

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **1901** Component **Diesel Engine** Fluid **DIESEL ENGINE OIL SAE 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.

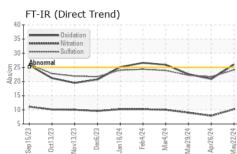
Fluid Condition

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

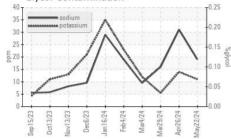
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0897852	WC0897864	WC0878770
Sample Date		Client Info		22 May 2024	26 Apr 2024	29 Mar 2024
Machine Age	mls	Client Info		347795	341953	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample 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
				ourroat		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	8	5	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	0	0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	<1
Lead	ppm	ASTM D5185m	>40	1	<1	<1
Copper	ppm	ASTM D5185m		0	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method				history2
ABBIIIVEO		method				motoryz
Boron	ppm	ASTM D5185m	250	2	0	<1
Boron Barium	ppm ppm		250 10	2 0	0 2	<1 0
Boron Barium Molybdenum		ASTM D5185m	250	2 0 60	0	<1 0 56
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	2 0 60 <1	0 2 62 <1	<1 0 56 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	2 0 60 <1 979	0 2 62 <1 938	<1 0 56 0 905
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	2 0 60 <1 979 1119	0 2 62 <1 938 1095	<1 0 56 0 905 1062
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	250 10 100 450 3000 1150	2 0 60 <1 979 1119 1013	0 2 62 <1 938 1095 1144	<1 0 56 0 905 1062 988
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	2 0 60 <1 979 1119 1013 1315	0 2 62 <1 938 1095 1144 1246	<1 0 56 0 905 1062 988 1169
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	250 10 100 450 3000 1150	2 0 60 <1 979 1119 1013	0 2 62 <1 938 1095 1144	<1 0 56 0 905 1062 988
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	250 10 100 450 3000 1150 1350	2 0 60 <1 979 1119 1013 1315	0 2 62 <1 938 1095 1144 1246	<1 0 56 0 905 1062 988 1169
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	250 10 100 450 3000 1150 1350 4250 limit/base	2 0 60 <1 979 1119 1013 1315 3618	0 2 62 <1 938 1095 1144 1246 3426	<1 0 56 0 905 1062 988 1169 3339
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	250 10 100 450 3000 1150 1350 4250 limit/base >25	2 0 60 <1 979 1119 1013 1315 3618 current	0 2 62 <1 938 1095 1144 1246 3426 history1	<1 0 56 0 905 1062 988 1169 3339 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	250 10 100 450 3000 1150 1350 4250 limit/base >25	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15	0 2 62 <1 938 1095 1144 1246 3426 history1 12	<1 0 56 0 905 1062 988 1169 3339 history2 9
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 ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	2 0 60 <1 979 1119 1013 1315 3618 <u>current</u> 15 19	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31	<1 0 56 0 905 1062 988 1169 3339 history2 9 16
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	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	2 0 60 <1 979 1119 1013 1315 3618 <u>current</u> 15 19 11	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20	2 0 60 <1 979 1119 1013 1315 3618 <u>current</u> 15 19 11 NEG	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15 19 11 NEG <i>current</i>	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG history1	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D2982 method *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15 19 11 NEG <i>current</i> 0.3	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG history1 0.2	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG NEG history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D2982 method *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 20 25 >158 >20 imit/base >20	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15 19 11 NEG <i>current</i> 0.3 10.2	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG history1 0.2 7.9	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG NEG history2 0.3 9.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 method *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >158 >20 Imit/base >3 >20 >30	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15 19 11 NEG <i>current</i> 0.3 10.2 24.1	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG history1 0.2 7.9 21.7	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG NEG history2 0.3 9.0 22.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m *ASTM D2982 ASTM D2982 ASTM D7844 *ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >3 >20 >30 imit/base	2 0 60 <1 979 1119 1013 1315 3618 <i>current</i> 15 19 11 NEG <i>current</i> 0.3 10.2 24.1	0 2 62 <1 938 1095 1144 1246 3426 history1 12 31 14 NEG history1 0.2 7.9 21.7 history1	<1 0 56 0 905 1062 988 1169 3339 history2 9 16 6 NEG NEG 0.3 9.0 22.2 history2

