

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id 212020

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

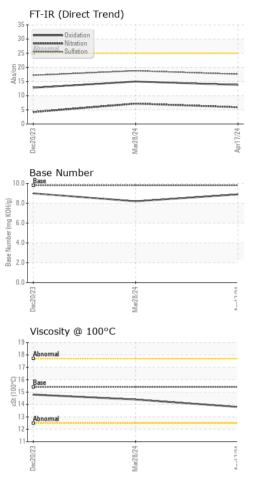
Fluid Condition

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		method	iimii/base	current	riistory i	nistoryz
Sample Number		Client Info		GFL0117588	GFL0117655	GFL0105845
Sample Date		Client Info		17 Apr 2024	28 Mar 2024	20 Dec 2023
Machine Age	hrs	Client Info		6031	5858	5084
Oil Age	hrs	Client Info		5858	5084	5084
Oil Changed		Client Info		Changed	Not Changd	Not Changd
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	c	method	limit/base	ourropt	biotopul	biotory?
	3			current	history1	history2
Iron	ppm	ASTM D5185m	>80	6	6	0
Chromium	ppm	ASTM D5185m	>5	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	<1	2	<1
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	3	0	<1
Tin	ppm	ASTM D5185m	>5	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base 0	current 2	history1 2	history2 4
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	2	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 1	2 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 1 55	2 0 57	4 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 1 55 1	2 0 57 <1	4 0 59 <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	2 1 55 1 903	2 0 57 <1 925	4 0 59 <1 954
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 1 55 1 903 1191	2 0 57 <1 925 1018	4 0 59 <1 954 1041
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 1 55 1 903 1191 1057	2 0 57 <1 925 1018 1004	4 0 59 <1 954 1041 1131
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 1 55 1 903 1191 1057 1241	2 0 57 <1 925 1018 1004 1222	4 0 59 <1 954 1041 1131 1289
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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 1010 1070 1150 1270 2060	2 1 55 1 903 1191 1057 1241 3616	2 0 57 <1 925 1018 1004 1222 3359	4 0 59 <1 954 1041 1131 1289 3258
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	0 0 60 1010 1070 1150 1270 2060	2 1 55 1 903 1191 1057 1241 3616 current	2 0 57 <1 925 1018 1004 1222 3359 history1	4 0 59 <1 954 1041 1131 1289 3258 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 1 55 1 903 1191 1057 1241 3616 current 6	2 0 57 <1 925 1018 1004 1222 3359 history1 3	4 0 59 <1 954 1041 1131 1289 3258 history2 5
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >20	2 1 55 1 903 1191 1057 1241 3616 <u>current</u> 6 8	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2
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 >20	2 1 55 1 903 1191 1057 1241 3616 current 6 8 1	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 2 <1
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 Imit/base >20 Sumt/base	2 1 55 1 903 1191 1057 1241 3616 current 6 8 1 1	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0 history1	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 <1 *
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 20 limit/base	2 1 55 1 903 1191 1057 1241 3616 current 6 8 1 current 0.1	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0 history1 0.3	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 <1 <1 history2 0
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3	2 1 55 1 903 1191 1057 1241 3616 <i>current</i> 6 8 1 <i>current</i> 0.1 5.9 17.6	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0 0 history1 0.3 7.2 18.8	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 <1 5 2 <1 history2 0 4.2 17.2
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 D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	2 1 55 1 903 1191 1057 1241 3616 Current 6 8 1 Current 0.1 5.9 17.6 Current	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0 history1 0.3 7.2 18.8 history1	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 2 <1 history2 0 4.2 17.2 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3 >30	2 1 55 1 903 1191 1057 1241 3616 <i>current</i> 6 8 1 <i>current</i> 0.1 5.9 17.6	2 0 57 <1 925 1018 1004 1222 3359 history1 3 10 0 0 history1 0.3 7.2 18.8	4 0 59 <1 954 1041 1131 1289 3258 history2 5 2 <1 bistory2 0 4.2 17.2



OIL ANALYSIS REPORT



		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
Mar28/24	Apr17/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar	Apr	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROP	ERTIES	method	limit/base	current	history1	history
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.4	14.8
		GRAPHS						
		Ferrous Alloys						
5		10 iron						
Mar28/24		8 - nickel						
2	<	6						
		ш. Ц.						
		4						
		2						
		0 N	24		24			
		Dec20/23	Mar28/24		Apr17/24			
		□ Non-ferrous Met			4			
3/24 -	V.C.	¹⁰ T						
Mar28/24	7 I	copper						
		8 - management tin						
		6-						
		mdd						

		2						
		ec20/23	ar28/24		1/24			
		Dec2(Mar28		Apr1			
		Viscosity @ 100	-C			Daga Number		
		Viscosity @ 100			10.0	Base Number		
		, -				Base		
		19 T				Base		
		19 18 <mark>Abnormal</mark> 17				Base		
		19 18 <mark>Abnormal</mark> 17	- U			Base		
		19 18 Abnormal 17 Base 00 15 3 14	-0			Base		
		19 18 Abnormal 17 17 17 16 Base 15 14 13 Abnormal			0.8 0.0 KOH/d) per	Base		
		19 18 Abnormal 17 G 16 Base 15 43 14			(6)(HO) Build Build Buil	Base		
		19 18 17 17 17 17 17 17 17 17 14 13 14 13 12 11			(0)HOX Bul Base Minute Base 2.0 0.0	Base		
		19 18 Abnormal 17 17 17 16 Base 15 14 13 Abnormal	Mar28/24		(6)(HO) Build Build Buil	Base	Mar28/24	
		19 18 17 17 17 17 17 17 17 17 14 13 14 13 12 11			(0)HOX Bul Base Minute Base 2.0 0.0	Base		
4	Laboratory	19 18 10 10 10 10 10 10 10 10 10 10	Mat28/24		(0)HOX Bul) Jaquinn 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	Base		
AB	Sample No.	19 10 10 10 10 10 10 10 10 10 10	501 Madisco Recei	ived : 22	(b)H0y bu) Jaquing area (b)H0y bu) Jaquing area (b)H0y bu) Jaquing area (c) H0y bu) Jaquing area	Base	Hironmental - 415	6200 Elmric
	Sample No. Lab Number	19 10 10 10 10 10 10 10 10 10 10	501 Madisco Recei Teste	ived : 22 d : 23	, NC 27513 2 Apr 2024	GFL Env	Hironmental - 415	6200 Elmric ing Heights,
	Sample No.	19 10 10 10 10 10 10 10 10 10 10	501 Madisco Recei Teste	ived : 22 d : 23	(b)H0y bu) Jaquing area (b)H0y bu) Jaquing area (b)H0y bu) Jaquing area (c) H0y bu) Jaquing area	GFL Env	vironmental - 415 Sterl	6200 Elmrid

Report Id: GFL415 [WUSCAR] 06155748 (Generated: 04/23/2024 11:40:20) Rev: 1

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

Submitted By: Frank Wolak

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