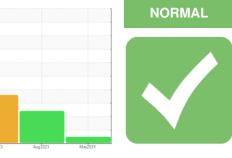


OIL ANALYSIS REPORT

Sample Rating Trend



(QB17790) Nachine Id 827061-252 Component Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- LTR)

SAMPLE INFORMATION method limit/base

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Area

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 INFORM		method	iimii/base	current	nistory i	nistory2
Sample Number		Client Info		GFL0120575	GFL0066040	GFL0060344
Sample Date		Client Info		06 May 2024	16 Aug 2023	31 Jan 2023
Machine Age	hrs	Client Info		0	0	11267
Oil Age	hrs	Client Info		0	0	500
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				NORMAL	ATTENTION	SEVERE
-				-		
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	c	method	limit/base	current	history1	history2
	3					
Iron	ppm	ASTM D5185m	>120	4	0	38
Chromium	ppm	ASTM D5185m	>20	0	0	2
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	1	2
Lead	ppm	ASTM D5185m	>40	0	0	6
Copper	ppm	ASTM D5185m	>330	<1	0	5
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm		limit/base	current 4		history2 20
	ppm ppm				history1 0 0	
Boron Barium	ppm	ASTM D5185m	0	4	0	20
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0	4 0	0	20 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 61 0		20 0 50
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 61	0 0 0 0	20 0 50 <1 511
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	4 0 61 0 991 1123		20 0 50 <1 511 1005
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	4 0 61 0 991 1123 1041	0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	4 0 61 0 991 1123 1041 1230		20 0 50 <1 511 1005 695 874
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 1010 1070 1150 1270 2060	4 0 61 0 991 1123 1041 1230 3858	0 0 0 0 0 0 0 0 0 0 5	20 0 50 <1 511 1005 695 874 2197
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	4 0 61 0 991 1123 1041 1230		20 0 50 <1 511 1005 695 874
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 00 00 1010 1070 1150 1270 2060	4 0 61 0 991 1123 1041 1230 3858	0 0 0 0 0 0 0 0 0 0 5	20 0 50 <1 511 1005 695 874 2197
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 00 00 1010 1070 1150 1270 2060	4 0 61 0 991 1123 1041 1230 3858 current	0 0 0 0 0 0 0 0 0 5 5 history1	20 0 50 <1 511 1005 695 874 2197 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 ASTM D5185m	0 00 00 1010 1070 1150 1270 2060	4 0 61 0 991 1123 1041 1230 3858 current 3	0 0 0 0 0 0 0 0 0 5 5 history1 0	20 0 50 <1 511 1005 695 874 2197 history2 4
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	4 0 61 0 991 1123 1041 1230 3858 current 3 2	0 0 0 0 0 0 0 0 0 5 5 history1 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3
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 >25 >20	4 0 61 0 991 1123 1041 1230 3858 current 3 2 0 0	0 0 0 0 0 0 0 0 0 5 5 history1 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2
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 limit/base >25 >20 limit/base	4 0 61 0 991 1123 1041 1230 3858 current 3 2 0 0 current 0.2	0 0 0 0 0 0 0 0 0 5 history1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 kasa
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	4 0 61 0 991 1123 1041 1230 3858 current 3 3 2 0 0 current 0.2 4.4	0 0 0 0 0 0 0 0 0 0 5 history1 0 0 0 0 0 0 history1	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 8 4 3 2 8 8 4 3 3 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4 >20	4 0 61 0 991 1123 1041 1230 3858 current 3 2 0 current 0.2 4.4 18.3	0 0 0 0 0 0 0 0 0 0 5 5 history1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 ▲ 8.4 30.1 54.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	4 0 61 0 991 1123 1041 1230 3858 current 3 3 2 0 0 current 0.2 4.4	0 0 0 0 0 0 0 0 0 0 5 5 history1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 8 8.4 30.1
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 >25 >20 imit/base >4 >20	4 0 61 0 991 1123 1041 1230 3858 current 3 2 0 current 0.2 4.4 18.3	0 0 0 0 0 0 0 0 0 0 5 5 history1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 ▲ 8.4 30.1 54.8
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >4 >20 >30 imit/base	4 0 61 0 991 1123 1041 1230 3858 current 3 2 0 current 0.2 4.4 18.3 current	0 0 0 0 0 0 0 0 0 0 5 5 history1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0 50 <1 511 1005 695 874 2197 history2 4 3 2 2 history2 ▲ 8.4 30.1 54.8



