

### **OIL ANALYSIS REPORT**

Sample Rating Trend



# Liberty 1

Component **Natural Gas Engine** 

PETRO CANADA SENTRON LD 3000 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

Tests indicate that there is no fuel present in the oil. There is no indication of any contamination in the oil.

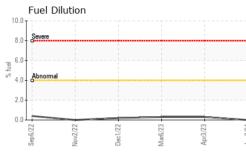
#### **Fluid Condition**

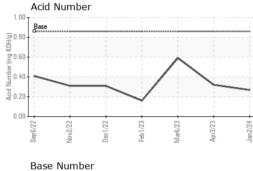
The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

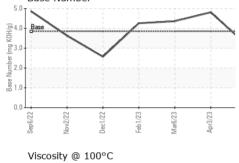
		Sep2022	Nov2U22 Dec2U22	Feb2023 Mar2023 Apr2023	Jan2024	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0103417	PCA0091280	PCA0091279
Sample Date		Client Info		02 Jan 2024	03 Apr 2023	06 Mar 2023
Machine Age	hrs	Client Info		69211	67974	67309
Oil Age	hrs	Client Info		67974	1663	9099
Oil Changed		Client Info		N/A	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
-		and the second	Proc 1 de como			
CONTAMINAT	ION	method	limit/base		history1	history2
Water	_	WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	2	1	<1
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>9	2	0	3
Lead	ppm	ASTM D5185m	>30	0	0	<1
Copper	ppm	ASTM D5185m	>35	<1	0	0
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ppm		Dec 10 de como	-	-	
ADDITIVES		method	limit/base		history1	history2
Boron	ppm	ASTM D5185m	5	<1	0	1
Barium	ppm	ASTM D5185m	1	0	0	0
Molybdenum	ppm	ASTM D5185m	2	1	2	2
Manganese	ppm	ASTM D5185m	1	0	0	<1
Magnesium	ppm	ASTM D5185m	5	10	10	10
Calcium	ppm	ASTM D5185m	1220	1264	1148	1266
Phosphorus	ppm	ASTM D5185m	298	316	264	264
Zinc	ppm	ASTM D5185m	350	328	329	336
Sulfur	ppm	ASTM D5185m	1995	2444	2295	2409
CONTAMINAN	TS	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>+100	2	4	2
Sodium	ppm	ASTM D5185m		0	<1	0
Potassium	ppm	ASTM D5185m	>20	2	<1	1
Fuel	%	ASTM D3524	>4.0	0.0	0.3	0.3
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		0	0	0.1
Nitration	Abs/cm	*ASTM D7624	>20	3.5	3.3	3.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	13.9	13.5	13.8
FLUID DEGRA	DATION		limit/base		history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		7.6	7.2	7.2
Acid Number (AN)		ASTM D7414 ASTM D8045		0.268	0.32	0.59
	mg KOH/g					
Base Number (BN)	mg KOH/g	ASTM D2896	3.85	3.17	4.81	4.36

