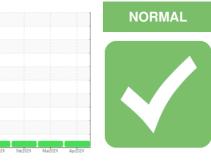


## **OIL ANALYSIS REPORT**



Machine Id

### 1705 Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (--- GAL)

#### 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.

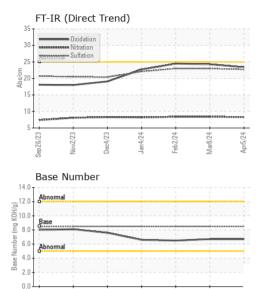
### Fluid Condition

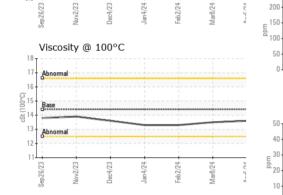
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	<b>MATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0893953	WC0894053	WC0893990
Sample Date		Client Info		05 Apr 2024	08 Mar 2024	02 Feb 2024
Machine Age	mls	Client Info		0	0	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	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	6	9	8
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	2	3	2
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	<1	4	4
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0
Cadmium ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base 250		-	-
ADDITIVES		method ASTM D5185m		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	250	current 2	history1 <1	history2 <1 0 56
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	250 10	current 2 0	history1 <1 2 57 0	history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	Current 2 0 57 0 907	history1 <1 2 57 0 882	history2 <1 0 56 0 1028
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	Current 2 0 57 0 907 1008	history1 <1 2 57 0 882 1055	history2 <1 0 56 0 1028 1087
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 2 0 57 0 907 1008 991	history1 <1 2 57 0 882 1055 998	history2 <1 0 56 0 1028 1087 1022
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 2 0 57 0 907 1008 991 1178	history1 <1 2 57 0 882 1055 998 1180	history2 <1 0 56 0 1028 1087 1022 1287
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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 1350 4250	Current 2 0 57 0 907 1008 991	history1 <1 2 57 0 882 1055 998	history2 <1 0 56 0 1028 1087 1022
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 Limit/base	Current 2 0 57 0 907 1008 991 1178 3225 Current	history1         <1         2         57         0         882         1055         998         1180         3208         history1	history2 <1 0 56 0 1028 1087 1022 1287 3031 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium 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 <b>limit/base</b> >25	Current 2 0 57 0 907 1008 991 1178 3225 Current 11	history1           <1           2           57           0           882           1055           998           1180           3208           history1           4	history2           <1           0           56           0           1028           1087           1022           1287           3031           history2           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >158	Current 2 0 57 0 907 1008 991 1178 3225 Current 11 <1	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium 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 <b>limit/base</b> >25	Current 2 0 57 0 907 1008 991 1178 3225 Current 11	history1           <1           2           57           0           882           1055           998           1180           3208           history1           4	history2           <1           0           56           0           1028           1087           1022           1287           3031           history2           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >25 >158 >20 <b>Imit/base</b>	Current 2 0 57 0 907 1008 991 1178 3225 Current 11 <1 0 Current	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur 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 <b>Iimit/base</b> >25 >158 >20 <b>Iimit/base</b> >3	Current         2         0         57         0         907         1008         991         1178         3225         current         11         <1         0         current         0.2	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1         0         3         0.2	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1         history2         0         0         0         0         0         0         0         0         0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur 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 <b>imit/base</b> >25 >158 >20 <b>imit/base</b> >3 >20	Current         2         0         57         0         907         1008         991         1178         3225         current         11         <1         0         current         0.2         8.3	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1         0         3         history1         0.2         8.4	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1         history2         6         2         <1         history2         6         2         <1         history2         0.2         8.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur 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 <b>Iimit/base</b> >25 >158 >20 <b>Iimit/base</b> >3	Current         2         0         57         0         907         1008         991         1178         3225         current         11         <1         0         current         0.2	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1         0         3         0.2	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1         history2         0         0         0         0         0         0         0         0         0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Sulfur 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 <b>imit/base</b> >25 >158 >20 <b>imit/base</b> >3 >20	Current         2         0         57         0         907         1008         991         1178         3225         current         11         <1         0         current         0.2         8.3	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1         0         3         history1         0.2         8.4	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1         history2         6         2         <1         history2         6         2         <1         history2         0.2         8.4
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 <b>imit/base</b> >25 >158 >20 <b>imit/base</b> >3 >20 >3	Current         2         0         57         0         907         1008         991         1178         3225         current         11         <1         0         current         0.2         8.3         22.7	history1         <1         2         57         0         882         1055         998         1180         3208         history1         4         0         3         history1         0         3         0.2         8.4         23.0	<1         0         56         0         1028         1087         1022         1287         3031         history2         6         2         <1         history2         0         2         <1         history2         0.2         8.4         23.0



