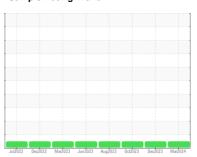


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id 125050

Component **Diesel Engine**

PETRO CANADA DURON XL SYN BLEND 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.

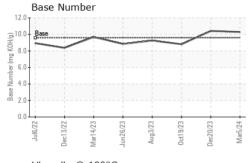
Fluid Condition

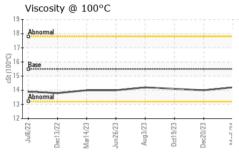
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Client Info GFL0012403 GFL0099601 GFL009165 GRample Date Client Info O5 Mar 2024 20 Dec 2023 19 Oct 202 Machine Age kms Client Info O	5W40 (GAL)		Jul2022 [Dec2022 Mar2023 Jun20	23 Aug2023 Oct2023 Dec2023	Mar2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age kms	Sample Number		Client Info		GFL0112403	GFL0099601	GFL0091590
Dil Age	Sample Date		Client Info		05 Mar 2024	20 Dec 2023	19 Oct 2023
Client Info	Machine Age	kms	Client Info		405312	397600	389903
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history	Oil Age	kms	Client Info		0	0	0
CONTAMINATION	Oil Changed		Client Info		Changed	N/A	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG Neg <t< td=""><td>CONTAMINAT</td><td>ION</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></t<>	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>100	23	18	22
Description	Chromium	ppm	ASTM D5185(m)	>20	<1	<1	<1
Soliver	Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Aluminum	Titanium	ppm	ASTM D5185(m)		0	0	0
Lead	Silver	ppm	ASTM D5185(m)	>3	0	<1	<1
Lead	Aluminum		ASTM D5185(m)	>20	2	2	1
Copper	Lead		. ,		<1	0	0
ASTM D5185(m) >15	Copper			>330	<1	<1	
Antimony	Tin		, ,		0	0	0
Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185(m) 1 3 2 2 Barium ppm ASTM D5185(m) 1 0 0 <1 Molybdenum ppm ASTM D5185(m) 1 0 0 <1 Manganese ppm ASTM D5185(m) 1 0 0 0 Magnesium ppm ASTM D5185(m) 1010 960 940 908 Calcium ppm ASTM D5185(m) 1070 1096 1118 1107 Phosphorus ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 <t< td=""><td>Antimony</td><td></td><td>ASTM D5185(m)</td><td></td><th></th><td>0</td><td>0</td></t<>	Antimony		ASTM D5185(m)			0	0
Beryllium	Vanadium				0		0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185(m) 1 3 2 2 Barium ppm ASTM D5185(m) 1 0 0 <1	Beryllium				0	0	0
Boron	Cadmium		, ,		0		0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Barium	Boron	ppm	ASTM D5185(m)	1	3	2	2
Manganese ppm ASTM D5185(m) 1 0 0 0 Magnesium ppm ASTM D5185(m) 1010 960 940 908 Calcium ppm ASTM D5185(m) 1070 1096 1118 1107 Phosphorus ppm ASTM D5185(m) 1150 1016 997 955 Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) 20 257 2580 2366 Lithium ppm ASTM D5185(m) 25 3 3 5 Soliicon ppm ASTM D5185(m) 25 3 3 4 Potassium ppm ASTM D5185(m) 20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7624*<	Barium		ASTM D5185(m)	1	0	0	<1
Magnesium ppm ASTM D5185(m) 1010 960 940 908 Calcium ppm ASTM D5185(m) 1070 1096 1118 1107 Phosphorus ppm ASTM D5185(m) 1150 1016 997 955 Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) <1	Molybdenum	ppm	ASTM D5185(m)	60	58	57	57
Magnesium ppm ASTM D5185(m) 1010 960 940 908 Calcium ppm ASTM D5185(m) 1070 1096 1118 1107 Phosphorus ppm ASTM D5185(m) 1150 1016 997 955 Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)	1	0	0	0
Calcium ppm ASTM D5185(m) 1070 1096 1118 1107 Phosphorus ppm ASTM D5185(m) 1150 1016 997 955 Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) <1	Magnesium	ppm	ASTM D5185(m)	1010	960	940	908
Phosphorus ppm ASTM D5185(m) 1150 1016 997 955 Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185(m) >25 3 3 5 Sodium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Calcium	ppm		1070	1096	1118	1107
Zinc ppm ASTM D5185(m) 1270 1211 1190 1165 Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185(m) >25 3 3 5 Sodium ppm ASTM D5185(m) 3 3 4 Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Phosphorus		ASTM D5185(m)	1150	1016	997	955
Sulfur ppm ASTM D5185(m) 2060 2578 2580 2366 Lithium ppm ASTM D5185(m) 2060 2578 2580 2366 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185(m) >25 3 3 5 Sodium ppm ASTM D5185(m) 3 3 4 Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Zinc		ASTM D5185(m)	1270	1211	1190	1165
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 3 3 5 Sodium ppm ASTM D5185(m) 3 3 4 Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Sulfur		ASTM D5185(m)		2578	2580	2366
Silicon ppm ASTM D5185(m) >25 3 3 5 Sodium ppm ASTM D5185(m) 3 3 4 Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Lithium		ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) 3 3 4 Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 1 2 0 INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Silicon	ppm	ASTM D5185(m)	>25	3	3	5
INFRA-RED method limit/base current history1 history1 Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Sodium	ppm	ASTM D5185(m)		3	3	4
Soot % % ASTM D7844* >3 0.2 0.2 0.3 Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	Potassium	ppm	ASTM D5185(m)	>20	1	2	0
Nitration Abs/cm ASTM D7624* >20 6.9 6.5 7.1	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>3	0.2	0.2	0.3
Sulfation Abs/.1mm ASTM D7415* >30 19.2 19.3 19.3	Nitration	Abs/cm	ASTM D7624*	>20	6.9	6.5	7.1
	Sulfation	Abs/.1mm	ASTM D7415*	>30	19.2	19.3	19.3



