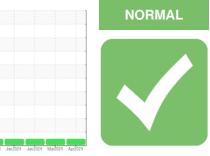


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

2109 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.

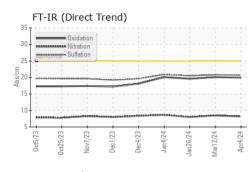
Fluid Condition

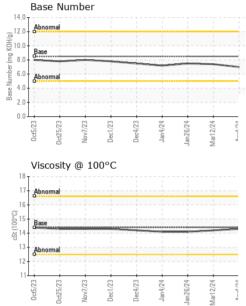
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0897861	WC0894028	WC0894040
Sample Date		Client Info		04 Apr 2024	12 Mar 2024	26 Jan 2024
Machine Age	mls	Client Info		0	0	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	١	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	<1	5	3
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	<1	3	2
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
					motory	···· ,
Boron	ppm	ASTM D5185m	250	3	<1	1
Boron Barium	ppm ppm				· · · · ·	
		ASTM D5185m	250	3	<1	1
Barium	ppm	ASTM D5185m ASTM D5185m	250 10	3 0	<1 2 82 0	1 0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	3 0 58	<1 2 82	1 0 56
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	3 0 58 0	<1 2 82 0	1 0 56 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	3 0 58 0 911	<1 2 82 0 1312	1 0 56 <1 902
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	3 0 58 0 911 1033	<1 2 82 0 1312 1503	1 0 56 <1 902 1020
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	3 0 58 0 911 1033 989	<1 2 82 0 1312 1503 1415	1 0 56 <1 902 1020 1064
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	3 0 58 0 911 1033 989 1182	<1 2 82 0 1312 1503 1415 1743	1 0 56 <1 902 1020 1064 1163
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	3 0 58 0 911 1033 989 1182 3243	<1 2 82 0 1312 1503 1415 1743 4758	1 0 56 <1 902 1020 1064 1163 3206
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	3 0 58 0 911 1033 989 1182 3243 current	<1 2 82 0 1312 1503 1415 1743 4758 history1	1 0 56 <1 902 1020 1064 1163 3206 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	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	3 0 58 0 911 1033 989 1182 3243 current 7	<1 2 82 0 1312 1503 1415 1743 4758 history1 5	1 0 56 <1 902 1020 1064 1163 3206 history2 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	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	3 0 58 0 911 1033 989 1182 3243 current 7 < 1 0	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	3 0 58 0 911 1033 989 1182 3243 current 7 <1 0	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3 3 3	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2 1
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	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >158 >20 Imit/base >3	3 0 58 0 911 1033 989 1182 3243 <u>current</u> 7 <1 0	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3 3 3 history1	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2 1 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >158 >20 Imit/base >3	3 0 58 0 911 1033 989 1182 3243 <u>current</u> 7 <1 0 <u>current</u> 0.2	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3 3 . history1 0.2	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2 1 history2 0.2
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	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >3 >20	3 0 58 0 911 1033 989 1182 3243 <i>current</i> 7 <1 0 <i>current</i> 0.2 8.2	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3 3 history1 0.2 8.5	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2 1 history2 0.2 8.0
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	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >3 >20	3 0 58 0 911 1033 989 1182 3243 <u>current</u> 7 <1 0 <u>current</u> 0.2 8.2 20.7	<1 2 82 0 1312 1503 1415 1743 4758 history1 5 3 3 3 history1 0.2 8.5 20.8	1 0 56 <1 902 1020 1064 1163 3206 history2 3 2 1 history2 0.2 8.0 20.5



OIL ANALYSIS REPORT





	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			
Jan 26/24 Mar 12/24 Apr4/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
Jan2 Mar1 Api	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	14.4	14.3	14.2	14.1			
	GRAPHS									
	Iron (ppm)			100	Lead (ppm)					
/24 /24	200 - Severe			80	Severe					
Jan 26/24 Mar 1 2/24	F 150			60						
	Abnormal		· · ·	und 40	Abnormal		-			
	50 -			20						
		~ ~	4 4			4 3 3	4 4 4			
	0ct5/23 0ct25/23 Nov7/23 Dec1/23	Dec4/23	Jan 4/24 - Jan 26/24 - Mar 1 2/24 -	Apr4/24	0ct5/23 0ct25/23 Nov7/23	Dec1/23 Dec4/23 Jan4/24	Jan 26/24 Mar 1 2/24 Apr 4/24			
	Aluminum (ppm)	_	, n ⊼		Chromium (p		n N			
	50 T		I I I	50	T	Pm)				
	40 - Severe			40						
+ + v	20 - Abnormal			³⁰	Abnormal					
Jan 26/24 Mar1 2/24			++		1.					
- ×	10			10						
	0ct5/23	Dec4/23	Jan4/24 - Jan26/24 - Mar12/24 -	Apr4/24	0ct5/23	Dec1/23 - Dec4/23 - Jan4/24 -	Jan26/24 - Mar12/24 - Apr4/24 -			
	Oct2 Nov	Dec.	Jan 2 Mar1	Apr	Oct2 Nov	Dec	Jan2 Mar1 Apr			
	Copper (ppm)	400				Silicon (ppm)				
	300 Severe		60							
	툡 200 -			년, 40	Abnormal					
	100 -			20)					
	23	23	24	24		23	24 + 24 + 24 + 24 + 24 + 24 + 24 + 24 +			
	0ct5/23 0ct25/23 Nov7/23 Dec1/23	Dec4/23	Jan 4/24 Jan 26/24 Mar 12/24	Apr4/24	0ct5/23 0ct25/23 Nov7/23	Dec1/23 Dec4/23 Jan4/24	Jan 26/24 Mar 12/24 Apr 4/24			
	Viscosity @ 100°C				Base Number	-				
	Abnormal		I I I	15.0 P	Abnormal	· · · · · · · · · · · · · · · · · · ·	I I I			
	16			9 p10.0	Base					
	Base 14 Abnormal			per (n	Abnormal					
	ਲੋਂ <mark>Abnormal</mark> 12 -			0.01 Base Number (mg KOH/g)	- a-					
	10			0.0)					
	0ct5/23 0ct25/23 Nov7/23 Dec1/23	Dec4/23	Jan 4/24 Jan 26/24 Mar 12/24	Apr4/24	0ct5/23 0ct25/23 Nov7/23	Dec1/23 Dec4/23 Jan4/24	Jan 26/24 Mar 1 2/24 Apr 4/24			
		ě.	Jan Mai	A	No 00	Ja De	Jan Mai			
	- Mission									
Laboratory Sample No.	: WearCheck USA - 501 : WC0897861	Madiso Recei		, NC 27513 Apr 2024			RHAM - RAPT ETTEVILLE ST			
							DURHAM, NC			
Unique Number	: 10981555	Diagr	Diagnosed : 18 Apr 2024 - Wes Davis				US 27701			
	: MOB 1 (Additional Te					Contact: Robert losiniecki				
s sample report,	contact Customer Servi					Robert.losinieck	i@ratpdev.com			

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)

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Certificate L2367

Contact/Location: Robert Iosiniecki - GODDUR

Page 2 of 2

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