# **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
Mar8/24 - Apr5/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Apr	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	13.6	13.5	13.3
	GRAPHS						
	Iron (ppm)			10	Lead (ppm)		
124	200 - Severe	1			80 Severe		
Mar8/24	150				60 -		
	Abnormal		; 	M dd	40 Abnormal		
	50-				20 -		
	0	_		_	0		
	Sep 26/23 Nov2/23 Dec4/23	Jan4/24	Feb2/24 Mar8/24	Apr5/24	Sep 26/23 Nov2/23	Dec4/23 Jan4/24	Feb2/24 Mar8/24 Apr5/24
	Sep No	Pa	Ma Fe	Aŗ	03		Ar Ma
	Aluminum (ppm)				Chromium (	ppm)	
	50 40 Severe				Severe		
24	20 Abnormal			mdd	20 Abnormal		
Mar8/24					1.1		
	10				0		
	Sep26/23 - Nov2/23 - Dec4/23 -	Jan4/24 -	Feb2/24 - Mar8/24 -	Apr5/24 -	Sep26/23	Dec4/23 - Jan4/24 -	Feb2/24 - Mar8/24 - Apr5/24 -
	Sep 2 Nov	Jan	Feb	Api	Sep2 Nov	Jan	Feb Mai
	Copper (ppm)				Silicon (ppm	)	
	Abnormat						
	300-				60		
	톱 200 -			d	40 - Abnormal		
	100-				20-		
	0	_			0		
	Sep 26/23 Nov2/23 Dec4/23	Jan 4/24	Feb2/24 Mar8/24	Apr5/24	Sep 26/23 No v2/23	Dec4/23 Jan4/24	Feb2/24 Mar8/24 Apr5/24
	05		¥ ∑	Ă			ă M A
	Viscosity @ 100°C				Base Numbe	۲	
	Abnormal		· · · · · · · · · · · · · · · · · · ·	Base Number (mg KOH/g)	Abnormal		
	Base			B10	Base		
	Base Base Abnormal			- mpe	Abnormal		
	12			ase N			
		4	+ +		).0		4 4
	Sep 26/23 Nov2/23 Dec4/23	Jan4/24	Feb2/24 . Mar8/24 .	Apr5/24 -	Sep 26/23 Nov2/23	Dec4/23 Jan4/24	Feb2/24 Mar8/24 Apr5/24
	~r				w.r.		
Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513						OURHAM - RAPT
Sample No.	: WC0893953	Rece		Apr 2024		1903 FA	YETTEVILLE ST
	: 06151529	Teste		Apr 2024	Noo Dovio		DURHAM, NC
Unique Number Test Package	: 10981607 : MOB 1 ( Additional Te			Apr 2024 - \	ives Davis	Contact	US 27701 Bobert Iosiniecki
.corrackaye		Contact: Robert Iosiniecki					

- Unique Number : 109 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)

Report Id: GODDUR [WUSCAR] 06151529 (Generated: 04/18/2024 04:37:25) Rev: 1

Certificate 12367

Contact/Location: Robert Iosiniecki - GODDUR Page 2 of 2

Robert.losiniecki@ratpdev.com

T:

F: