

OIL ANALYSIS REPORT





Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 10W30 (--- QTS)

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

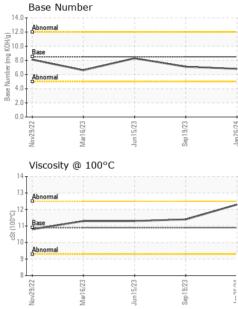
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0101212	PCA0101269	PCA0073109
Sample Date		Client Info		26 Jan 2024	19 Sep 2023	15 Jun 2023
Machine Age	mls	Client Info		173712	133571	102566
Oil Age	mls	Client Info		0	30000	30000
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	22	17	18
Chromium	ppm	ASTM D5185m	>20	2	2	2
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	<1	<1	0
Aluminum	ppm	ASTM D5185m	>20	10	12	17
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	9	18	48
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
	pp			51	0	0
ADDITIVES	66	method	limit/base	current	history1	history2
	ppm		limit/base 250		-	-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	250	current 13	history1 <1	history2 0
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	250 10	current 13 <1	history1 <1 <1	history2 0 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	250 10	current 13 <1 63	history1 <1 <1 62	history2 0 0 62
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	current 13 <1 63 <1	history1 <1 <1 62 <1	history2 0 0 62 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	current 13 <1 63 <1 852	history1 <1 <1 62 <1 978	history2 0 0 62 <1 1023
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	250 10 100 450 3000	current 13 <1 63 <1 852 1039	history1 <1 <1 62 <1 978 1073	history2 0 0 62 <1 1023 1145
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	current 13 <1 63 <1 852 1039 981	history1 <1 <1 62 <1 978 1073 993	history2 0 0 62 <1 1023 1145 993
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	current 13 <1 63 <1 852 1039 981 1189	history1 <1 <1 62 <1 978 1073 993 1239	history2 0 0 62 <1 1023 1145 993 1262
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	250 10 100 450 3000 1150 1350 4250	current 13 <1 63 <1 852 1039 981 1189 2709	history1 <1 <1 62 <1 978 1073 993 1239 2467	history2 0 0 62 <1 1023 1145 993 1262 2992
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	250 10 100 450 3000 1150 1350 4250	current 13 <1 63 <1 852 1039 981 1189 2709 current	history1 <1 <1 62 <1 978 1073 993 1239 2467 history1	history2 0 0 62 <1 1023 1145 993 1262 2992 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	250 10 100 450 3000 1150 1350 4250 limit/base >25	current 13 <1 63 <1 852 1039 981 1189 2709 current 7	history1 <1 <1 62 <1 978 1073 993 1239 2467 history1	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0	history1 <1 <1 62 <1 978 1073 993 1239 2467 history1 4 1	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4 1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >20	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0 20	history1 <1 <1 62 <1 978 1073 993 1239 2467 history1 4 1 24	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4 1 35
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	250 10 100 450 3000 1150 1350 4250 Imit/base >25 .20 Imit/base	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0 20 current	history1 <1 62 <1 978 1073 993 1239 2467 history1 4 1 24 history1	history2 0 62 <1 1023 1145 993 1262 2992 history2 4 1 35 history2
ADDITIVES 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	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >20 Imit/base	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0 20 current 0.6	history1 <1 62 <1 978 1073 993 1239 2467 history1 4 1 24 history1 0.5	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4 1 35 history2 0.5
ADDITIVES 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 t t t t	method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 i mit/base >25 >20 i mit/base >3 >20	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0 20 current 0.6 8.8	history1 <1 <1 62 <1 978 1073 993 1239 2467 history1 4 1 24 history1 0.5 8.1	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4 1 35 history2 0.5 8.7
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 t t t t	method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >25 imit/base >3 >20 >3	current 13 <1 63 <1 852 1039 981 1189 2709 current 7 0 20 current 0.6 8.8 21.2	history1 <1 62 <1 978 1073 993 1239 2467 history1 4 1 24 history1 0.5 8.1 19.9	history2 0 0 62 <1 1023 1145 993 1262 2992 history2 4 1 35 history2 0.5 8.7 19.9



OIL ANALYSIS REPORT

VISUAL



		VISUAL		method	limit/base	current	history1	history2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
		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
Jun 15/23 .	Sep19/23 - Jan26/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Junl	Sep1	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		12.3	11.4	11.3
	-	GRAPHS	001		10.0	1210		11.0
		Ferrous Alloys						
		40 T						
5/23	9/23	35 - iron		1				
Jun15/23	Sep 19/23	30- mickel		I 				
		25						
		툡 20						
		15						
		10						
		5 -						
		3 5	23	23	54			
		Nov29/22 Mar16/23	Jun 15/23	Sep 19/23	Jan 26/24			
			<i>r</i>	õ				
		Non-ferrous Meta	IS					
		copper						
		150- 150-						
		Ē 100-						
		50-						
			2	57	4			
		Nov29/22 Mar16/23	Jun 15/23	Sep 19/23	Jan 26/24			
		≗ ≊ Viscosity @ 100°0	-	Se	Ja			
		¹⁴	-		14.0	Base Number		
		13 - Abnormal			12.0	Abnormal		
		12-			》 影10.0·			
					y Bu 8.0-	Base		
		Base						1
		0001 11- Base			e 6.0	Ab		
		(2-001) 11- Base 10-			0.0 gr	Abnormal		
					(0/H0) Bull 10.0- H0) Bull 10.0- Jaquinung ase 8 4.0-	Abnormal		
		10 - Abnormal			2.0-	Abnormal		
		9+ 8	23	23	2.0-		23	/23
		9+ 8	un15/23	tep 19/23	2.0-		lun15/23	sep19/23
		10 - Abnormal	Jun15/23	Sep 19/23	2.0-	Abnormal	Jun 15/23	Sep19/23
d	Laboratory	Abnormal Abnormal EZC6700N EZC912EW EZC912EW EZC912EW EZC912EW	1 Madiso	on Ave., Cary	2.0- 0.0-	Nov29/22 Mar16/23	Company - High	n Plains - 600l
NAB	Sample No.	: WearCheck USA - 50 : PCA0101212	1 Madiso Recei	n Ave., Cary i ved : 27	, NC 27513 7 Feb 2024	Nov29/22 Mar16/23	Company - High 1717	Plains - 600 East Loop 28
	Sample No. Lab Number	: WearCheck USA - 50 : PCA0101212 : 06102339	1 Madiso Recei Teste	in Ave., Cary ived : 27	, NC 27513 7 Feb 2024 8 Feb 2024	Nov29/22	Company - High 1717	Plains - 600F East Loop 28 LUBBOCK, 1
	Sample No. Lab Number Unique Number	: WearCheck USA - 50 : PCA0101212 : 06102339 : 10900569	1 Madiso Recei Teste	in Ave., Cary ived : 27	, NC 27513 7 Feb 2024	Nov29/22	Company - High 1717	Plains - 600H East Loop 24 LUBBOCK, 1 US 7940
ficate L2367 tiscuss this	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 50 : PCA0101212 : 06102339 : 10900569	1 Madiso Recei Teste Diagr	on Ave., Cary ived : 27 ed : 28 nosed : 29	2.0 0.0 7 Feb 2024 8 Feb 2024 7 Feb 2024 7 Feb 2024 7 Feb 2024 7 Feb 2024	Nov29/22	Company - High 1717 Contact:	Plains - 600 East Loop 2 LUBBOCK, 1

Contact/Location: RITA GARCIA - MCLLUB