0

Jan4/19

May17/23 .

Diagnostician : Wes Davis

Feb20/23

Received

Diagnosed

Aug17/23 -