

OIL ANALYSIS REPORT

Sample Rating Trend





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.

,				23 Oct2023 Dec2023 Mar2024		
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0104901	GFL0104788	GFL0088224
Sample Date		Client Info		19 Mar 2024	07 Mar 2024	12 Dec 2023
Machine Age	hrs	Client Info		33168	33168	32239
Oil Age	hrs	Client Info		33168	32239	11408
Oil Changed		Client Info		N/A	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	>110	41	43	26
Chromium	ppm	ASTM D5185m	>4	2	1	2
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	5	4	2
Lead	ppm	ASTM D5185m	>45	2	0	1
Copper	ppm	ASTM D5185m	>85	2	2	2
Tin	ppm	ASTM D5185m	>4	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 2	history2 0
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	0	2	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0	2 0	0 12
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 68	2 0 58	0 12 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 68 <1	2 0 58 <1	0 12 61 <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	0 0 68 <1 986	2 0 58 <1 923	0 12 61 <1 916
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	0 0 68 <1 986 1145	2 0 58 <1 923 1066	0 12 61 <1 916 1023
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	0 0 68 <1 986 1145 1130	2 0 58 <1 923 1066 1047	0 12 61 <1 916 1023 1010
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	0 0 68 <1 986 1145 1130 1301	2 0 58 <1 923 1066 1047 1238	0 12 61 <1 916 1023 1010 1207
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	0 0 60 0 1010 1070 1150 1270 2060	0 0 68 <1 986 1145 1130 1301 3082	2 0 58 <1 923 1066 1047 1238 3109	0 12 61 <1 916 1023 1010 1207 3021
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 68 <1 986 1145 1130 1301 3082 current	2 0 58 <1 923 1066 1047 1238 3109 history1	0 12 61 <1 916 1023 1010 1207 3021 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	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	0 0 68 <1 986 1145 1130 1301 3082 current 10	2 0 58 <1 923 1066 1047 1238 3109 history1 8	0 12 61 <1 916 1023 1010 1207 3021 history2 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 68 <1 986 1145 1130 1301 3082 <u>current</u> 10 25	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >30	0 0 68 <1 986 1145 1130 1301 3082 current 10 25 6	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base	0 0 68 <1 986 1145 1130 1301 3082 <u>current</u> 10 25 6	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4 history1	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6 6 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >30 200 limit/base	0 0 68 <1 986 1145 1130 1301 3082 <u>current</u> 10 25 6 <u>current</u>	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4 history1 0.8	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6 6 history2 0.6
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >30 220 <i>limit/base</i> >3	0 0 68 <1 986 1145 1130 1301 3082 current 10 25 6 current 0.8 11.2	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4 15 4 history1 0.8 11.2	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6 6 history2 0.6 9.4
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 Iimit/base >30 220 Iimit/base >3 >20 >30	0 0 68 <1 986 1145 1130 1301 3082 Current 10 25 6 Current 0.8 11.2 22.8 Current	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4 history1 0.8 11.2 22.3 history1	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6 history2 0.6 9.4 20.9 history2
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >30 imit/base >3 >20 >3	0 0 68 <1 986 1145 1130 1301 3082 <u>current</u> 10 25 6 <u>current</u> 0.8 11.2 22.8	2 0 58 <1 923 1066 1047 1238 3109 history1 8 15 4 <u>history1</u> 0.8 11.2 22.3	0 12 61 <1 916 1023 1010 1207 3021 history2 8 6 6 6 history2 0.6 9.4 20.9



13 Abnormal 12 11 Jul26/19

Jan2/23

Apr24/23

OIL ANALYSIS REPORT

scalar *Visual

NONE

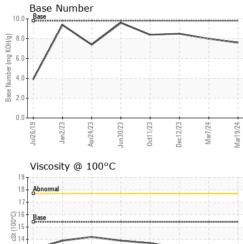
NONE

NONE

NONE

VISUAL

White Metal



		_			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						
1						scalar	*Visual	NONE	NONE	NONE	NONE
~			4	4	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Jun30/23	0ct11/23	Dec12/23	Mar7/24	Mar1 9/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jur	00	De	\geq	Ma	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
°C					Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
1					Free Water	scalar	*Visual		NEG	NEG	NEG
1					FLUID PROP	FRTIES	method	limit/base	current	history1	history2
						cSt	ASTM D445				
					Visc @ 100°C	CSI	ASTIVI D445	13.4	13.4	13.4	13.3
					GRAPHS						
					Ferrous Alloys						
23	23	23	24 -	V C	iron						
Jun30/23	0ct11/23	Dec12/23	Mar7/24	101-107	50 - chromium	\wedge					
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					Non-ferrous Met	,		≥			
					¹⁶ T	lais					
					14 - copper						
					12 tin						
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					4	L					
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					23 23	23 -	23	54			
					Jul26/19 Jan2/23 Apr24/23	Jun30/23 Oct11/23	Dec12/23 Mar7/24	Mar19/24			
					Viscosity @ 100	2023		2			
					¹⁹ T			10	Base Number		
					18 - Abnormal					\wedge	
					17			(B ^K			
					O ¹⁶ Base			Di Ko	1.0		
					(16) Base 15 3 14			Base Number (mg KOH/g)			
								- I N A	1.0		
					13 Abnormal			Bas	2.0 -		
					12-						
					11 +)/23 - /23 -	2/23 -		5/19 + 0.0 1/23 + 0.0)/23 -	2/23 +
					Jul26/19 Jan2/23 Apr24/23	Jun30/23 Oct11/23	Dec12/23 Mar7/24	Mar19/24	Jul26/19 Jan2/23 Apr24/23	Jun30/23 0ct11/23	Dec12/23 Mar7/24 Mar19/24
										-	
	4		abora		: WearCheck USA - S	501 Madiso Recei		, NC 27513 2 Mar 2024	GFL En		0 - Joplin Hauling
A	JAB		Sample No.	: GFL0104901	3700	West 7th Street					
TESTING	G LABORATORY		Lab Number		: 10940322	Teste Diagr		Mar 2024 Mar 2024 - Wes Davis			Joplin, MO US 64801
Certifi	icate L2367				: FLEET	Diagnoseu . 22 Mai 2024 - W				Contac	ct: James Jarrett
					, contact Customer Se	rvice at 1-8	00-237-1369	9.			rett@gflenv.com
* - D	enotes	test n	nethod	ds that	are outside of the ISC	17025 sco	pe of accred	litation.		Т	: (417)310-2802
State	ements	of co	nformi	ity to s	pecifications are based	d on the sin	nple accepta	nce decisioi	n rule (JCGM 10		F:

Submitted By: VINCE ASTI

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