

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id Component

Fluid

Diesel Engine PETRO CANADA DURON SHP 15W40 (5 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

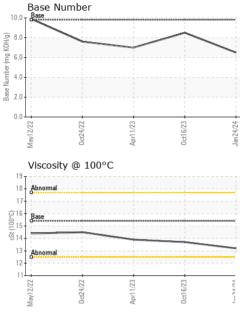
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0106690	GFL0097707	GFL0072963
Sample Date		Client Info		24 Jan 2024	16 Oct 2023	11 Apr 2023
Machine Age	hrs	Client Info		17983	17377	16788
Oil Age	hrs	Client Info		606	589	829
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>90	23	4	14
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	2	<1	0
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	1
Lead	ppm	ASTM D5185m	>40	1	<1	0
Copper	ppm	ASTM D5185m	>330	62	1	<1
Tin	ppm	ASTM D5185m	>15	1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	<1 history1	0 history2
	ppm ppm		limit/base			-
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 4	history1 3	history2 3
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 4 0	history1 3 5	history2 3 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 65	history1 3 5 56	history2 3 0 60
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 4 0 65 1	history1 3 5 56 <1	history2 3 0 60 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 4 0 65 1 958	history1 3 5 56 <1 823	history2 3 0 60 <1 946
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 4 0 65 1 958 1091	history1 3 5 56 <1 823 999	history2 3 0 60 <1 946 1093
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 4 0 65 1 958 1091 993	history1 3 5 56 <1 823 999 1010	history2 3 0 60 <1 946 1093 1021
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 4 0 65 1 958 1091 993 1252	history1 3 5 56 <1 823 999 1010 1131	history2 3 0 60 <1 946 1093 1021 1299
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 00 00 1010 1070 1150 1270 2060	Current 4 0 65 1 958 1091 993 1252 2699	history1 3 5 56 <1 823 999 1010 1131 2793	history2 3 0 60 <1 946 1093 1021 1299 3329
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 00 00 1010 1070 1150 1270 2060	Current 4 0 65 1 958 1091 993 1252 2699 Current	history1 3 5 56 <1 823 999 1010 1131 2793 history1	history2 3 0 60 <1 946 1093 1021 1299 3329 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus 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 method	0 0 60 1010 1070 1150 1270 2060 kimit/base	current 4 0 65 1 958 1091 993 1252 2699 current 8	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	current 4 0 65 1 958 1091 993 1252 2699 current 8 4	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	current 4 0 65 1 958 1091 993 1252 2699 current 8 4 4	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0 2	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25	Current 4 0 65 1 958 1091 993 1252 2699 Current 8 4 4 4 4	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0 2 history1	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2 <1 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 4 0 65 1 958 1091 993 1252 2699 current 8 4 2 0 0.4	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0 2 history1 0.1	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2 <1 history2 6 2 <1 history2 0.4
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 ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	current 4 0 65 1 958 1091 993 1252 2699 current 8 4 0 0.4 9.1	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0 2 history1 0.1 4.9	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2 <1 history2 0 4 8.7
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 ppm	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >6 >20 >30	Current 4 0 65 1 958 1091 993 1252 2699 current 8 4 0.4 9.1 20.6	history1 3 5 56 <1 823 999 1010 1131 2793 history1 4 0 2 history1 0.1 4.9 17.9	history2 3 0 60 <1 946 1093 1021 1299 3329 history2 6 2 <1 history2 0 0.4 8.7 20.3



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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORM
Odor	scalar	*Visual	NORML	NORML	NORML	NORM
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	histor
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.7	13.9
GRAPHS						
Ferrous Alloys						
30 iron]						
25 - chromium						
20 - nickel			1			
			1			
15 -	1	/				
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	11/23					
	Apr11/23	0ct16/23	Jan24/24			
May12/22 0ct24/22						
May 12/22 0ct24/22 Non-ferrous Metal						
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Non-ferrous Metal	S	Oct16/23	Jan 24/24			
Non-ferrous Metal	S	Oct16/23	Jan 24/24			
Non-ferrous Metal						
ZZ/HZPO Non-ferrous Metal	Phili23	Oct16/23	Jan 24/24			
Non-ferrous Metal	Phili23	Oct16/23	Jan24/24	Base Numbe	r	
ZZZI/REW Non-ferrous Metal	Phili23	Oct16/23	Jan 24/24	Base Numbe	r	
Non-ferrous Metal	Phili23	Oct16/23	+2/+2/=		r	
ZZZI/REW Non-ferrous Metal	Phili23	Oct16/23			r	
Non-ferrous Metal	Phili23	Oct16/23			r	
Non-ferrous Metal	Phili23	Oct16/23			r	
Non-ferrous Metal	Phili23	Oct16/23			r	
Non-ferrous Metal	Phili23	Oct16/23			r	
Viscosity @ 100°C	Phili23	Oct16/23			r	
Viscosity @ 100°C	Phili23	Oct16/23	Jan24/24 0.9 0.0 0.0 0.0		r	
Viscosity @ 100°C	Phili23	Oct16/23	Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24		r	
Viscosity @ 100°C	S 4011/23	0et16/23	Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24 Jan 24/24			
Viscosity @ 100°C	Phili23	Oct16/23	10.0 Base Number (0) Hold (0)		r	Oct16.23

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 405 - Arbor Hills Laboratory : 06 Feb 2024 Sample No. : GFL0106690 Recieved 7400 Napier Rd Lab Number : 06081088 Diagnosed : 06 Feb 2024 NORTHVILLE, MI Unique Number : 10863179 Diagnostician : Wes Davis US 48168 Test Package : FLEET Contact: John Nahal Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jnahal@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T:

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

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