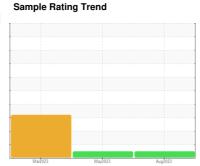


OIL ANALYSIS REPORT



Machine Id **912023** Component **Diesel Engine**

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





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

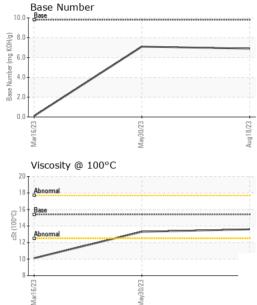
Fluid Condition

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

SAMPLE INFORMATION method fimilibase current history1 history2	N 30P 13W40 (- GAL)	Ma	r2023	May2023 Aug20	23	
Client Info	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 18 Aug 2023 30 May 2023 16 Mar 2023	Sample Number		Client Info		GFL0086618	GFL0081401	GFL0073926
Machine Age hrs Client Info 4701 4050 3449 0 Oil Age hrs Client Info 4050 3449 0 Oil Changed Client Info Changed Changed <th< td=""><td></td><td></td><td>Client Info</td><td></td><th>18 Aug 2023</th><td>30 May 2023</td><td>16 Mar 2023</td></th<>			Client Info		18 Aug 2023	30 May 2023	16 Mar 2023
Dil Age	Machine Age	hrs	Client Info		_		3449
Changed Changed Changed NORMAL NORMAL ABNORMAL		hrs	Client Info		4050	3449	0
NORMAL NORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2	-				Changed		Changed
Fuel	-						Ü
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 23 34 ▲ 134 Chromium ppm ASTM D5185m >20 <1	Fuel		WC Method	>3.0	<1.0	<1.0	0.7
Port Port	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1 1 4 Nickel ppm ASTM D5185m >5 2 3 ▲ 6 Titanium ppm ASTM D5185m >2 0 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>120	23	34	<u> </u>
Description	Chromium	ppm	ASTM D5185m	>20	<1	1	4
Description	Nickel	ppm	ASTM D5185m	>5	2	3	<u>^</u> 6
Silver	Titanium		ASTM D5185m	>2	0	0	<1
Aluminum	Silver		ASTM D5185m	>2	<1		<1
Lead	Aluminum		ASTM D5185m	>20			
Copper ppm ASTM D5185m >330 6 7 30 Tin ppm ASTM D5185m >15 2 2 4 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 4 11 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1	Lead					0	<1
Princ			ASTM D5185m	>330	6	7	30
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 4 11 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 -1 1 4 Manganese ppm ASTM D5185m 0 -1 1 4 Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 <th< td=""><td></td><td></td><td></td><td></td><th></th><td></td><td></td></th<>							
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 4 11 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 -1 1 4 Magnese ppm ASTM D5185m 0 -1 1 4 Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 2							
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0	Cadmium						0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 79 59 56 Manganese ppm ASTM D5185m 0 <1 1 4 Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 79 59 56 Manganese ppm ASTM D5185m 0 <1 1 4 Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >4 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>1</th> <td>4</td> <td>11</td>	Boron	ppm	ASTM D5185m	0	1	4	11
Manganese ppm ASTM D5185m 0 <1 1 4 Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1	Molybdenum	ppm	ASTM D5185m	60	79	59	56
Magnesium ppm ASTM D5185m 1010 1215 944 430 Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1	Manganese	ppm	ASTM D5185m	0	<1	1	4
Calcium ppm ASTM D5185m 1070 1345 1062 808 Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1	-		ASTM D5185m	1010	1215	944	430
Phosphorus ppm ASTM D5185m 1150 1263 960 562 Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m >20 2 <1			ASTM D5185m			1062	808
Zinc ppm ASTM D5185m 1270 1626 1225 656 Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m 6 4 7 Potassium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 0.8 0.8 1.4 Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1							562
Sulfur ppm ASTM D5185m 2060 3726 3071 1648 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m 6 4 7 Potassium ppm ASTM D5185m >20 2 <1							
Silicon ppm ASTM D5185m >25 2 6 18 Sodium ppm ASTM D5185m 6 4 7 Potassium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.8 1.4 Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1							
Sodium ppm ASTM D5185m 6 4 7 Potassium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.8 1.4 Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.8 1.4 Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	Silicon	ppm	ASTM D5185m	>25	2	6	18
INFRA-RED	Sodium	ppm	ASTM D5185m		6	4	7
Soot % % *ASTM D7844 >4 0.8 0.8 1.4 Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	Potassium	ppm	ASTM D5185m	>20	2	<1	2
Nitration Abs/cm *ASTM D7624 >20 8.0 8.6 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	Soot %	%	*ASTM D7844	>4	8.0	0.8	1.4
Sulfation Abs/.1mm *ASTM D7415 >30 20.4 20.9 25.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.5 17.7 25.1	Vitration	Abs/cm	*ASTM D7624	>20	8.0	8.6	11.1
Oxidation	Sulfation			>30			25.5
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.5	17.7	25.1
	Base Number (BN)	mg KOH/g			6.9	7.1	<u></u> 0.1



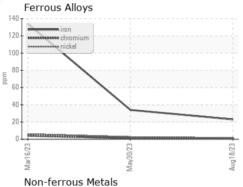
OIL ANALYSIS REPORT



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
	DTIES	us a the seal	li.ee it/le e e e		المرسمة ما	histom (O

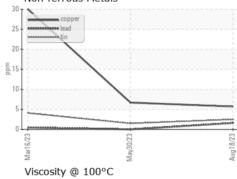
13.6

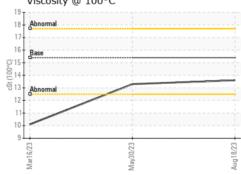
Visc @ 100°	С
GRAPHS	3

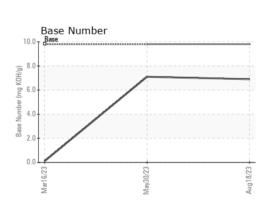


cSt

ASTM D445 15.4











Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10609352 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0086618 : 05929405

Received Diagnosed

: 21 Aug 2023 : 22 Aug 2023 Diagnostician : Wes Davis

GFL Environmental - 415 - Michigan East 6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

<u></u> 10.1

13.3

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)