

OIL ANALYSIS REPORT

Sample Rating Trend



427057-401390.1

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

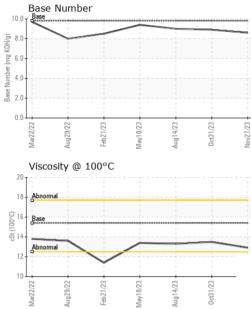
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088106	GFL0088083	GFL0067683
Sample Date		Client Info		27 Nov 2023	31 Oct 2023	14 Aug 2023
Machine Age	hrs	Client Info		33718	33602	0
Oil Age	hrs	Client Info		33602	0	0
Oil Changed		Client Info		Changed	Changed	N/A
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	9	5	18
Chromium	ppm	ASTM D5185m	>20	2	<1	4
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	1	<1	5
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	2	0	0
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Oddinium	ppm	No TWI Do Toolii		U	0	0
ADDITIVES	ppm	method	limit/base	current	history1	history2
	ppm		limit/base	-	-	-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0 0 60	current <1 0 55	history1 0 0 55	history2 5 0 73
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60 0	current <1 0	history1 0 0 55 0	history2 5 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current <1 0 55	history1 0 0 55 0 889	history2 5 0 73 0 1123
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<pre>current <1 0 55 <1</pre>	history1 0 0 55 0 889 940	history2 5 0 73 0 1123 1264
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current <1 0 55 <1 956 1034 1044	history1 0 55 0 889 940 967	history2 5 0 73 0 1123 1264 1223
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current <1 0 55 <1 956 1034 1044 1242	history1 0 55 0 889 940 967 1188	history2 5 0 73 0 1123 1264 1223 1610
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current <1 0 55 <1 956 1034 1044	history1 0 55 0 889 940 967	history2 5 0 73 0 1123 1264 1223
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current <1 0 55 <1 956 1034 1044 1242	history1 0 55 0 889 940 967 1188 2911 history1	history2 5 0 73 0 1123 1264 1223 1610
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m 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	current <1 0 555 <1 956 1034 1044 1242 3091 current 8	history1 0 0 55 0 889 940 967 1188 2911 history1 5	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current <1 0 555 <1 956 1034 1044 1242 3091 current 8 <1	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m 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 limit/base	current <1 0 555 <1 956 1034 1044 1242 3091 current 8	history1 0 0 55 0 889 940 967 1188 2911 history1 5	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 <1 current	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 0 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 <1 0.2	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1 0 history1 0.1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 history2 10 0.2
ADDITIVES 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	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 <1 current	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 0 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 <1 0.2	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1 0 history1 0.1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 history2 10 0.2
ADDITIVES 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 t ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 ourrent 0.2 4.8	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1 0 history1 0.1 4.5	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 history2 10 0.2 5.2
ADDITIVES 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 t ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	current <1 0 55 <1 956 1034 1044 1242 3091 current 8 <1 <1 current 0.2 4.8 17.2	history1 0 0 55 0 889 940 967 1188 2911 history1 5 1 0 history1 0.1 4.5 17.1	history2 5 0 73 0 1123 1264 1223 1610 4963 history2 10 0 0 history2 10 0.2 5.2 17.3



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
Feb21/23 Mav18/23	Aua14/23	0ct31/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Ma Fei	Aur	00 0		scalar	*Visual	NORML	NORML	NORML	NORML
0°C			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
			Free Water	scalar	*Visual		NEG	NEG	NEG
			FLUID PROPE		method	limit/base	current	history1	history2
		*****	Visc @ 100°C	cSt	ASTM D445	15.4	12.9	13.5	13.3
			GRAPHS						
			Ferrous Alloys						
1/23 -	4/23 -	0ct31/23 -	60 - chromium						
Feb21/23 Mav18/23	Aua14/23	Oct3	50						
			= 40						
			und 30						
			20-		~				
			10-						
			Mar22/22 Aug29/22 Feb21/23	May18/23	Aug14/23 0ct31/23	Nov27/23			
					Au	Nc			
			Non-ferrous Meta	115					
			copper						
			8 -						
			udd 4						
				\mathbf{N}					
			2			/			
			Mar22/22 Aug29/22 Feb21/23	May18/23	Aug14/23 Oct31/23	Nov27/23			
			≥		AL	2			
			¹⁹ T			10.0	Base Number		
			18 - Abnormal						
			17 16 Page			(B)H			
						.6.0 6.0 8ase Number (mg KOH/d) 8ase 2.0)-		
			00 15 00 15 14			-aq 4.0			
			13 Abnormal	\square		N asse Nu			
			12			⁶⁶ 2.0)		
			10						
			Mar22/22 Aug29/22 Feb21/23	May18/23	Aug14/23 0ct31/23	Nov27/23	Mar22/22 Aug29/22 Feb21/23	May18/23	Aug 1-1/23 0ct31/23 Nov27/23
			Ma Aui	Ma	Au	No	Aui	Ma	No. Or
à	Laboratory		: WearCheck USA -				3 GFL Envir) - Joplin Hauling
		Sample No.	: GFL0088106	Received		Dec 2023		3700	West 7th Street
A C C R E D		Lab Number Unique Numbe	: 06027564 r : 10777355		Diagnosed : 08 Dec 2023 Diagnostician : Wes Davis				Joplin, MO US 64801
Certificate	e L2367	Test Package		Siagnost				Contac	t: James Jarrett
		s sample report	, contact Customer Serv						ett@gflenv.com
			are outside of the ISO				ICGM 106-2012	T:	: (417)310-2802 F:
Glaicin		sinoning to spe	omeations are based off	and simple	acceptance		000 m 100.2012)		