

OIL ANALYSIS REPORT

Sample Rating Trend



BM-156

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (--- 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.

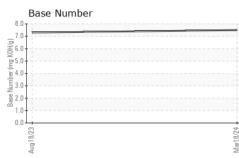
Fluid Condition

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

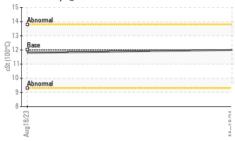
·			Aug2023	Mar2024		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0103107	PCA0103177	
Sample Date		Client Info		18 Mar 2024	18 Aug 2023	
Machine Age	hrs	Client Info		6938	6031	
Oil Age	hrs	Client Info		907	1024	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
-		and the set	1			h istanı Q
CONTAMINATI	UN	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	29	20	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	9	8	
Lead	ppm	ASTM D5185m	>40	0	<1	
Copper	ppm	ASTM D5185m	>330	2	2	
Tin	ppm	ASTM D5185m	>15	0	<1	
Vanadium	ppm	ASTM D5185m		<1	<1	
	pp					
Cadmium	ppm	ASTM D5185m		0	0	
	ppm	ASTM D5185m	1111	0	0	
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	 history2
	ppm ppm		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	2	current 12	history1 <1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	2 0	current 12 0	history1 <1 0	history2
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 12 0 56	history1 <1 0 64	history2
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current 12 0 56 <1	history1 <1 0 64 <1	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current 12 0 56 <1 850	history1 <1 0 64 <1 1097	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	current 12 0 56 <1 850 1265	history1 <1 0 64 <1 1097 1278	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	current 12 0 56 <1 850 1265 980	history1 <1 0 64 <1 1097 1278 1123	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180	current 12 0 56 <1 850 1265 980 1136	history1 <1 0 64 <1 1097 1278 1123 1417	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current 12 0 56 <1 850 1265 980 1136 3175	history1 <1 0 64 <1 1097 1278 1123 1417 3718	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	12 0 56 <1 850 1265 980 1136 3175 current	kistory1 <1 0 64 <1 1097 1278 1123 1417 3718 history1	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current 12 0 56 <1 850 1265 980 1136 3175 current 8	kistory1 <1 0 64 <1 1097 1278 1123 1417 3718 history1 8	history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2	history1 <1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 -20 Imit/base	12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1	history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 >20 Imit/base >3	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6	history2 history2 history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7 9.3	kistory1 <1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6 9.5	history2 history2 history2 history2 history2
ADDITIVES 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	method ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20 >30	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7 9.3 21.8	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6 9.5 20.7	history2 history2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 method	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7 9.3 21.8 current	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6 9.5 20.7 history1	history2 history2 history2 history2 history2 history2
ADDITIVES 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	method ASTM D5185m ASTM D7185m ASTM D7844 *ASTM D7624 *ASTM D7414	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7 9.3 21.8 current 17.8	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6 9.5 20.7 history1 16.7	history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415 method	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	current 12 0 56 <1 850 1265 980 1136 3175 current 8 2 18 current 0.7 9.3 21.8 current	<1 0 64 <1 1097 1278 1123 1417 3718 history1 8 3 18 history1 0.6 9.5 20.7 history1	history2 history2 history2 history2 history2 history2 history2 history2 history2



OIL ANALYSIS REPORT



Viscosity @ 100°C



		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
		Precipitate	scalar	*Visual	NONE	NONE	NONE	
		Silt	scalar	*Visual	NONE	NONE	NONE	
		Debris	scalar	*Visual	NONE	NONE	NONE	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
	24	Appearance	scalar	*Visual	NORML	NORML	NORML	
	Mar1 8/24	Odor			NORML	NORML	NORML	
	2		scalar	*Visual				
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	
		FLUID PROPE		method	limit/base	current	history1	history2
	-	Visc @ 100°C	cSt	ASTM D445	12.00	12.0	11.8	
		GRAPHS						
		Ferrous Alloys						
	10	25 - iron						
	10 10	25- nickel						
	-	20						
		톮 15-						
		10-						
		5						
		0						
		8/23			8/24			
		Aug18/23			Mar18/24			
		Non-ferrous Meta	ls					
	¹⁰ T							
		8 - copper B						
		°						
		6 -						
		ш d						
		4						
		2						
		Aug18/23			Mar18/24			
		Auç			Ma			
		Vicessity @ 1000	<u> </u>				-	
		Viscosity @ 100°(C		8.0	Base Number		
		-	C		8.0			
		15	C		7.0			
		15 14 13	0		7.0			
		15 14 13			7.0			
		15 14 Abnormal	C		7.0			
		15 14 33 00 12 30 11 30 10 30 11 30 11 10 10 10 10 10 10 10 10 10 10 10 10 1	C		7.0 (9)100 KON (9)100			
		15 14 13 6 12 8 12 8 11	C		7.0 0/HOX 6.0 uu) 14.0 4.0 3.0 888 2.0			
		15 14 Abnormal 13 13 13 13 13 12 12 12 8 8 8 8 14 Abnormal 13 13 13 13 13 14 13 14 13 14 14 14 14 14 14 14 14 14 14	C		7.0 9(HOX) 100() 1			
		15 14 Abnormal 13 Coll 2 5 11 Abnormal Abnormal 5 11 Abnormal 4 Abnormal 5 12 4 4 4 4 4 4 4 4 4 4 4 4 4	C		7.0 (http://times.com/ http://times.com/ http://times.com/ http://times.com/ http://times.com/ see 2.0 1.0 0.0			
		15 14 Abnormal 13 13 13 13 13 12 12 12 8 8 8 8 14 Abnormal 13 13 13 13 13 14 13 14 13 14 14 14 14 14 14 14 14 14 14	C		7.0 9(HOX) 100() 1			
		Abnormal Abnormal Base EXENT Base EXENT Base EXENT Base Base EXENT Base			7.0 (b)HOX bu) Jaquining ase 2.0 1.0 +2/81 Jay 4.0 9868 2.0 1.0 0.0			
4	Laboratory Sample No.	Abnormal Base Base College Station Base College Station Base College Station C)1 Madiso		7.0 (http://doi.org/10.00000000000000000000000000000000000	Aug 18/23	BLUE MA	
NABB I	Sample No.	Abnormal Base Base Base Company Base Company Base Company Base Company Base Company Base Company Compa		ved : 26	7.0 (http://doi.org/10.00000000000000000000000000000000000	Aug 18/23	BLUE MA 15 E. WESTING	
		¹⁵ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁵ ¹⁴ ¹³ ¹⁴ ¹³ ¹³ ¹⁵ ¹⁴ ¹³ ¹⁵ ¹² ¹² ¹² ¹² ¹³ ¹³ ¹³ ¹³ ¹³ ¹³ ¹³ ¹³ ¹³ ¹³ ¹⁴ ¹⁵ ¹² ¹⁴ ¹⁵ ¹⁵ ¹² ¹⁵)1 Madiso Recei Teste	ved : 26 d : 02	7.0 (http://doi.org/10.00000000000000000000000000000000000	E2001000	BLUE MA 15 E. WESTING	HOUSE BLV ARLOTTE, N
tificate L2367	Sample No. Lab Number	¹⁵ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹³ ¹³ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹³ ¹⁴ ¹⁵ ¹² ¹² ¹² ¹² ¹² ¹² ¹¹ ¹⁰)1 Madiso Recei	ved : 26 d : 02	, NC 27513 Mar 2024 Apr 2024	E2001000	BLUE MA 15 E. WESTINGI CH	AX TRUCKIN

* - 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)

Submitted By: Charleston Shop - Joe Nuzzolese

T: (980)225-9968

F: (704)588-2901