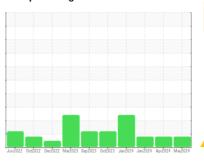


OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Machine Id 721072 Component

Diesel Engine

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

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil.

Fluid Condition

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

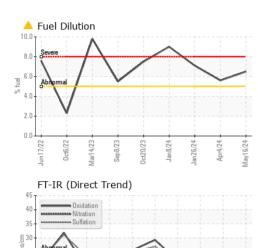
Sample Date	Jundasz Ordasz Ondasz Ondasz Midasz Sindasz Ordasz Jundasz Jundasz Jundasz Anydasz Any								
Sample Date	SAMPLE INFORM	NOITAN	method	limit/base	current	history1	history2		
Machine Age hrs Client Info	Sample Number		Client Info		GFL0116029	GFL0116026	GFL0092887		
Oil Age hrs Client Info N/A N/A N/A N/A Oil Changed Client Info N/A N/A N/A N/A N/A Sample Status Contain Info N/A N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Water WC Method NEG NEG NEG Wear WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 2 0 2 VEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 2 0 2 Iron ppm ASTM D5185m >20 2 0 3 Iron ppm ASTM D5185m >40 <1 0 <1 Cop	Sample Date		Client Info		16 May 2024	04 Apr 2024	26 Jan 2024		
Colient Info	Machine Age	hrs	Client Info		8199	7989	7583		
ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL ABNORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		0	64346	0		
CONTAMINATION	Oil Changed		Client Info		N/A	N/A	N/A		
Water WC Method >0.2 NEG AST NEG AST AST ATT ATT NEG AST ATT ATT ATT ATT <	Sample Status				ABNORMAL	ABNORMAL	ABNORMAL		
WEAR METALS	CONTAMINATI	ON	method	limit/base	current	history1	history2		
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 20 18 21 Chromium ppm ASTM D5185m >20 2 0 2 Nickel ppm ASTM D5185m >2 <1	Water		WC Method	>0.2	NEG	NEG	NEG		
Iron	Glycol		WC Method		NEG	NEG	NEG		
Chromium ppm ASTM D5185m >20 2 0 2 Nickel ppm ASTM D5185m >2 <1	WEAR METALS	3	method	limit/base	current	history1	history2		
Nickel	ron	ppm	ASTM D5185m	>100	20	18	21		
Titanium	Chromium	ppm	ASTM D5185m	>20	2	0	2		
Silver	Nickel	ppm	ASTM D5185m	>2	<1	0	<1		
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	0	<1		
Lead ppm ASTM D5185m >40 <1 0 0 Copper ppm ASTM D5185m >330 1 0 <1 Tin ppm ASTM D5185m >15 <1 0 <1 Vanadium ppm ASTM D5185m <1 0 <1 Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 25 21 24 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 1008 1170 1007 Calcium ppm ASTM D5185m 1270 771 889 744 </td <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <td>2</td> <td>0</td> <td><1</td>	Silver	ppm	ASTM D5185m	>2	2	0	<1		
Copper ppm ASTM D5185m >330 1 0 <1 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>25	2	0	3		
Tin ppm ASTM D5185m > 15 <1 0 <1 Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	<1	0	0		
Vanadium ppm ASTM D5185m <1 0 <1 Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 25 21 24 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 <1 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 1008 1170 1007 Calcium ppm ASTM D5185m 1070 771 889 744 Phosphorus ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>330	1	0	<1		
Cadmium ppm ASTM D5185m <1 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 25 21 24 Barium ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	0	<1		
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	<1		
Boron ppm ASTM D5185m 0 25 21 24 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 60 58 60 60 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 1008 1170 1007 Calcium ppm ASTM D5185m 1070 771 889 744 Phosphorus ppm ASTM D5185m 1150 917 1120 962 Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D5185m >20 2 2 0 2 Fuel % ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/:imm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/:imm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/:imm *ASTM D7414 >25 21.3 21.6 21.1	Cadmium	ppm	ASTM D5185m		<1	0	<1		
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2		
Molybdenum ppm ASTM D5185m 60 58 60 60 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	25	21	24		
Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 1008 1170 1007 Calcium ppm ASTM D5185m 1070 771 889 744 Phosphorus ppm ASTM D5185m 1150 917 1120 962 Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >3 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td><1</td> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	<1	0	0		
Magnesium ppm ASTM D5185m 1010 1008 1170 1007 Calcium ppm ASTM D5185m 1070 771 889 744 Phosphorus ppm ASTM D5185m 1150 917 1120 962 Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D5844 >3	Molybdenum	ppm	ASTM D5185m	60	58	60	60		
Calcium ppm ASTM D5185m 1070 771 889 744 Phosphorus ppm ASTM D5185m 1150 917 1120 962 Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >20 4 0.4 0.4 Nistory2 Soot % % *ASTM D7844 <	Manganese	ppm	ASTM D5185m	0	<1	0	<1		
Phosphorus ppm ASTM D5185m 1150 917 1120 962 Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Magnesium	ppm	ASTM D5185m	1010	1008	1170	1007		
Zinc ppm ASTM D5185m 1270 1128 1317 1160 Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method	Calcium	ppm	ASTM D5185m	1070	771	889	744		
Sulfur ppm ASTM D5185m 2060 3024 4035 3046 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m 7 5 7 Potassium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D585m >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3<	Phosphorus	ppm	ASTM D5185m	1150	917	1120	962		
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m 7 5 7 Potassium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Zinc	ppm	ASTM D5185m	1270	1128	1317	1160		
Silicon ppm ASTM D5185m >25 7 4 7 Sodium ppm ASTM D5185m 7 5 7 Potassium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Sulfur	ppm	ASTM D5185m	2060	3024	4035	3046		
Sodium ppm ASTM D5185m 7 5 7 Potassium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	CONTAMINAN [*]	TS	method	limit/base	current	history1	history2		
Potassium ppm ASTM D5185m >20 2 0 2 Fuel % ASTM D3524 >5 ▲ 6.5 ▲ 5.6 ▲ 7.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Silicon	ppm	ASTM D5185m	>25	7	4	7		
Fuel	Sodium	ppm	ASTM D5185m		7	5	7		
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Potassium	ppm	ASTM D5185m	>20	2	0	2		
Soot % % *ASTM D7844 >3 0.4 0.4 0.4 Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Fuel	%	ASTM D3524	>5	△ 6.5	<u>▲</u> 5.6	<u> </u>		
Nitration Abs/cm *ASTM D7624 >20 11.3 11.3 11.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	INFRA-RED		method	limit/base	current	history1	history2		
Sulfation Abs/.1mm *ASTM D7415 >30 21.2 21.3 21.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Soot %	%	*ASTM D7844	>3	0.4	0.4	0.4		
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 21.3 21.6 21.1	Nitration	Abs/cm	*ASTM D7624	>20	11.3	11.3	11.1		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	21.3	21.1		
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2		
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.9 7.7 7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	21.3	21.6	21.1		
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.9	7.7	7.8		

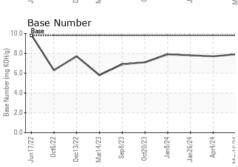


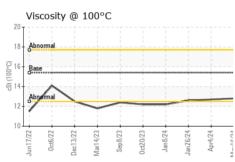
20

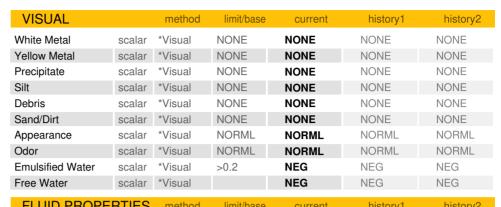
15

OIL ANALYSIS REPORT



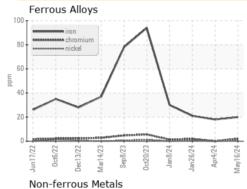


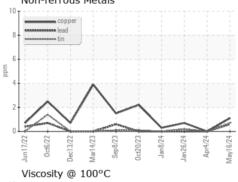


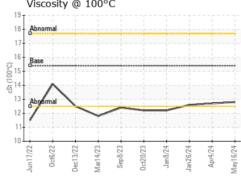


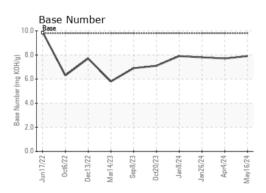
FLUID FROF	LHILS	method	IIIIII/Dase	Current	HISTOLAL	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	12.7	12.6

GRAPHS













Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06191887

: GFL0116029 Unique Number : 11048639

Received **Tested** Diagnosed

: 28 May 2024 : 29 May 2024

: 30 May 2024 - Sean Felton

1241 KING SETTLEMENT RD ALPENA, MI US 49707

GFL Environmental - 641 - Alpena

Contact: DYLAN TOLAN dylan.tolan@gflenv.com T: (989)854-7203

Certificate 12367

Test Package : FLEET (Additional Tests: PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369.

 st - 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: GFL641 [WUSCAR] 06191887 (Generated: 05/30/2024 12:33:20) Rev: 1

Submitted By: GFL463 and GFL641 - DYLAN TOLAN