

OIL ANALYSIS REPORT

Area Irvington Machine Id Unit 02 DB060102E

Component Natural Gas Engine

PETRO CANADA DURON MONOGRADE HD 40W (250 GAL)

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. Resample at the next service interval to monitor. (Customer Sample Comment: Top Up Amount: 19 GAL)

Wear

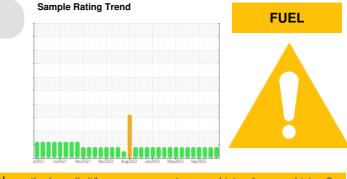
All component wear rates are normal.

Contamination

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

Fluid Condition

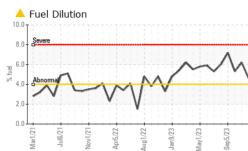
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The AN level is acceptable for this fluid.

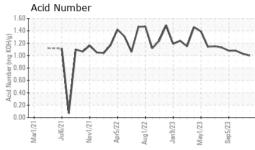


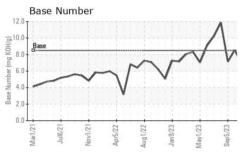
SAMPLE INFORM	/IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0105166	PCA0105168	PCA0105170
Sample Date		Client Info		13 Dec 2023	01 Nov 2023	03 Oct 2023
Machine Age	hrs	Client Info		26689	26033	25292
Oil Age	hrs	Client Info		18261	17605	16864
Oil Changed		Client Info		Oil Added	Oil Added	Oil Added
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Water		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m		12	12	13
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	~_	0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m		۰ <1	<1	0
Lead	ppm	ASTM D5185m	>30	12	11	12
Copper	ppm	ASTM D5185m	>35	11	11	12
Tin	ppm	ASTM D5185m	>4	2	2	2
Vanadium	ppm	ASTM D5185m	~7	0	0	0
Cadmium	ppm	ASTM D5185m		ہ <1	0	0
	ррш					-
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		14	16	15
Barium	ppm	ASTM D5185m		0	0	<1
Molybdenum	ppm	ASTM D5185m		3	5	5
Manganese	ppm	ASTM D5185m		<1	0	<1
Magnesium	ppm	ASTM D5185m		800	743	712
Calcium	ppm	ASTM D5185m		1074	1107	1093
Phosphorus	10 10 100	ACTM DE10Em				
	ppm	ASTM D5185m		885	826	869
Zinc	ppm	ASTM D5185m ASTM D5185m		885 1165	826 1117	869 1125
Zinc Sulfur						
	ppm ppm	ASTM D5185m	limit/base	1165	1117	1125
Sulfur	ppm ppm	ASTM D5185m ASTM D5185m	limit/base >+100	1165 2072	1117 2051	1125 2249
Sulfur CONTAMINAN	ppm ppm TS	ASTM D5185m ASTM D5185m method		1165 2072 current	1117 2051 history1	1125 2249 history2
Sulfur CONTAMINAN Silicon	ppm ppm TS ppm	ASTM D5185m ASTM D5185m method ASTM D5185m		1165 2072 current 3	1117 2051 history1 4	1125 2249 history2 2
Sulfur CONTAMINAN ⁻ Silicon Sodium	ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	>+100	1165 2072 current 3 5	1117 2051 history1 4 7	1125 2249 history2 2 2
Sulfur CONTAMINAN ⁻ Silicon Sodium Potassium	ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	>+100 >20	1165 2072 current 3 5 2	1117 2051 history1 4 7 <1	1125 2249 history2 2 2 2 2
Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	>+100 >20 >4.0 limit/base	1165 2072 current 3 5 2 2 ▲ 4.6	1117 2051 history1 4 7 <1 ▲ 6.2	1125 2249 history2 2 2 2 2 2 2 5.3
Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method	>+100 >20 >4.0 limit/base	1165 2072 current 3 5 2 2 ▲ 4.6 current	1117 2051 4 7 <1 ▲ 6.2 history1	1125 2249 history2 2 2 2 2 2 5.3 history2
Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	>+100 >20 >4.0 limit/base	1165 2072 current 3 5 2 ▲ 4.6 current 0.1	1117 2051 4 7 <1 ▲ 6.2 history1 0.1	1125 2249 history2 2 2 2 2 5.3 history2 0.1
Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7844 *ASTM D7845	>+100 >20 >4.0 limit/base	1165 2072 current 3 5 2 2 ▲ 4.6 current 0.1 6.8	1117 2051 4 7 <1 ▲ 6.2 history1 0.1 6.9	1125 2249 history2 2 2 2 2 5.3 history2 0.1 6.8
Sulfur CONTAMINAN ^T Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 *ASTM D7844 *ASTM D7844 *ASTM D7845	>+100 >20 >4.0 limit/base >20 >30	1165 2072 current 3 5 2 ▲ 4.6 current 0.1 6.8 17.1	1117 2051 4 7 <1 ▲ 6.2 history1 0.1 6.9 17.0	1125 2249 history2 2 2 2 2 5.3 history2 0.1 6.8 16.7
Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 ASTM D3524 *ASTM D7844 *ASTM D7624 *ASTM D7415	>+100 >20 >4.0 limit/base >20 >30 limit/base	1165 2072 current 3 5 2 2 ▲ 4.6 current 0.1 6.8 17.1 current	1117 2051 history1 4 7 <1 ▲ 6.2 history1 0.1 6.9 17.0 history1	1125 2249 history2 2 2 2 2 5.3 history2 0.1 6.8 16.7 history2

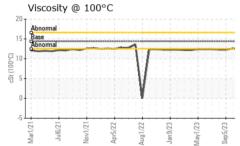


OIL ANALYSIS REPORT









	VISUAL		method	limit/base	current	history1	history2	
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Δ	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
M	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
May1/23 Sep5/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Sep	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
\sim	FLUID PROPE		method	limit/base	current	history1	history2	
	Visc @ 100°C	cSt	ASTM D445	14.4	12.6	12.5	12.6	
	GRAPHS							
	Iron (ppm)			6				
May1/23	80 - Severe			5				
	60 - Abnormal			4 53				
1	40			료 ³ 2				
	20			1			~~~	
Λ	21	12	12 12			3 22		
atta	Mar1/21 Jul6/21 Nov1/21 Apr5/22	Aug1/22.	Jan 9/23 . May 1/23 .		Mar1/21 Jul6/21 Nov1/21	Apr5/22 - Aug 1/22 - Jan 9/23 -	May1/23 Sep5/23	
•	Aluminum (ppm)	4	, 2 ,	~	Chromium (p		2 */	
	²⁰ T				⁸ T	, , , , , , , , , , , , , , , , , , ,		
	15 Severe				6 Severe			
May1/23 . Sep5/23	10 - Abnormal			dd				
Ma	5				2-			
						3		
	Mar1/21 Jul6/21 Nov1/21	Aug1/22	Jan 9/23 May 1/23		Mar1/21 Jul6/21 Nov1/21	Apr5/22 Aug1/22 Jan9/23	May1/23 Sep5/23	
	Copper (ppm)	N N N N						
	80			20	Silicon (ppm)			
	Severe			15	0-			
	40 - Abnormal			툍 10				
23	20			5	0			
May1/23 Sep5/23			n n n			3 2	21 E2	
	Mar1/21 Jul6/21 Nov1/21 Apr5/22	Aug1/22	Jan9/23 May1/23		Mar1/21- Jul6/21- Nov1/21-	Apr5/22 Aug1/22 Jan9/23	May1/23 Sep5/23	
	Viscosity @ 100°C	A	, 2 0	,	Base Number	r V r	2 0	
	20			12.	0 -		Λ	
	Abnormal 15 Abnormal	-		(0)H01 H03 Buy Jack B. Jack B.	0 Base		1	
1000U	10-	\[Bm) 2	0	·Mr	NK	
11 100	5	V		aq 		\sim \sim		
	0	, V		ase 2.	0	na anna an		
	21	22	33	0.	0	22		
	Mar1/21 Jul6/21 Nov1/21 Apr5/22	Aug1/22.	Jan 9/23 May 1/23		Mar1/21 Jul6/21 Nov1/21	Apr5/22 Aug1/22 Jan9/23	May1/23 Sep5/23	
Laboratory	: WearCheck USA - 5				3 Mag	Jellan Midstrea		
Sample No. Lab Number		Recieve Diagnos		Dec 2023 Dec 2023		9405 Be	nnington Road Omaha, NE	
Unique Number		Diagnos		an Felton			US 68122	
Test Package	: MOB 2 (Additional 1	Tests: Fi	uelDilution, P	ercentFuel)		Conta	ct: Zach Jones	
sample report, c	ontact Customer Servi	ce at 1-8	300-237-136	9.		zach.jones@n	nagellanlp.com	
and a the state the state of		7005						

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)

Certificate L2367

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