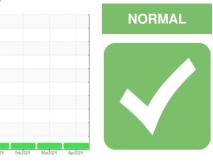


OIL ANALYSIS REPORT



Machine Id

1018 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.

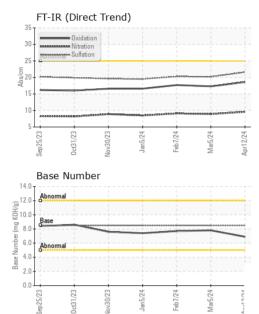
Fluid Condition

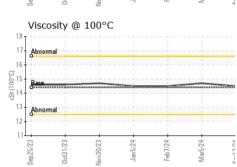
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0897927	WC0878872	WC0893998
Sample Date		Client Info		12 Apr 2024	05 Mar 2024	07 Feb 2024
Machine Age	mls	Client Info		0	0	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	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	17	14	14
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	1	3	1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	0	2	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
- · ·						
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base 250			-
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	250	current 1	history1 0	history2 <1
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	250 10	current 1 0	history1 0 2	history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	250 10	current 1 0 60	history1 0 2 63	history2 <1 0 59
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	Current 1 0 60 0	history1 0 2 63 0	history2 <1 0 59 0
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 1 0 60 0 954	history1 0 2 63 0 971 1157 1087	history2 <1 0 59 0 1078 1146 1089
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	Current 1 0 60 0 954 1147	history1 0 2 63 0 971 1157	history2 <1 0 59 0 1078 1146
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 1 0 60 0 954 1147 1067	history1 0 2 63 0 971 1157 1087	history2 <1 0 59 0 1078 1146 1089
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	250 10 100 450 3000 1150 1350	Current 1 0 60 0 954 1147 1067 1280	history1 0 2 63 0 971 1157 1087 1274	history2 <1 0 59 0 1078 1146 1089 1354
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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 1 0 60 0 954 1147 1067 1280 3210	history1 0 2 63 0 971 1157 1087 1274 3257	<1 0 59 0 1078 1146 1089 1354 3025 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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 1 0 60 0 954 1147 1067 1280 3210 Current	history1 0 2 63 0 971 1157 1087 1274 3257 history1	history2 <1 0 59 0 1078 1146 1089 1354 3025 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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 1 0 60 0 954 1147 1067 1280 3210 Current 19	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5	<1 0 59 0 1078 1146 1089 1354 3025 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	Current 1 0 60 0 954 1147 1067 1280 3210 Current 19 2	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0	<1 0 59 0 1078 1146 1089 1354 3025 history2 6 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	Current 1 0 60 0 954 1147 1067 1280 3210 Current 19 2 3	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5	<1 0 59 0 1078 1146 1089 1354 3025 history2 6 2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	Current 1 0 60 0 954 1147 1067 1280 3210 Current 19 2 3 Current	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0 5 0 5 0 5 0 5 0 5 0 5 history1	<1 0 59 0 1078 1146 1089 1354 3025 history2 6 2 2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS 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 limit/base >25 >158 >20 limit/base >3	Current 1 0 60 0 954 1147 1067 1280 3210 current 19 2 3 current 0.6	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0 5 0 5 0 5 0 5 0.4	<1 0 59 0 1078 1146 1089 1354 3025 history2 6 2 history2 0 0 0 0 0 3025 history2 0 0 0 0 0.5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20	Current 1 0 60 0 954 1147 1067 1280 3210 current 19 2 3 current 0.6 9.6	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0 5 0 5 0 5 0 5 0.4 8.9	history2 <1 0 59 0 1078 1146 1089 1354 3025 history2 6 2 history2 0 0 0 0 1354 3025 history2 0 0 2 0.5 9.1
ADDITIVES 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	method ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >25 >158 >20 imit/base >3 >20	Current 1 0 60 0 954 1147 1067 1280 3210 Current 19 2 3 Current 0.6 9.6 21.6	history1 0 2 63 0 971 1157 1087 1274 3257 history1 5 0 5 0 5 0.4 8.9 20.2	<1 0 59 0 1078 1146 1089 1354 3025 history2 6 2 history2 0.5 9.1 20.3



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
and the second sec	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
1	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
2/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Apr12/24	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	14.5	14.7	14.5
	GRAPHS						
	Iron (ppm)			100	Lead (ppm)		
10	200 Severe			80	Severe		
ACI C 1A	E 150 100 - Abnormal			60			
	and 100 - Abnormal		· · ·	e 40	Abnormal	·····	
	50 -			20			
	0			 (
	Sep.25/23 0ct31/23 Vov30/23	Jan 5/24 .	Feb7/24 . Mar5/24 .	Apr12/24 -	Sep 25/23 0ct31/23	Vov30/23 Jan5/24	Feb7/24 Mar5/24
	Sep	Ja	Ma Rei	Apr	Sep	Ja	Ma Fe
	Aluminum (ppm)				Chromium (ppm)	
	50 40 Severe			50	Severe		
			1 1	40			
VC	and a second sec			E 20	Abnormal		
10.01-1					1.1		
<	10-			10			
	23	24	24 -	24		723 -	24.
	Sep 25/23 0ct31/23 Nov30/23	Jan5/24	Feb7/24 Mar5/24	Apr12/24	Sep 25/23 0ct31/23	Nov30/23 Jan5/24	Feb7/24 Mar5/24
	Copper (ppm)				Silicon (ppm)	
	400 Severe			80	Severe	1 1	1 1
	300			60	•		
	툪 200 -			틆.40	•		
	100-			20	Abnormal		
	23	/24 -	724	74		/23 -	/24 + /24 +
	Sep 25/23 0ct31/23 Nov30/23	Jan5/24	Feb7/24 Mar5/24	Apr12/24 -	Sep 25/23 0ct31/23	Nov30/23 Jan5/24	Feb7/24 Mar5/24
	Viscosity @ 100°C			-	Base Numbe		
	Abnormal						
	16			(), HOX Base Number (mg KOH/(d) 5.0	Deer		· · · · · · · · · · · · · · · · · · ·
	(5.00) 14 35 Abnormal			E lot	Base		
					Abnormal		
	12 -			Base			
				0.0) +	23	24 -
		24	5 5				~ ~
	Sep 25/23	Jan5/24	Feb7/24 Mar5/24	Apr12/24	Sep 25/23 0ct31/23	Nov30/23 Jan5/24	Feb7/24 Mar5/24

: 18 Apr 2024 - Wes Davis



Test Package : MOB 1 (Additional Tests: TBN) 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)

Diagnosed

Report Id: GODDUR [WUSCAR] 06151522 (Generated: 04/18/2024 04:36:37) Rev: 1

Certificate 12367

Unique Number : 10981600

Contact/Location: Robert Iosiniecki - GODDUR

Page 2 of 2

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F:

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Robert.losiniecki@ratpdev.com