

OIL ANALYSIS REPORT

Sample Rating Trend



427078-4023 Component

Diesel Engine Fluid

Machine Id

Resample at the next service interval to monitor.

There is no indication of any contamination in the

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

oil is suitable for further service.

All component wear rates are normal.

PETRO CANADA DU

SAMPLE INFORMATION method imitibase current history1 history1 history2 Sample Number Client Info IB Dec 2023 20 Mar 2023 02 Feb 2023 Machine Age hrs Client Info 18 Dec 2023 20 Mar 2023 02 Feb 2023 Machine Age hrs Client Info 18 Dec 2023 20 Mar 2023 02 Feb 2023 Oil Age hrs Client Info 18 Dec 2023 20 Mar 2023 02 Feb 2023 Oil Changed Client Info 18 Dec 2023 20 Mar 2023 02 Feb 2023 Sample Date Client Info Changed Changed Changed Changed Oil Changed Client Info NoRMAL NORMAL MARGINAL MARGINAL CONTAMINATION method imit/base current history1 history1 Fuel WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 0 <1 0 Cromium ppm ASTM 05155 >2 0 </th <th>N SHP 15W40 (-</th> <th> GAL)</th> <th></th> <th></th> <th></th> <th></th> <th></th>	N SHP 15W40 (-	GAL)					
Sample Number Client Info GFL0102273 GFL0059959 GFL005917 GFL005917 <thgl005917< th=""> GFL005917 <th< th=""><th>•</th><th></th><th>method</th><th></th><th>Feb2022 Apr2022 Oct2022 Feb2</th><th>history1</th><th>history2</th></th<></thgl005917<>	•		method		Feb2022 Apr2022 Oct2022 Feb2	history1	history2
Sample Date Client Info 18 Dec 2023 20 Mar 2023 02 Feb 2023 Machine Age hrs Client Info 18732 16924 16590 Oil Age hrs Client Info 600 600 250 Oil Changed Client Info Changed Change Ch	Sampla Number		Client Info		GEL 0102273	GEL 0056959	GEL 0056949
Machine Age hrs Client Info 18732 16924 16590 Oil Age hrs Client Info 600 600 250 Oil Changed Client Info Changed Changed Changed Changed Sample Status Imit/Dase current history1 history2 Fuel WC Method >3.0 <1.0							
Oil Age hrs Client Info 600 600 250 Oil Changed Client Info Changed Changed<		hrs					
Oil Changed Sample Status Client Info Changed NORMAL Changed NORMAL Changed MARGINAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	•						
Sample Status NORMAL NORMAL NORMAL MARGINAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	0						
Fuel WC Method >3.0 <1.0 <1.0 >3.8 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >120 6 4 3 Chromium ppm ASTM D5185m >20 0 <1	•				•	0	Ū
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method WE Method NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >20 0 <1	CONTAMINA	ΓΙΟΝ	method	limit/base	current	history1	history2
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method WE Method NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >20 0 <1	Fuel		WC Method	>3.0	<1.0	<1.0	3 .8
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 6 4 3 Chromium ppm ASTM D5185m >20 0 <1							
Iron ppm ASTM D5185m >120 6 4 3 Chromium ppm ASTM D5185m >20 0 <1	Glycol		WC Method		NEG	NEG	NEG
Dromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >5 0 0 0 Silver ppm ASTM D5185m >2 0 0 <1	WEAR META	_S	method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >5 0 0 0 Silver ppm ASTM D5185m >2 0 0 <1	Iron	ppm	ASTM D5185m	>120	6	4	3
Nickel ppm ASTM D5185m >5 0 0 0 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 <1	Chromium		ASTM D5185m	>20	0	<1	0
Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 2 2 2 Lead ppm ASTM D5185m >40 1 0 0 Copper ppm ASTM D5185m >330 <1 <1 <1 <1 Tin ppm ASTM D5185m >15 <1 <1 <1 <1 <1 Vanadium ppm ASTM D5185m >15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1					0	0	0
Aluminum ppm ASTM D5185m >20 2 2 2 Lead ppm ASTM D5185m >40 1 0 0 Copper ppm ASTM D5185m >330 <1	Titanium		ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 1 0 0 Copper ppm ASTM D5185m >330 <1	Silver		ASTM D5185m	>2	0	0	<1
Copper ppm ASTM D5185m >330 <1 <1 <1 Tin ppm ASTM D5185m >15 <1	Aluminum		ASTM D5185m	>20	2	2	2
Copper ppm ASTM D5185m >330 <1 <1 <1 Tin ppm ASTM D5185m >15 <1	Lead	ppm	ASTM D5185m	>40	1	0	0
Tin ppm ASTM D5185m >15 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1	Copper		ASTM D5185m	>330	<1	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 5 <1		ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 5 <1	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 0 1 5 <1 Barium ppm ASTM D5185m 0 0 0 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 <1 Molybdenum ppm ASTM D5185m 60 56 55 55 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 55 55 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	1	5	<1
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 901 875 897 Calcium ppm ASTM D5185m 1010 901 875 897 Calcium ppm ASTM D5185m 1070 985 997 975 Phosphorus ppm ASTM D5185m 1070 985 930 943 Zinc ppm ASTM D5185m 1270 1189 1170 1156 Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >20 <11	Barium	ppm	ASTM D5185m	0	0	0	<1
Magnesium ppm ASTM D5185m 1010 901 875 897 Calcium ppm ASTM D5185m 1070 985 997 975 Phosphorus ppm ASTM D5185m 1070 985 930 943 Zinc ppm ASTM D5185m 1150 928 930 943 Zinc ppm ASTM D5185m 1270 1189 1170 1156 Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >20 <11	Molybdenum	ppm	ASTM D5185m	60	56	55	55
Calcium ppm ASTM D5185m 1070 985 997 975 Phosphorus ppm ASTM D5185m 1150 928 930 943 Zinc ppm ASTM D5185m 1150 928 930 943 Zinc ppm ASTM D5185m 1270 1189 1170 1156 Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >20 <11	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 928 930 943 Zinc ppm ASTM D5185m 1270 1189 1170 1156 Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >25 3 4 2 Potassium ppm ASTM D5185m >20 <11 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2	0	ppm					897
Zinc ppm ASTM D5185m 1270 1189 1170 1156 Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >20 <11 26 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2	Calcium	ppm	ASTM D5185m	1070	985	997	975
Sulfur ppm ASTM D5185m 2060 2436 2820 3438 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >25 3 4 2 Potassium ppm ASTM D5185m >20 <1	Phosphorus	ppm		1150			
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >25 3 4 2 Potassium ppm ASTM D5185m >20 <1		ppm		1270	1189		
Silicon ppm ASTM D5185m >25 3 4 2 Sodium ppm ASTM D5185m >20 14 36 2 Potassium ppm ASTM D5185m >20 <1 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2			ASTM D5185m	2060	2436	2820	3438
Sodium ppm ASTM D5185m 14 36 2 Potassium ppm ASTM D5185m<>20 <1	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2				>25			
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2		ppm	ASTM D5185m		14	36	2
Soot % % *ASTM D7844 >4 0.4 0.3 0.2 Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2	Potassium	ppm	ASTM D5185m	>20	<1	2	0
Nitration Abs/cm *ASTM D7624 >20 9.6 7.7 7.2	INFRA-RED		method	limit/base	current	history1	history2
		%	*ASTM D7844	>4			
Sulfation Abs/.1mm *ASTM D7415 >30 21.8 18.5 17.9		Abs/cm	*ASTM D7624	>20	9.6	7.7	7.2
	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.8	18.5	17.9
	FLUID DEGRA		method	limit/base	current	history1	history2



Recommendation

Contamination

Fluid Condition

Wear

oil.

Oxidation

Abs/.1mm *ASTM D7414 >25

Base Number (BN) mg KOH/g ASTM D2896 9.8

17.5

5.9

14.6

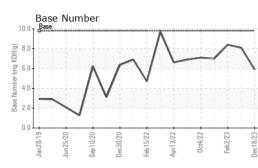
8.1

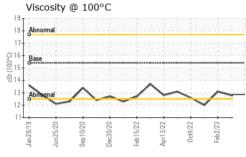
14.6

8.4



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
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	12.8	12.8	13.1
GRAPHS						

Ferrous Alloys 50 40 30 20 10 0 Dec18/23 . un25/20 Feb15/22 Apr13/22 eb2/23 Jan 28/19 Sep 10/20 Dec30/20 Non-ferrous Metals 10 Jec18/23 an 28 eh Gen Viscosity @ 100°C Base Number 19 10.0 18 17 8. (mg KOH/g) ()-16 ()-00 ()-15 ()-15 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-15) B 6 (umber 4.0 Base 13 A 12 11-0.0 0ct4/22 -Dec18/23 -Dec18/23 -Feb2/23 Feb15/22 Feb2/23 Jan28/19 Jun25/20 Sep 10/20 Dec30/20 Feb15/22 Apr13/77 Sep10/20 Apr13/22 Der 30/20 Jan28/1 GFL Environmental - 859 - Bay City Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : GFL0102273 Recieved : 04 Jan 2024 700 Avenue F Lab Number Diagnosed : 05 Jan 2024 Bay City, TX : 06051359 Unique Number : 10817308 Diagnostician : Don Baldridge US 77414 Test Package : FLEET Contact: TERESA DIXON To discuss this sample report, contact Customer Service at 1-800-237-1369. teresa.dixon@gflenv.com

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* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.
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Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Т:

F: