

OIL ANALYSIS REPORT

Sample Rating Trend

DIRT



GZJ00403

Component Biogas Engine

PETRO CANADA SENTRON CG 40 (--- GAL)

Sample Number Client Info WC0699020 WC0699019 WC0699020 Sample Date i Client Info 20 Mar 2023 13 Mar 2023 07 Mar 2023 Machine Age hrs Client Info 113046 112879 112737 Oil Age hrs Client Info 428 261 117 Oil Changed Client Info N/A N/A N/A N/A Sample Status Imit Mase current history1 history1 history2 Water WC Method >0.1 NEG NEG NEG Glycol WC Method >0.1 NEG NEG NEG Chromium ppm ASTM 05185m >2 <1 0 0 Nickel ppm ASTM 05185m >2 0 0 0 0 Silver ppm ASTM 05185m >10 2 <1 0 Silver ppm ASTM 05185m >13 1 2 <1 <	RON CG 40 (GAL)	n2022 Jul20	2 Aug2022 Sep2022	Oct2022 Dec2022 Jan2023 F	Feb 2023	
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Dil Age hrs Client Info 428 261 117 Dil Changed Client Info N/A N/A N/A N/A Sample Status Client Info N/A ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Blycol WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 fron ppm ASTM 05185m >2 <1	Sample Date		Client Info		20 Mar 2023	13 Mar 2023	07 Mar 2023
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Aluminum ppm ASTM D5185m >10 2 2 <1 Lead ppm ASTM D5185m >5 0 <1	Silver			>5	0	0	<1
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Sulfur ppm ASTM D5185m 2575 3588 3772 3153 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >200 205 148 83 Sodium ppm ASTM D5185m >200 205 148 83 Sodium ppm ASTM D5185m >200 205 148 83 Sodium ppm ASTM D5185m >20 0 <1 0 0 Potassium ppm ASTM D5185m >20 0 <1 0 0 Fuel % ASTM D5185m >20 0.3 0.3 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 5.0 4.6 5.8 Sulfation Abs/.mm< *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method	Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	9 2712	<1 13 2685	14 2734	<1 14 2571
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Sodium ppm ASTM D5185m <1 0 0 Potassium ppm ASTM D5185m >20 0 <1	Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342	<1 13 2685 249 317	14 2734 263 322	<1 14 2571 251 305
Potassium ppm ASTM D5185m >20 0 <1 0 Fuel % ASTM D3524 >4.0 0.3 0.3 0.4 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 5.0 4.6 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342 2575	<1 13 2685 249 317 3588	14 2734 263 322 3772	<1 14 2571 251 305 3153
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INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 5.0 4.6 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	9 2712 292 342 2575 limit/base	<1 13 2685 249 317 3588 current 205	14 2734 263 322 3772 history1 148	<1 14 2571 251 305 3153 history2 83
Soot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 5.0 4.6 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	9 2712 292 342 2575 limit/base >200	<1 13 2685 249 317 3588 current 205 <1	14 2734 263 322 3772 history1 148 0	<1 14 2571 251 305 3153 history2 83 0
Nitration Abs/cm *ASTM D7624 >20 5.0 4.6 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342 2575 limit/base >200	<1 13 2685 249 317 3588 <u>current</u> 205 <1 0	14 2734 263 322 3772 history1 148 0 <1	<1 14 2571 251 305 3153 history2 83 0 0
Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	9 2712 292 342 2575 limit/base >200 >20 >20	<1 13 2685 249 317 3588 current 205 <1 0 0.3	14 2734 263 322 3772 history1 148 0 <1 0.3	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4
Sulfation Abs/.1mm *ASTM D7415 >30 18.4 16.8 19.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D3524	9 2712 292 342 2575 limit/base >200 >20 >20	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current	14 2734 263 322 3772 history1 148 0 <1 0.3 history1	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4 history2
Oxidation Abs/.1mm *ASTM D7414 >25 9.8 8.9 12.2 Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D51854	9 2712 292 342 2575 limit/base >200 >4.0 limit/base	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current 0.1	14 2734 263 322 3772 history1 148 0 <1 0.3 history1 0.1	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4 history2 0.1
Acid Number (AN) mg KOH/g ASTM D8045 0.98 0.97 0.62 0.406	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7844	9 2712 292 342 2575 limit/base >200 >20 >4.0 limit/base	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current 0.1 5.0	14 2734 263 322 3772 history1 148 0 <1 0.3 history1 0.1 4.6	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4 history2 0.1 5.8
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D3524 ASTM D3524 *ASTM D7844 *ASTM D7624	9 2712 292 342 2575 limit/base >200 >4.0 limit/base >20 >20 >4.0	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current 0.1 5.0 18.4	14 2734 263 322 3772 history1 148 0 <1 0.3 history1 0.1 4.6 16.8	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4 history2 0.1 5.8 19.1
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/cm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 Method *ASTM D7844 *ASTM D7624 *ASTM D7415	9 2712 292 342 2575 limit/base >200 >4.0 limit/base >20 >30 limit/base	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current 0.1 5.0 18.4 current	14 2734 263 322 3772 history1 148 0 <1 0.3 history1 0.1 4.6 16.8 history1	<1 14 2571 251 305 3153 history2 83 0 0 0 0 0.4 history2 0.1 5.8 19.1 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5244 *ASTM D7844 *ASTM D7844 *ASTM D7415	9 2712 292 342 2575 limit/base >200 >20 >4.0 limit/base >20 >30 limit/base >25	<1 13 2685 249 317 3588 current 205 <1 0 0.3 current 0.1 5.0 18.4 current 9.8	14 2734 263 322 3772 history1 148 0 <1 0.3 history1 0.1 4.6 16.8 history1 8.9	<1 14 2571 251 305 3153 history2 83 0 0 0 0.4 history2 0.1 5.8 19.1 history2 12.2

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Total oil added 48 gal)

Fluid

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. Elemental level of silicon (Si) above normal.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Submitted By: Blain Middleton

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OIL ANALYSIS REPORT

Silt

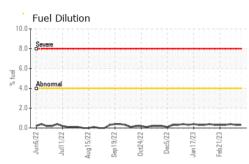
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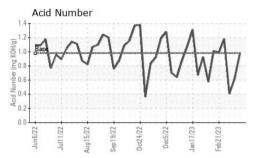
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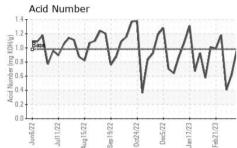
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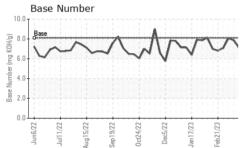
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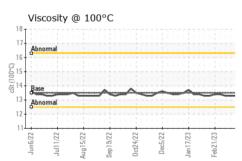
20











.ug15/22 CC/01 mm Ē Aluminum (ppm) Se 15 Abnon ۲ų 10an17/73 CC/1040 ug15/22 en 19/77 lllul Copper (ppm) 30 Se 25 20 E 15-10 5 Jan 17/23 Feb21/23 lec5/22 Π In Viscosity @ 100°C 18 11 cSt (100°C) 10 Jul11/22 Sep19/22. Aug 15/22 Laboratory : WC0699020 Sample No.



Certificate L2367

Lab Number

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)

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