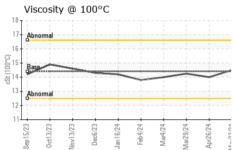


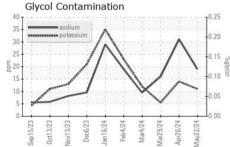
OIL ANALYSIS REPORT











	VISUAL		method	limit/base	current	history1	history
i.	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
	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	FLUID PROPERT		method	limit/base	current	history1	history
	Visc @ 100°C	cSt	ASTM D445	14.4	14.5	14.0	14.25
	GRAPHS	001					
	Iron (ppm)				Lead (ppm)		
	250 Smm		I I I	100	T ::		1 1 1
	200 - Severe			80			
	a 150 Abnormal			60 E	Ab		
	100 4			40		-	
	50						
	²³ ²³ ²³ ⁰	24 +	24	0	23	24 - 24 - 24 - 24 - 24 - 24 - 24 - 24 -	24 24
	Sep 15/23 Oct13/23 Nov13/23 Dec6/23	Jan 16/24 Feb4/24	Mar4/24 Mar29/24 Apr26/24	May22/24	Sep15/23 Oct13/23 Nov13/23	Dec6/23 Jan16/24 Feb4/24	Mar4/24 Mar29/24 Apr26/24
		-, -, -, -, -, -, -, -, -, -, -, -, -, -	- 2 4	M		7	- M A
	Aluminum (ppm)			50	Chromium (p	риц) Полого с	
	40 - Severe			40	Severe		
				20			
	a 20 Abnormal			E 20	Abnormal		
	10			10			
		+ +		o		0 et et	
	Sep 15/23 Oct13/23 Nov13/23 Dec6/23	Jan 16/24 Feb4/24	Mar4/24 Mar29/24 Apr26/24	May22/24	Sep 15/23 Oct13/23 Nov13/23	Dec6/23 Jan16/24 Feb4/24	Mar4/24 Mar29/24 Apr26/24
		P H	N Ma Ap	Ma		u en e	Ma Ap
	Copper (ppm)			80	Silicon (ppm)		
	Abnormal						
	300 -			60			
	퉡 200 -	-		틆 40	+		
	100-			20	Abnormal		
	0			0			
		an 16/24 - Feb 4/24 -	Mar4/24 - Aar29/24 - Apr26/24 -		5/23 - 3/23 - 3/23 - 3/23 -	Dec6/23 - Jan 16/24 - Feb 4/24 -	Mar4/24 - 1ar29/24 - 1pr26/24 -
	Sep 15/23 Oct13/23 Nov13/23 Dec6/23	Jan 16/24 Feb 4/24	Mar4/24 Mar29/24 Apr26/24	May22/24	Sep 15/23 Oct13/23 Nov13/23	Dec6/23 Jan 16/24 Feb 4/24	Mar4/24 Mar29/24 Apr26/24
	Viscosity @ 100°C	2		-	Base Number		
	Abnormal			(B)H	Abnormal		
				p10.0	Base		
	16 (0,001)14 835 Abnormal			0.01 Base Number (mg KOH/g)	Base		
	경 12 - Abnormal			E 5.0	Abnormal		
				Base			
	Sep 15/23 +	Jan 16/24 - Feb 4/24 -	Mar4/24 + Mar29/24 + Apr26/24 +	0.0	L+	Dec6/23 + Jan16/24 + Feb4/24 +	Mar4/24 + Mar29/24 + Apr26/24 +
	Sep 15/23 Oct 13/23 Nov 13/23 Dec6/23			- T		(0 (0 et	9 G G



1903 FAYETTEVILLE ST DURHAM, NC US 27701 Contact: Robert Iosiniecki Robert.losiniecki@ratpdev.com T: F:

Lab Number : 06208344 Tested : 14 Jun 2024 Unique Number : 11075805 Diagnosed : 14 Jun 2024 - Don Baldridge Test Package : MOB 1 (Additional Tests: Glycol, TBN) Certificate 12367 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)

Received

: 12 Jun 2024

Report Id: GODDUR [WUSCAR] 06208344 (Generated: 06/15/2024 12:04:24) Rev: 1

Sample No.

: WC0897852

Contact/Location: Robert Iosiniecki - GODDUR

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