

OIL ANALYSIS REPORT

SAMPLE INFORMATION method

NORMAL

Sample Rating Trend



Area G.LOPES CONSTRUCTION INC./On-Road 311

Component Diesel Engine Fluic

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

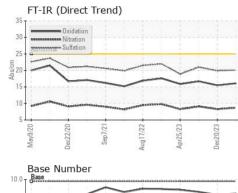
Fluid Condition

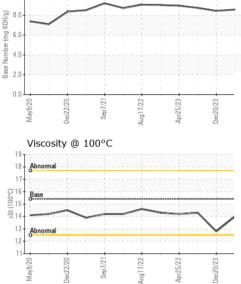
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Comple Number				DO 40100010		DC 40000001
Sample Number		Client Info		PCA0122610	PCA0110110	PCA0098391
Sample Date		Client Info		23 Apr 2024	20 Dec 2023	23 Aug 2023
Machine Age	mls	Client Info		386000	386000	308000
Oil Age	mls	Client Info		232000	310000	232000
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>65	25	24	17
Chromium	ppm	ASTM D5185m	>5	3	2	2
Nickel	ppm	ASTM D5185m	>3	0	<1	1
Titanium	ppm	ASTM D5185m	>5	<1	<1	1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>35	12	11	9
Lead	ppm	ASTM D5185m	>10	0	0	<1
Copper	ppm	ASTM D5185m	>180	10	11	13
Tin	ppm	ASTM D5185m	>8	0	<1	1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES			11 1. 4			
ADDITIVES		method				history2
Boron	ppm	ASTM D5185m	limit/base	current 0	history1 11	history2 <1
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	0	11	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0	11 0	<1 2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 60	11 0 62	<1 2 66
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 60 <1	11 0 62 <1	<1 2 66 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 60 <1 974	11 0 62 <1 873	<1 2 66 <1 979
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	0 0 60 <1 974 1157	11 0 62 <1 873 1059	<1 2 66 <1 979 1209
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	0 0 60 <1 974 1157 1026	11 0 62 <1 873 1059 985	<1 2 66 <1 979 1209 1058
Boron Barium 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	0 0 60 <1 974 1157 1026 1243	11 0 62 <1 873 1059 985 1205	<1 2 66 <1 979 1209 1058 1344
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	0 0 60 <1 974 1157 1026 1243 3190	11 0 62 <1 873 1059 985 1205 2603	<1 2 66 <1 979 1209 1058 1344 3246
Boron Barium 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 0 60 <1 974 1157 1026 1243 3190 current	11 0 62 <1 873 1059 985 1205 2603 history1	<1 2 66 <1 979 1209 1058 1344 3246 history2
Boron Barium 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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >15	0 0 60 <1 974 1157 1026 1243 3190 current 4	11 0 62 <1 873 1059 985 1205 2603 history1 4	<1 2 66 <1 979 1209 1058 1344 3246 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >15	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >15 >20	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 215 >15 >20 Limit/base	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1 1	11 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1 history1	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4 N history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >15 >20 limit/base >3 >20	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1 current 0.7	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1 history1 0.7	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4 0 4 Notestory2 0.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >15 >20 limit/base >3 >20	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1 current 0.7 8.7	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1 history1 0.7 8.3	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4 0 4 0 4 0 0 4 0 0 8 9.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >30	0 0 60 <1 974 1157 1026 1243 3190 <u>current</u> 4 3 1 1 <u>current</u> 0.7 8.7 20.1	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1 history1 0.7 8.3 19.9	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4 0 4 0 4 0 10 2 0.8 9.1 21.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 2060 2060 2060 2	0 0 60 <1 974 1157 1026 1243 3190 current 4 3 1 current 0.7 8.7 20.1 current	111 0 62 <1 873 1059 985 1205 2603 history1 4 <1 1 history1 0.7 8.3 19.9 history1	<1 2 66 <1 979 1209 1058 1344 3246 history2 4 0 4 0 4 0 4 0 0 4 bistory2 0.8 9.1 21.0 bistory2



OIL ANALYSIS REPORT





	VISUAL		method	limit/base	current	hi	story1	h	istory2	
	White Metal	scalar	*Visual	NONE	NONE	NO	NE	NC	DNE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NO	NE	NC	DNE	
	Precipitate		*Visual *Visual *Visual	NONE	NONE	NO	NE	NC	NONE	
Silt		scalar		NONE	NONE	NO	NONE NONE		NONE NONE	
	Debris			NONE	NONE	NO				
Sand/Dirt		scalar	scalar *Visual NONE NONE		NONE	NO	NONE		NONE	
Appearance		scalar	scalar *Visual NORML NORML		NORML		NORML			
Deci	Odor	scalar	*Visual	NORML	NORML	NO	RML	NC	DRML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NE	G	NE	G	
	Free Water	scalar	*Visual		NEG	NE	G	NE	G	
	FLUID PROPE	RTIES	method	limit/base	current	hi	story1	h	istory2	
	Visc @ 100°C	cSt	ASTM D445	15.4	14.0	12.8	3	14	.3	
	GRAPHS									
	Iron (ppm)			3	Lead (ppm)					
23	Sminn				5 Severe					
Dec20/23					10 -					
	Loo - Abnormal		1	und l	Abnormal					
	50-				0 - G		1			
		_			0					
	May9/20 Dec22/20 Sep7/21	Aug17/22	Apr25/23	Dec20/23	May9/20 Dec22/20	Sep7/21	Aug17/22	Apr25/23	Dec20/23	
		Aug	Apı	Dei			Bug	Api	Dec	
	Aluminum (ppm)				Chromium ((ppm)				
\checkmark	80 Severe				2 0 Severe					
	60 - Severe			-	8-					
1/23 -	a 40 Abnormal		<u>i</u>	dd	6 - Abnormal	·				
Dec20/23	20-		1		4					
_			~		2					
		7/22 -	5/23			Sep7/21-	7/22 -	5/23 -	0/23 -	
	May9/20 Dec22/20 Sep7/21	Aug17/22	Apr25/23	Dec20/23	May9/20 Dec22/20	Sep	Aug17/22	Apr25/23	Dec20/23	
	Copper (ppm)				Silicon (ppm	n)				
	400 Severe			4	Severe		1	1		
	300			3	10-					
	a 200 - Abnormal			E 2	0					
	100 -				Abnormal		1			
								-		
	20	22 .	23	723	20 10	/21-	22	23	23	
	May9/20 Dec22/20 Sep7/21	Aug17/22	Apr25/23	Dec20/23	May9/20 Dec22/20	Sep7/21	Aug17/22 -	Apr25/23	Dec20/23	
	– – – – – Viscosity @ 100°(Base Numb	er	A	4		
	²⁰ T			10.						
	18 Abnormal		+	8 8. 4. 5. 6. 7. 7. 8. 8. 8. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9	.0-	\sim				
	0 16 - Base			Ĕ 6.	.0 -					
	0016 Base			and the second sec	.0 -					
	12 - Abnormal				.0 -					
		2		0.			2		m	
	May9/20 Dec22/20 Sep7/21	Aug17/22	Apr25/23	Dec20/23	May9/20 Dec22/20	Sep7/21	Aug17/22	Apr25/23	Dec20/23	
	: WearCheck USA - 50 : PCA0122610 : 06161708 : 10997131		n Ave., Car ved : 2 d : 2		G LOPES CONSTRUCTIO 565 WINTHROP S TAUNTON, M US 0278					
	: MOB 2	51					Contact: BUTCH MCGRAT			

To discuss this sample report, co. * - 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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Certificate L2367

Submitted By: MATT MANOLI Page 2 of 2

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