

OIL ANALYSIS REPORT

Sample Rating Trend



PETRO CANADA SENTRON CG 40 (145 GAL)

DIRT

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0799175	WC0799200	WC0799197
Sample Date		Client Info		08 May 2023	01 May 2023	24 Apr 2023
Machine Age	hrs	Client Info		122789	122624	122458
Oil Age	hrs	Client Info		471	305	139
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>45	7	5	4
Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	4	2	2
Lead	ppm	ASTM D5185m	>5	0	0	0
Copper	ppm	ASTM D5185m	>14	1	2	<1
Tin	ppm	ASTM D5185m	>13	6	3	1
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	0	0	0
Barium	ppm	ASTM D5185m	1	0	0	0
Molybdenum	ppm	ASTM D5185m	2	<1	<1	<1
Manganese	ppm	ASTM D5185m	1	<1	<1	<1
Magnesium			9			
-	ppm	ASTM D5185m		9	14	15
Calcium	ppm ppm	ASTM D5185m ASTM D5185m		9 3143	14 2886	15 2823
Calcium Phosphorus				-		
Phosphorus Zinc	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2712 292	3143	2886	2823
Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2712 292	3143 309	2886 293	2823 284
Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	2712 292 342 2575 limit/base	3143 309 369 4743 current	2886 293 357 4187 history1	2823 284 340 3925 history2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	2712 292 342 2575 limit/base	3143 309 369 4743 <u>current</u> ▲ 286	2886 293 357 4187 history1 199	2823 284 340 3925 history2 112
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	2712 292 342 2575 limit/base >200	3143 309 369 4743 <u>current</u> ▲ 286 1	2886 293 357 4187 history1 199 1	2823 284 340 3925 history2 112 <1
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2712 292 342 2575 limit/base >200	3143 309 369 4743	2886 293 357 4187 history1 199 1 <1	2823 284 340 3925 history2 112 <1 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	2712 292 342 2575 limit/base >200	3143 309 369 4743 <u>current</u> ▲ 286 1	2886 293 357 4187 history1 199 1	2823 284 340 3925 history2 112 <1
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2712 292 342 2575 limit/base >200	3143 309 369 4743	2886 293 357 4187 history1 199 1 <1	2823 284 340 3925 history2 112 <1 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	2712 292 342 2575 limit/base >200 >20 >4.0 limit/base	3143 309 369 4743 ▲ 286 1 <1 <1 0.3 current 0	2886 293 357 4187 history1 199 1 1 <1 0.3 history1 0	2823 284 340 3925 history2 112 <1 0 0.3 history2 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 Method *ASTM D7844 *ASTM D7844	2712 292 342 2575 limit/base >200 >4.0 limit/base	3143 309 369 4743 current ▲ 286 1 <1 <1 0.3 current	2886 293 357 4187 history1 199 1 1 <1 0.3 history1	2823 284 340 3925 history2 112 <1 0 0 0.3 history2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	2712 292 342 2575 limit/base >200 >4.0 limit/base	3143 309 369 4743 ▲ 286 1 <1 <1 0.3 current 0	2886 293 357 4187 history1 199 1 1 <1 0.3 history1 0	2823 284 340 3925 history2 112 <110 0 0.3 history2 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 Method *ASTM D7844 *ASTM D7844	2712 292 342 2575 limit/base >200 >4.0 limit/base	3143 309 369 4743	2886 293 357 4187 history1 199 1 <1 <1 0.3 history1 0 4.8	2823 284 340 3925 history2 112 <112 <1 0 0.3 history2 0 4.4
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7824 *ASTM D7415	2712 292 342 2575 limit/base >200 >20 >4.0 limit/base >20 >4.0	3143 309 369 4743	2886 293 357 4187 history1 199 1 -1 <1 0.3 history1 0 4.8 16.1	2823 284 340 3925 history2 112 <1 0 0.3 history2 0 4.4 14.5
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	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 D5844 *ASTM D7624 *ASTM D7624 *ASTM D7624	2712 292 342 2575 imit/base >200 >4.0 imit/base >20 >30 imit/base >20	3143 309 369 4743	2886 293 357 4187 history1 199 1 <1 <1 0.3 history1 0 4.8 16.1 history1	2823 284 340 3925 history2 112 <1 0 0.3 history2 0 4.4 14.5 history2