OIL ANALYSIS REPORT

FT-IR (Direct Tren	ıd)
120 - Oxidation 100 - Sulfation	
5 80 8 60	
40 Abnomal	
Dec15/22 + 0	Jan31/23 + May6/24 +
Base Number	
原 8.0- HOX 距 6.0-	
(0) 8.0 (0) HOX bu) aquuny 4.0 see 2.0	
0.0	
Dec15/22	Jan 31/23
Viscosity @ 100°C	2
35 - ç 30 -	
25 ³ 20 Abnomal	
15 Abnormal	
Dec15/22	Jan 31/23

VISUAL method limit/base current history1 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 NORML NORML Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG Ferrous Alloys	history 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 Odor scalar *Visual NORML NORML NORML NORML Odor scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS State State State State State State State State State	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 Odor scalar *Visual NORML NORML NORML NORML Odor scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS State State State State State State State State State	NONL
Precipitate scalar *Visual NONE NONE NONE NONE Sitt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Codor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NORML NORML NORML Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys Non-ferrous Metals Mon-ferrous Metals	NONE
Silt scalar "Visual NONE NONE NONE Debris scalar "Visual NONE NONE NONE Sand/Dirt scalar "Visual NONE NONE NONE Appearance scalar "Visual NORML NORML NORML Odor scalar "Visual NORML NORML NORML Odor scalar "Visual NORML NORML NORML Emulsified Water scalar "Visual >0.2 NEG NEG Free Water scalar "Visual NORML NEG NEG Free Water scalar "Visual NEG NEG NEG Free Water scalar "Visual NEG NEG NEG Fullid PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys Non-ferrous Metals	NONE
Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NORML NORML NORML Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys	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 Free Water scalar *Visual NORM NOR NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys	NONE
Appearance scalar *Visual NORML NORML NORML NORML Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys	NONE
Odor scalar *Visual NORML NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual >0.2 NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys Out of the provementation of the proveme	NORML
Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys	NORML
Free Water scalar *Visual NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys Imit/base current nckel 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NEG
FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys Official of the prime of the prima of the prime of the prime of the prime of the prima of the pri	NEG
Visc @ 100°C cSt ASTM D445 15.4 14.7 GRAPHS Ferrous Alloys	history
GRAPHS Ferrous Alloys	▲ 36.0
Ferrous Alloys	
Non-ferrous Metals	
Non-ferrous Metals	
Non-ferrous Metals	
ZZSTJAD Non-ferrous Metals	
Non-ferrous Metals	
CZCSTAR CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
Non-ferrous Metals	
2 2 0 8 6	
2 0 8 6	
6	
2-	
Dec15/22 Jan 31/23 Aug 16/23 May6/24	
Viscosity @ 100°C Base Number	
	/
Ť	
	/
9 5 4.0	/
Abnormal	
2.0	
Abnormal	
Dec 15/23 May6/24 Dec 15/22	
VearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental	
	985 Tieman /
6178344 Tested : 14 May 2024 10000270 Diamage de 144 May 2024 May 2024	Thorp,
1029670 Diagnosed : 14 May 2024 - Wes Davis	US 54



To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Report Id: GFL904A [WUSCAR] 06178344 (Generated: 05/14/2024 18:38:22) Rev: 1

Certificate L2367

Laboratory Sample No. Lab Number Unique Number

Test Package : FLEET

Submitted By: See also GFL904,A,B,C, 927, 938 - Andy Kane

F:

Contact: Andy Kane

akane@gflenv.com

T: (715)202-3420