

## **OIL ANALYSIS REPORT**

Sample Rating Trend



#### Machine Id **Hurricane Creek 3** Component

**Natural Gas Engine** 

PETRO CANADA SENTRON LD 3000 (--- GAL)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

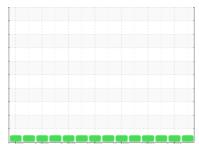
All component wear rates are normal.

#### 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.

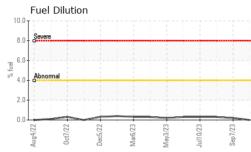


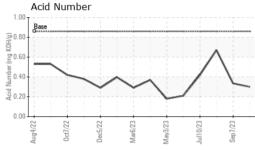


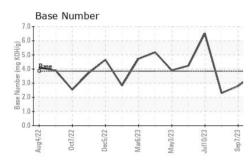
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		PCA0103477	PCA0103474	PCA0092104	
Sample Date		Client Info		07 Nov 2023	07 Sep 2023	03 Aug 2023	
Machine Age	hrs	Client Info		141029	139575	138788	
Oil Age	hrs	Client Info		1144	190	24010	
Oil Changed		Client Info		Not Changd	Changed	Not Changd	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Water		WC Method	>0.1	NEG	NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>50	0	2	<1	
Chromium	ppm	ASTM D5185m	>4	0	<1	0	
Nickel	ppm	ASTM D5185m	>2	0	0	0	
Titanium	ppm	ASTM D5185m		0	<1	0	
Silver	ppm	ASTM D5185m	>3	0	0	0	
Aluminum	ppm	ASTM D5185m	>9	<1	<1	2	
Lead	ppm	ASTM D5185m	>30	0	0	0	
Copper	ppm	ASTM D5185m	>35	0	0	<1	
Tin	ppm	ASTM D5185m	>4	<1	0	0	
Vanadium	ppm	ASTM D5185m		0	0	<1	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	5	<1	0	0	
	pp		0	51	0	0	
Barium	ppm		1	0	0	0	
Barium Molybdenum							
	ppm	ASTM D5185m ASTM D5185m	1	0	0	0	
Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	1 2	0 0	0 0	0 <1	
Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1	0 0 0	0 0 <1	0 <1 <1	
Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5	0 0 0 8	0 0 <1 10	0 <1 <1 9	
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220	0 0 0 8 1248	0 0 <1 10 1313	0 <1 <1 9 1300	
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298	0 0 0 8 1248 278	0 0 <1 10 1313 291	0 <1 <1 9 1300 275	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350	0 0 8 1248 278 338 2376 current	0 0 <1 10 1313 291 348 2834 history1	0 <1 <1 9 1300 275 336 2685 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995	0 0 8 1248 278 338 2376 current 2	0 0 <1 10 1313 291 348 2834	0 <1 9 1300 275 336 2685	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b>	0 0 8 1248 278 338 2376 current	0 0 <1 10 1313 291 348 2834 history1	0 <1 <1 9 1300 275 336 2685 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b>	0 0 8 1248 278 338 2376 current 2	0 0 <1 10 1313 291 348 2834 2834 history1 2 <1 0	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100	0 0 8 1248 278 338 2376 current 2 0	0 0 <1 10 1313 291 348 2834 history1 2 <1	0 <1 <1 9 1300 275 336 2685 history2 2 <1	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur Sulfur Silicon Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100 >20	0 0 8 1248 278 338 2376 current 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2 history1	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0 0.3 history2	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100 >20 >20	0 0 8 1248 278 338 2376 current 2 0 0 0 0	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm %	ASTM D5185m ASTM D3524 <b>method</b> *ASTM D7844	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100 >20 >4.0	0 0 8 1248 278 338 2376 current 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2 history1 0 4.1	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3 history2 0 3.4	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D3524	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100 >20 >4.0	0 0 8 1248 278 338 2376 current 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0 0.2 history1 0	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3 history2 0	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>limit/base</b> >+100 >20 >20 >4.0	0 0 0 8 1248 278 338 2376 <u>current</u> 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2 history1 0 4.1	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3 history2 0 3.4	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	1 2 1 5 1220 298 350 1995 <b>imit/base</b> >+100 >20 >4.0 <b>imit/base</b> >20 >20 >30	0 0 8 1248 278 338 2376 current 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 1 1 4.1	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2 history1 0 4.1 16.8	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3 history2 0 3.4 13.8	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 ASTM D3524 ASTM D78444 *ASTM D7624 *ASTM D7615	1 2 1 5 1220 298 350 1995 <b>Imit/base</b> >+100 >20 >4.0 <b>Imit/base</b> >20 >30 <b>Imit/base</b>	0 0 8 1248 278 338 2376 current 2 0 0 0 0 0.0 0 0.0 0 0.0 0 0.0 1.5 14.1	0 0 <1 10 1313 291 348 2834 history1 2 <1 0 0.2 history1 0 4.1 16.8 history1	0 <1 <1 9 1300 275 336 2685 history2 2 <1 0 0.3 history2 0 3.4 13.8 history2	

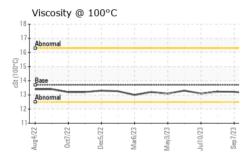


# **OIL ANALYSIS REPORT**









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	VISUAL		method	limit/base	C	urrent		histor	·y1	his	story2
	White Metal	scalar	*Visual	NONE	NO	NE		NONE		NOI	NE
	Yellow Metal	scalar	*Visual	NONE	NO	NE		NONE		NO	NE
	Precipitate	scalar	*Visual	NONE	NO			NONE		NO	
	Silt	scalar	*Visual	NONE	NO			NONE		NO	NE
	Debris	scalar	*Visual	NONE	NO			NONE		NO	NE
	Sand/Dirt	scalar	*Visual	NONE	NO	NE		NONE		NO	NE
Jul10/23 - Sep7/23 -	Appearance	scalar	*Visual	NORML	NO	RML		NORM	L	NO	RML
Sep	Odor	scalar	*Visual	NORML	NO	RML		NORM	L	NO	RML
	Emulsified Water	scalar	*Visual	>0.1	NE	G		NEG		NEC	G
	Free Water	scalar	*Visual		NE	G		NEG		NEC	G
	FLUID PROPE	RTIES	method	limit/base	C	urrent		histor	ʻy1	his	story2
$\wedge$	Visc @ 100°C	cSt	ASTM D445	13.7	13.	1		13.22		13.2	23
	GRAPHS										
	Iron (ppm)				- 0.0	(ppm	)				
21 E2	100 Severe				50 Severe						
Jul10/23 Sep7/23	00			4	40						
L S	40 Abnormal			u dd	30 - Abnom	nal					
	20				20						
٨				-	10						
$\wedge$	Aug4/22 - 0ct7/22 - 0ct7/22 - 0ct7/22 -	Mar6/23 -	Jul10/23	Sep 7/23 -	Aug4/22	0ct7/22 -	Dec5/22 -	Mar6/23 -	May3/23 -	Jul10/23 -	Sep7/23 -
	Aug	Mar Mar	Jult	Sep	Aug	0	Dec	Mai	May	Jul	Sep
	Aluminum (ppm)				Chro	mium	(ppn	n)			
L	20				8						
	15 - Severe			-	6 - Severe		-		-		
23 -	a 10 - Abnormal			Edo	4 Abnom	nal					
Jul10/23 Sep7/23	5				2						
,		$\sim /$	1-								
	ug4/22	3/23 +	)/23	1/23	122	0ct7/22	5/22	3/23	3/23	1/23	//23
	Aug4/22 0ct7/22 Dec5/22	Mar6/23 M⇒v2/23	Jul10/23	Sep 7/23	Aug4/22	0ct <sup>7</sup>	Dec5/22	Mar6/23	May3/23	Jul10/23	Sep7/23
	Copper (ppm)					on (ppi	m)				
	80 Severe			20	00 - Severe						
	60			15	50						
	40 - Abnormal			ة 10	00 - Abnom	nal					
	20				50-						
Jul10/23 . Sep7/23 .	0				0						
Jull' Sep	Aug4/22	Mar6/23 -	Jul10/23	Sep7/23	Aug4/22	0ct7/22 -	Dec5/22 -	Mar6/23 -	May3/23 -	Jul10/23 -	Sep 7/23 -
	Aug	Mar	Jul	Sep	Aug	Oct	Dec	Mar	May	Jul	Sep
	Viscosity @ 100°C				0-	Numł	ber				
	Abnormal			Base Number (mg KOH(g) 5	0						
i.				JY Bu			-	-		$\wedge$	
	16 - 6 14 - Base Abnorma			La qu	.0 - Hase	1	4	$\checkmark$	~	1	/
	12-			N as	.0-						
					0		-				
	Aug4/22 0ct7/22 Dec5/22	Mar6/23 M⇒v2/23	Jul10/23	Sep 7/23 .	Aug4/22	0ct7/22	Dec5/22	Mar6/23	May3/23	Jul10/23	Sep7/23
	D, D	N N	nr	õ	Aı	0	õ	M	M	ηŋ	5
Laboratory	: WearCheck USA - 5	01 Madi		INC 2751	3	ENE	RVFC	T OPER	ΔΤΙΝΟ	. HIID	RICANE
Sample No.		Received		Nov 2023	0			30 LAUF			
Lab Number	: 06010250	Diagnos		Dec 2023							NT, VA
Unique Number	: 10749394	Diagnost		s Davis						US	24656

US 24656 Contact: Service Manager

Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel) Certificate L2367 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)

Contact/Location: Service Manager - ENEVANH