OIL ANALYSIS REPORT





FLUID DEGRA	DATION	method	limit/l	base	curren	t	his	tory1		histor	y2
Oxidation Base Number (BN)	Abs/.1mm mg KOH/g	ASTM D7414* ASTM D2896*	>25 9.6		15.1 10.29		15.0 10.4			15.0 3.81	
VISUAL		method	limit/l	base	curren	t	his	tory1		histor	y2
Emulsified Water	scalar	Visual*	>0.2		NEG		NEG			NEG	
Free Water	scalar	Visual*			NEG		NEG		1	NEG	
FLUID PROPI		method	limit/l	base	curren	t		tory1		histor	y2
Visc @ 100°C	cSt	ASTM D7279(m)	15.5		14.2		14.0		1	14.1	
GRAPHS Iron (ppm)					Lead (ppr	n)					
250				100 -		'' <i>'</i>					
200 Severe				80 -	Severe						
150 Abnormal				60·	Abnormal						
50				- 40 - 20 -	. 0						
0			_	0-							_
Jul6/22 Dec13/22 Mar14/23	Jun26/23 - Aug3/23 -	Oct19/23 Dec20/23	Mar5/24		Jul6/22 Dec13/22	Mar14/23	Jun26/23	Aug3/23	Oct19/23	Dec20/23	Mar5/24
ā ≥ Aluminum (ppm)	,	0 å	_		Chromiun			d.	0	Ď	_
50				50-							
40 Severe				40 -	Severe						
20 Abnormal				30 · Ed. 20 ·	Abnormal						
10				10-							
3 2 2	2 2	m m	-	0 -	2						
Jul6/22 Dec13/22 Mar14/23	Jun26/23 Aug3/23	Oct19/23 Dec20/23	Mar5/24		Jul6/22	Mar14/23	Jun26/23	Aug3/23	0ct19/23	Dec20/23	Mar5/24
Copper (ppm)	7				Silicon (p		~				
Severe Abnormal				80-	Severe						
300				60 -							
200				ᇤ 40 -	Abnormal						
100				20 -	ADIIOIII a						
Jul6/22 Dec13/22	Jun26/23	Oct19/23	Mar5/24	0 -	Jul6/22	Mar14/23	Jun26/23	Aug3/23	Oct19/23 -	Dec20/23	Mar5/24
□ ≥ Viscosity @ 100°		0 0			Base Num		7		0		
19 Abnormal	1			12.0 - 	- Base						
17-				0.8 KOH/							
Base 15				mper (n							
Abnormal		***************************************		Base Number (mg KOH/g) 0.09 0.09 0.09 0.09							
13		m m		0.0	2 2						



CALA ISO 17025:2017 Accredited Laboratory

Laboratory

Sample No.

Lab Number : 02621411 Unique Number : 5746530 Test Package : MOB 2

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 550 - Rocky View County : GFL0112403 Received

Validity of results and interpretation are based on the sample and information as supplied.

Tested

Diagnosed

: 12 Mar 2024 : 13 Mar 2024

: 13 Mar 2024 - Wes Davis

220 Carmek Blvd Rocky View County, AB

CA T1X 1X1 Contact: GFL Calgary calgarymaintenance@gflenv.com

Submitted By: GFL Calgary

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

F: (403)369-6163