

OIL ANALYSIS REPORT

SAMPLE INFORMATION method

Sample Rating Trend



Area (KN5211) 210018

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 Number		Client Info		GFL0123406	GFL0082412	GFL0082500
Sample Date		Client Info		18 Jun 2024	26 Oct 2023	09 Aug 2023
Machine Age	hrs	Client Info		5096	5096	5096
Oil Age	hrs	Client Info		5096	5096	600
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	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	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	7	21
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	5
Lead	ppm	ASTM D5185m	>40	2	<1	2
Copper	ppm	ASTM D5185m	>330	4	2	6
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 0	history2 <1
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0	current 0 0	history1 0 0	history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	current 0 0 63	history1 0 0 60	history2 <1 0 65
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	current 0 0 63 <1	history1 0 0 60 <1	history2 <1 0 65 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	current 0 63 <1 1086	history1 0 0 60 <1 954	history2 <1 0 65 <1 1043
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070	current 0 63 <1 1086 1268	history1 0 0 60 <1 954 1057	history2 <1 0 65 <1 1043 1198
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150	Current 0 63 <1 1086 1268 1192	history1 0 60 <1 954 1057 1100	history2 <1 0 65 <1 1043 1198 971
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270	Current 0 63 <1 1086 1268 1192 1499	history1 0 60 <1 954 1057 1100 1213	history2 <1 0 65 <1 1043 1198 971 1338
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	limit/base 0 60 0 1010 1070 1150 1270 2060	current 0 0 63 <1 1086 1268 1192 1499 3979	history1 0 0 60 <1 954 1057 1100 1213 2970	<1 0 65 <1 1043 1198 971 1338 3554
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 limit/base	current 0 63 <1 1086 1268 1192 1499 3979 current	history1 0 0 60 <1 954 1057 1100 1213 2970 history1	history2 <1 0 65 <1 1043 1198 971 1338 3554 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon	ppm	method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 225	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3	<1 0 65 <1 1043 1198 971 1338 3554 history2 5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium	ppm	method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 2060 2060 225	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium Potassium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 4 ppm 4	method ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060 2060 225 >225	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4	<1 0 65 <1 1043 1198 971 1338 3554 bistory2 5 2 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 2 3 2 3 current	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1	kistory2 <1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	method ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 limit/base >3	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 2 3 current 1.2	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1 0.7	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2 1.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	method ASTM D5185m	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 2 3 current 1.2 9.9	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1 0.7 9.9	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2 1.2 12.9
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	limit/base 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30	current 0 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 current 1.2 9.9 20.3	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1 0.7 9.9 19.8	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2 1.2 12.9 23.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 method	limit/base 0 0 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20 >30	current 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 current 1.2 9.9 20.3 current	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1 0.7 9.9 19.8 history1	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2 1.2 12.9 23.9 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7415 method *ASTM D7414	limit/base 0 0 1010 1070 1150 1270 2060 limit/base >25 limit/base >3 >20 >30 limit/base >3	current 0 63 <1 1086 1268 1192 1499 3979 current 3 2 3 current 1.2 9.9 20.3 current 16.7	history1 0 0 60 <1 954 1057 1100 1213 2970 history1 3 6 4 history1 0.7 9.9 19.8 history1 17.8	<1 0 65 <1 1043 1198 971 1338 3554 history2 5 2 7 history2 1.2 12.9 23.9 history2 22.7



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VISUAL		method				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	14.8	14.3	14.1
GRAPHS						

Ferrous Alloys

lead

450

400





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 007 - Brunswick Sample No. : GFL0123406 Received : 20 Jun 2024 2809 Galloway Road Lab Number : 06215685 Tested : 21 Jun 2024 Bolivia, NC US 28422 Unique Number : 11088549 Diagnosed : 21 Jun 2024 - Wes Davis Test Package : FLEET Contact: DONALD CRAVEN Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. dcraven@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: F: (910)253-4179

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

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Submitted By: DONALD CRAVEN

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