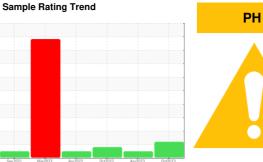


OIL ANALYSIS REPORT

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Machine Id **831029**

Component **Natural Gas Engine**

PETRO CANADA DURON GEO LD 15W40 (--- GAL)

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. 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.

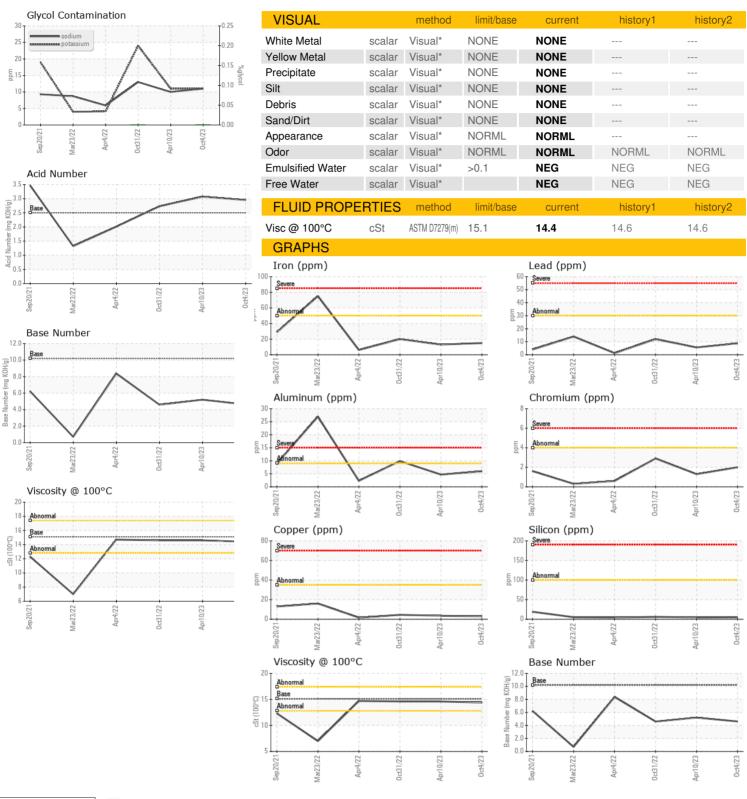
Fluid Condition

The i-pH level is abnormally low. The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The oil is no longer serviceable.

Sample Date Client Info O4 Oct 2023 10 Apr 2023 31 Oct 2022	GEO LD 15W40 (-	GAL)	Sep 2021	Mar2022 Apr2022	Oct2022 Apr2023	0ct2023	
Sample Date Client Info 04 Oct 2023 10 Apr 2023 31 Oct 2022	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0091566	GFL0077565	GFL0060270
Oil Age hrs Client Info 0 1101 1349 Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed Changed Changed Changed Changed Changed ABNORMAL ABNORMAL <th< td=""><td>Sample Date</td><td></td><td>Client Info</td><td></td><th>04 Oct 2023</th><td>10 Apr 2023</td><td>31 Oct 2022</td></th<>	Sample Date		Client Info		04 Oct 2023	10 Apr 2023	31 Oct 2022
Client Info	Machine Age	hrs	Client Info		5750	4663	3564
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185(m) >50 15 13 20 Chromium ppm ASTM DS185(m) >44 2 1 3 Nickel ppm ASTM DS185(m) >2 <1	Oil Age	hrs	Client Info		0	1101	1349
WEAR METALS	Oil Changed		Client Info		Changed	Changed	Changed
Chromium	Sample Status				ABNORMAL	NORMAL	ABNORMAL
Chromium ppm ASTM D5185(m) >4 2 1 3 Nickel ppm ASTM D5185(m) >2 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>50	15	13	20
Description	Chromium	ppm	ASTM D5185(m)	>4	2	1	3
Silver	Nickel	ppm	ASTM D5185(m)	>2	<1	<1	1
Aluminum	Titanium	ppm	ASTM D5185(m)		0	<1	<1
Lead	Silver	ppm	ASTM D5185(m)	>3	<1	0	0
Copper	Aluminum	ppm	ASTM D5185(m)	>9	6	5	<u></u> 10
Trin	Lead	ppm	ASTM D5185(m)	>30	9	6	12
Tin	Copper	ppm	ASTM D5185(m)	>35	3	4	4
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 history2 Boron ppm ASTM D5185(m) 50 5 6 4 Barium ppm ASTM D5185(m) 50 56 55 59 Manganese ppm ASTM D5185(m) 50 56 55 59 Manganesium ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 780 725 774 8	Tin	ppm	ASTM D5185(m)	>4	<1	1	2
Beryllium	Antimony	ppm	ASTM D5185(m)		0	0	<1
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 5 6 4 Barium ppm ASTM D5185(m) 50 56 55 59 Manghesium ppm ASTM D5185(m) 0 <1 <1 2 Magnesium ppm ASTM D5185(m) 560 593 579 616 Calcium ppm ASTM D5185(m) 560 593 579 616 Calcium ppm ASTM D5185(m) 780 725 774 819 Phosphorus ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 780 947 929 975 Sulfur ppm ASTM D5185(m) 204 1953 2072 2096 Lithium ppm ASTM D5185(m) >+100	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES	Beryllium		ASTM D5185(m)		0	0	0
Boron	•		ASTM D5185(m)		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 50 56 55 59 Manganese ppm ASTM D5185(m) 0 <1 <1 2 Magnesium ppm ASTM D5185(m) 560 593 579 616 Calcium ppm ASTM D5185(m) 560 593 579 616 Calcium ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 2040 1953 2072 2096 Sulfur ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185	Boron	ppm	ASTM D5185(m)	50	5	6	4
Manganese ppm ASTM D518S(m) 0 <1 <1 2 Magnesium ppm ASTM D518S(m) 560 593 579 616 Calcium ppm ASTM D518S(m) 1510 1636 1737 1748 Phosphorus ppm ASTM D518S(m) 780 725 774 819 Zinc ppm ASTM D518S(m) 2040 1953 2072 2096 Sulfur ppm ASTM D518S(m) 2040 1953 2072 2096 Lithium ppm ASTM D518S(m) 2040 1953 2072 2096 Lithium ppm ASTM D518S(m) 2040 1953 2072 2096 Lithium ppm ASTM D518S(m) 2040 1953 2072 2096 Silicon ppm ASTM D518S(m) >+100 5 4 6 Sodium ppm ASTM D518S(m) >20 11 10 13 Potassium ppm	Barium	ppm	ASTM D5185(m)	5	<1	0	0
Magnesium ppm ASTM D5185(m) 560 593 579 616 Calcium ppm ASTM D5185(m) 1510 1636 1737 1748 Phosphorus ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 870 947 929 975 Sulfur ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) 204 1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >20 11 11 10 13 Potassium ppm ASTM D5185(m) >20 11 11 11 24 Glyco	Molybdenum	ppm	ASTM D5185(m)	50	56	55	59
Calcium ppm ASTM D5185(m) 1510 1636 1737 1748 Phosphorus ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 870 947 929 975 Sulfur ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) 204 4 6 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >20 11 11 10 13 Hotassium ppm	Manganese	ppm	ASTM D5185(m)	0	<1	<1	2
Phosphorus ppm ASTM D5185(m) 780 725 774 819 Zinc ppm ASTM D5185(m) 870 947 929 975 Sulfur ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) 20 1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >20 11 10 13 Potassium ppm ASTM D5185(m) >20 11 11 10 13 INFRA-RED method limit/base current history1 history2 Soot % ASTM D7844*	Magnesium	ppm	ASTM D5185(m)	560	593	579	616
Zinc	Calcium	ppm	ASTM D5185(m)	1510	1636	1737	1748
Sulfur ppm ASTM D5185(m) 2040 1953 2072 2096 Lithium ppm ASTM D5185(m) -	Phosphorus	ppm	ASTM D5185(m)	780	725	774	819
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) >20 11 10 13 Potassium ppm ASTM D5185(m) >20 11 11 24 Glycol % ASTM D5185(m) >20 11 11 10 13 Potassium ppm ASTM D5185(m) >20 11 11 11 24 Glycol % ASTM D7922* 0.0 0.0 0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >20 11.8 11.7 13.8 Sulfation Abs/.1mm ASTM D7415*	Zinc	ppm	ASTM D5185(m)	870	947	929	975
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >+100 5 4 6 Sodium ppm ASTM D5185(m) 11 10 13 Potassium ppm ASTM D5185(m) >20 11 11 24 Glycol % ASTM D7922* 0.0 0.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* 0 0 0 Nitration Abs/cm ASTM D7624* >20 11.8 11.7 13.8 Sulfation Abs/.1mm ASTM D7415* >30 26.7 26.2 30.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D2896* 10.2 4.	Sulfur	ppm	ASTM D5185(m)	2040	1953	2072	2096
Silicon ppm ASTM D5185(m) >+100 5 4 6	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium	Silicon	ppm	ASTM D5185(m)	>+100	5	4	6
Columber (AN) Columber (AN	Sodium		ASTM D5185(m)		11	10	13
INFRA-RED	Potassium	ppm	ASTM D5185(m)	>20	11	11	24
Soot % % ASTM D7844* 0 0 0 Nitration Abs/cm ASTM D7624* >20 11.8 11.7 13.8 Sulfation Abs/.1mm ASTM D7415* >30 26.7 26.2 30.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	Glycol	%	ASTM D7922*		0.0		0.0
Nitration Abs/cm ASTM D7624* >20 11.8 11.7 13.8 Sulfation Abs/.1mm ASTM D7415* >30 26.7 26.2 30.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm ASTM D7415* >30 26.7 26.2 30.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	Soot %	%	ASTM D7844*		0	0	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	Nitration	Abs/cm	ASTM D7624*	>20	11.8	11.7	13.8
Oxidation Abs/.1mm ASTM D7414* >25 22.7 21.6 27.9 Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	Sulfation	Abs/.1mm	ASTM D7415*	>30	26.7	26.2	30.5
Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	FLUID DEGRAD	OATION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D974* 2.5 2.95 3.07 2.73 Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59	Oxidation	Abs/.1mm	ASTM D7414*	>25	22.7	21.6	27.9
Base Number (BN) mg KOH/g ASTM D2896* 10.2 4.61 5.20 4.59							
, , ,	Base Number (BN)						
	i-pH		ASTM D7946*	<4.5	4.26	4.53	4.65



OIL ANALYSIS REPORT





CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number **Unique Number**

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

: 5657332

: GFL0091566 : 02588266

Received Diagnosed

: 16 Oct 2023 Diagnostician : Kevin Marson

: 11 Oct 2023

220 Carmek Blvd Rocky View County, AB **CA T1X 1X1**

Test Package : MOB 2 (Additional Tests: Glycol, i-pH, TAN Auto, TAN Man, Visual) To discuss this sample report, contact Customer Service at 1-800-268-2131.

Contact: GFL Calgary calgarymaintenance@gflenv.com T:

Submitted By: GFL Calgary

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

F: (403)369-6163