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Total oil added 44 gallons)

Component

Fluic

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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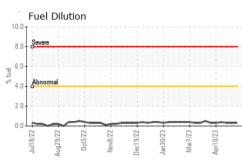


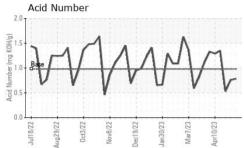
OIL ANALYSIS REPORT

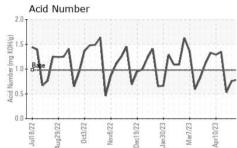
VISUAL

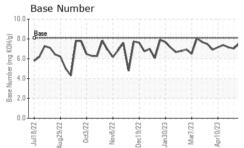
White Metal

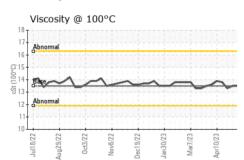
Yellow Metal











TING LABORATORY	Laboratory Sample No. Lab Number Unique Number Test Package		Receit Teste Diagr ests: Fuel	ived : 12 ed : 18 nosed : 18 IDilution, Per	2 May 2023 3 May 2023 May 2023 - Jona centFuel)	than Hester	74265 Bombir Contact:	Y BIOENERG ng Range Road Boardman, OF US 97813 Blain Middletol archaea.energ
Dec19/22	Mar7/23 + Apr10/23 +	Approximation 22/81/2014	Dec19/22	Jan30/23 - Mar7/23 -	0.0	100100100000000	Nov8/22	Mar1/23
	~~	(0-001) //			(b)(HOX Bul) Bull KOM Bull KOM	\sim	\sim	~~~
		18 Abnormal				Base	maanaan	anna an
		22/82/10 0et2 0et222 0et22 0et222 0et22	Dec19/22	Jan30/23 Mar7/23		Juil 8/22 Aug 29/22 Decta 7/22	Nov8/22 Dec19/22 Jan30/23	Mar7/23 Apr1 0/23
Dec19/22	Mar7/23 +	E 15 10 5 0		23				
~~~	1~~	Copper (ppm)			500	1	1 / /	ΛΛ
	~	Jul18/22 Aug29/22 0ct3/22	Dec19/22 -	Jan30/23 - Mar7/23 - Anr10/23 -		Jul18/22 Aug29/22 Oct3/22	Nov8/22 Dec19/22	Mar7/23 Apr10/23
Dec19/22 Jan30/23	Mar7/23 Apr1 0/23	E 10 - Abnormal	$\sim$				~~~~	~~~
	VV	Severe 15 E 10 Abnormal				Severe		
LAN	M	Juli 8,722 Alamina Aug 29,722 0ct3/72 Nov8,722	Dec19/22	Jan 30/23 Mar 7/23 Anri 10/23		Chromium (bb	Uov8/22 Dec19/22 Jan30/23	Mar7/23 Apr10/23
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~			
Dec19/22 -	Mar7/23 - Apr10/23 -	80 - Abnormal			L L L L L L L L L L L L L L L L L L L	3		
V U	VV	GRAPHS Iron (ppm)				Lead (ppm)		
AN	M	Visc @ 100°C	cSt	method ASTM D445	limit/base 13.5	current 13.49	history1 13.5	history2 13.3
		Free Water	scalar	*Visual	line it /le e e e	NEG	NEG	NEG
		Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Dec19/22 Jan30/23	Mar Apr1	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
9/22	Mar7/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	~~~~	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
		Silt Debris	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE	NONE
		Precipitate		*Visual	NONE	NONE	NONE	NONE

limit/base

NONE

NONE

current

NONE

NONE

method

*Visual

scalar *Visual

scalar

history1

NONE

NONE

history2

NONE

NONE

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