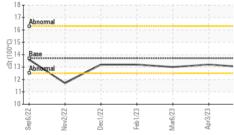


## **OIL ANALYSIS REPORT**









	VISUAL			me	thod	limit/ba	se	CL	irrent		history	1	histor	ry2
	White Metal		scalar	*Visı	Jal	NONE		NON	١E		NONE		NONE	
	Yellow Meta		scalar	*Visu	ual	NONE		NO	١E		NONE		NONE	
	Precipitate		scalar	*Visı	ual	NONE		NO	١E		NONE		NONE	
	Silt		scalar	*Visu	ual	NONE		NO	١E		NONE		NONE	
	Debris		scalar	*Visu	ual	NONE		NON	١E		NONE		NONE	
	Sand/Dirt		scalar	*Visu	ual	NONE		NOM	١E		NONE		NONE	
Apr3/23 Jan2/24	Appearance		scalar	*Visu	ual	NORML		NOF	RML		NORML		NORM	L
Ap	Odor		scalar	*Visu	ual	NORML		NOF	RML		NORML		NORM	L
	Emulsified V	Vater	scalar	*Visı	ual	>0.1		NEC	à	I	NEG		NEG	
	Free Water		scalar	*Visu	ual			NEC	à		NEG		NEG	
	FLUID P	ROPE	RTIES	me	thod	limit/ba	se	CL	irrent		history	1	histor	ry2
	Visc @ 100°		cSt	ASTN	/I D445	13.7		13.0			13.2		13.0	
	GRAPH								,	,				
	Iron (ppm	)					<sup>60</sup> T	Lead	(ppm	)				
Apr3/23 - Jan2/24 -	80 - Severe						50-							
	60 - Abnormal						40 - 팀 30 -	Abnorm	al				1	
	40						20-							
~	20						10							
	22	22 -	/23	23	23	24	01	22	22	22	23	23	/23	
	Sep6/22 Nov2/22	Dec1/22	Feb1/23	Mar6/23	Apr3/23	Jan 2/24		Sep6/22	Nov2/22	Dec1/22	Feb1/23	Mar6/23	Apr3/23	
	Aluminum	(ppm)						Chror	nium	(ppm)				
	20						<sup>8</sup> T	Smiara						
	15 - Severe			*****			6 -	Severe						
/23	a 10 - Abnormal						۳đ4	Abnorm	al		i I	1	1	
Apr3/23 .	5						2 -							
	0				-	_	0		_	_		_		
	Sep 6/22 Nov2/22	Dec1/22	Feb 1/23	Mar6/23	Apr3/23	Jan 2/24		Sep6/22	Nov2/22	Dec1/22	Feb1/23 -	Mar6/23	Apr3/23 .	
	∽ ≥ Copper (p	_	LL.	2	4	7		Silico			LL.	2	4	-
	80 Severe	p,	1		1		<sup>200</sup> T	Severe	(pp)	,				
	60 -						150-							
	Abnormal						톱 100 -	Abnorm	al		1			
	20						50-							
Apr3/23 -														
Apr	Sep6/22	Dec1/22 -	Feb1/23 -	Mar6/23 -	Apr3/23 .	Jan 2/24	01	Sep 6/22	Nov2/22 -	Dec1/22	Feb1/23 -	Mar6/23 -	Apr3/23 -	
	Sep	Dec	Feb	Mar	Apri	Jan		Sep	Nov	Dec	Feb	Marl	Apri	
	Viscosity @	D 100°C	2				5.0-	Base	Numb	ber				
			1				Base Number (mg KOH/g) 3.0 - 1.0 -	Base			-			
	D Para						Ē 3.0			$\checkmark$				
	Abnormal	-		*****			ag 2.0 -			Ĩ				
	12						N 1.0 -							
	10 2 2	22	53	23 +	23		0.0	22		12	33	13	23	
	Sep 6/22 Nov2/22	Dec1/22	Feb1/23	Mar6/23	Apr3/23	Jan 2/24		Sep 6/22	Nov2/22	Dec1/22	Feb1/23 -	Mar6/23	Apr3/23	
	B. 2	Dec	율	Mai	Api	Jan		Sep	Nov	Dec	Feb	Mai	Api	
	Se													
boratory	ي چ : WearCheck	USA -	501 Madi	son Av	ve., Ca	try, NC 27	513		ENE	RVES		ATING	G - LIBE	RT
boratory mple No. b Number		7	501 Madi <b>Recieve</b> <b>Diagnos</b>	b	: 10	ury, NC 27 Jan 2024 Jan 2024	513		ENE	RVES			<b>G - LIBE</b> ETON R NORA	OA

US 24272 Contact: Service Manager

Certificate L2367	Test Package	: MOB 2 (Additional Tests: FuelDilution, PercentFuel)
To discuss th	is sample report, o	contact Customer Service at 1-800-237-1369.
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\* - 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)

То