

OIL ANALYSIS REPORT

Area KANSAS 2000 GMC 1000-MD912

Diesel Engine Fluid

SHELL Rotella T5 15W-40 (--- QTS)

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.

NORMAL

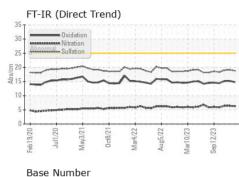


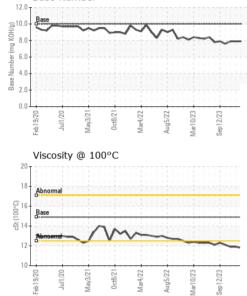
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SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0559211	WC0559209	WC0857194
Sample Date		Client Info		05 Apr 2024	07 Mar 2024	05 Jan 2024
Machine Age	mls	Client Info		317325	317323	317277
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	٧	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 METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	23	25	20
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	3	2
Lead	ppm	ASTM D5185m	>40	1	0	0
Copper	ppm	ASTM D5185m	>330	1	2	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 184	history1 164	history2 187
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	184	164	187
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	184 0	164 0	187 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	184 0 72	164 0 73	187 0 77
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	184 0 72 <1	164 0 73 <1	187 0 77 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	184 0 72 <1 289	164 0 73 <1 294	187 0 77 <1 322
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	184 0 72 <1 289 1986	164 0 73 <1 294 1918	187 0 77 <1 322 1962
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	limit/base	184 0 72 <1 289 1986 1109	164 0 73 <1 294 1918 1094	187 0 77 <1 322 1962 1180
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	limit/base	184 0 72 <1 289 1986 1109 1269	164 0 73 <1 294 1918 1094 1256	187 0 77 <1 322 1962 1180 1347
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	limit/base	184 0 72 <1 289 1986 1109 1269 4328	164 0 73 <1 294 1918 1094 1256 4023	187 0 77 <1 322 1962 1180 1347 4394
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	limit/base	184 0 72 <1 289 1986 1109 1269 4328 current	164 0 73 <1 294 1918 1094 1256 4023 history1	187 0 77 <1 322 1962 1180 1347 4394 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	limit/base	184 0 72 <1 289 1986 1109 1269 4328 current 5	164 0 73 <1 294 1918 1094 1256 4023 history1 5	187 0 77 <1 322 1962 1180 1347 4394 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	limit/base	184 0 72 <1 289 1986 1109 1269 4328 current 5 2	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	184 0 72 <1 289 1986 1109 1269 4328 current 5 2 0	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1 <1	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	184 0 72 <1 289 1986 1109 1269 4328 <u>current</u> 5 2 0	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1 <1 <1 +istory1	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2 0 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	184 0 72 <1 289 1986 1109 1269 4328 <u>current</u> 5 2 0 0 <u>current</u>	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1 <1 <1 history1 0.4	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2 2 0 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	184 0 72 <1 289 1986 1109 1269 4328 <i>current</i> 5 2 0 <i>current</i> 0.4 6.3	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1 5 1 <1 <1 history1 0.4 6.4	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2 0 history2 0.4 6.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20 >30	184 0 72 <1 289 1986 1109 1269 4328 current 5 2 0 current 0.4 6.3 18.8	164 0 73 <1 294 1918 1094 1256 4023 history1 5 1 <1 <1 history1 0.4 6.4 19.1	187 0 77 <1 322 1962 1180 1347 4394 history2 5 2 0 0 history2 0.4 6.4 19.0

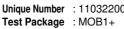


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	VISUAL		method			history1	history2	
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
~	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
2/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Sep12/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
~~	FLUID PROPERT	IES	method	limit/base	current	history1	history2	
	Visc @ 100°C	cSt	ASTM D445	14.9	11.8	11.9	11.9	
	GRAPHS							
	Iron (ppm) ²⁵⁰ T		Incorporation	100	Lead (ppm)	11111111111		
Sep12/23	200 - Severe			80				
Sep 12/23	E 150 - Abnormal			E 60	Abarana			
	100 - 4			40	Turdundu			
	50			<u>~</u> 20				
		Mar4/22 +	Aug5/22 -			0ct8/21. Mar4/22 - Aug5/22 -	0/23	
	Feb19/20 Jul1/20 May3/21 Oct8/21	Mar	Aug5/22 Mar1 0/23 Sen 1 2/23		Feb19/20 Jul1/20 May3/21	Oct Mar ⁴	Mar10/23 Sep12/23	
	Aluminum (ppm)				Chromium (p	om)		
	50 Severe		10000000	50	Severe			
				40) + B			
23	Band Abnormal			ع ³⁰ 20	Abnormal			
Sep12/23							*****	
Sep 12/23				Λ_ ¹⁰				
	Feb19/20	Mar4/22 -	Aug5/22 - Mar10/23 -		Feb19/20	0ct8/21- Mar4/22 - Aug5/22 -	Mar10/23	
	<u>ц</u> –	Ma	Mar	5	e z	0 M∉ Aug	Mar	
	Copper (ppm)			80	Silicon (ppm)			
	300 -			60				
	톱 200 -			틆 40	1			
	100 -			20	Abnormal			
	Feb 19/20	Mar4/22	Aug5/22 - Mar10/23 -	0	Feb19/20	0ct8/21	Mar10/23 +	
	E –	Mai	Aug Marl		E –	0c Mar Aug	Marl Sep1	
	Viscosity @ 100°C		upanangan sa	12.0	Base Number			
	18 Abnormal			(b)H0.0 B)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b)H0.0 b	Base	~~~~		
	00 16 Base			Bu 8.0	1	Y		
	Abnormal	2~		is 6.0	Ĩ			
	12-	v		- 22 Z.O	•			
		2-	3 13	0.0)	21-2-2-2-2-		
	Feb 19/20 Jul1/20 May3/21 0ct8/21	Mar4/22	Aug5/22 Mar10/23 Sen12/23	1	Feb19/20 Jul1/20 May3/21	0ct8/21 Mar4/22 Aug5/22	Mar10/23 Sep12/23	
	a , ≥ 0	2	Ma	}	ĕ , ⊼	- 2 Ř	Ma	
aboratory ample No. ab Number	: WearCheck USA - 501 : WC0559211 : 06180874 : 11032200	n Ave., Cary, NC 27513 ved : 15 May 2024 d : 16 May 2024 iosed : 16 May 2024 - Wes Davis			6401 S	LIBERTY DISPOSA 6401 S EASTERN AV OKLAHOMA CITY, C US 7314		



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)

Report Id: SEAOKL [WUSCAR] 06180874 (Generated: 05/16/2024 15:43:48) Rev: 1

Certificate 12367

Contact/Location: M Rutherford - SEAOKL

Page 2 of 2

T:

F:

Contact: M Rutherford

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