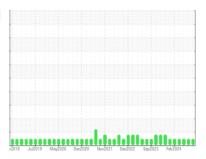


# **OIL ANALYSIS REPORT**

## Sample Rating Trend







Machine Id CATERPILLAR D10T 15105049 (S/N CATOD10TCRJG01495) Diesel Engine

ROYAL PURPLE MOTOR OIL 15W40 (--- GAL)

# DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the

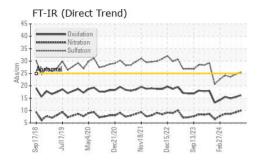
# **Fluid Condition**

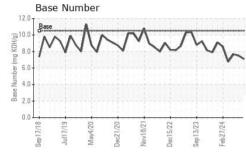
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

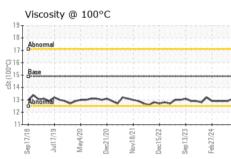
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		RP0040756	RP0040782	RP0036963
Sample Date		Client Info		13 Jun 2024	22 May 2024	22 Apr 2024
Machine Age	hrs	Client Info		28529	28263	27993
Oil Age	hrs	Client Info		1940	1674	1404
Oil Changed		Client Info		Changed	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	V	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	84	80	69
Chromium	ppm	ASTM D5185m	>20	2	2	1
Nickel	ppm	ASTM D5185m	>2	<1	<1	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	<1	1	0
Aluminum	ppm	ASTM D5185m	>25	3	2	2
Lead	ppm	ASTM D5185m	>40	6	3	<1
Copper	ppm	ASTM D5185m	>330	130	160	165
Tin	ppm	ASTM D5185m	>15	<1	1	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	<1	0
Oddiniani	ppiii	AOTIVI DOTOOIII		< 1	< 1	0
ADDITIVES	ppiii	method	limit/base	current	history1	history2
	ppm		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current	history1	history2 <1
ADDITIVES Boron Barium	ppm	method ASTM D5185m ASTM D5185m	0	current <1 0	history1 0 0	history2 <1 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 100	current <1 0 99 2 14	history1 0 0 100	history2 <1 0 103
ADDITIVES  Boron  Barium  Molybdenum  Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 100	current <1 0 99 2 14 2530	history1  0  0 100 1 22 2218	history2 <1 0 103
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium	ppm ppm ppm ppm	method  ASTM D5185m	0 0 100	current <1 0 99 2 14 2530 790	history1  0  0 100 1 22 2218 766	history2 <1 0 103 1 25
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium	ppm ppm ppm ppm ppm	method  ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 100 60 3050	current <1 0 99 2 14 2530	history1  0  0 100 1 22 2218	history2 <1 0 103 1 25 2510
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 100 60 3050 1050 1200	current <1 0 99 2 14 2530 790 1056 current	history1  0  0 100 1 22 2218 766 967 history1	history2 <1 0 103 1 25 2510 811 1023 history2
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 100 60 3050 1050 1200	current <1 0 99 2 14 2530 790 1056 current 5	history1  0  0 100 1 22 2218 766 967 history1 6	history2 <1 0 103 1 25 2510 811 1023 history2
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 100 60 3050 1050 1200	current <1 0 99 2 14 2530 790 1056 current	history1  0  0 100  1 22 2218 766 967 history1  6 1	history2 <1 0 103 1 25 2510 811 1023 history2
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium  Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25	current <1 0 99 2 14 2530 790 1056 current 5 2 6	history1  0  0 100  1 22 2218 766 967 history1  6 1 3	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25	current <1 0 99 2 14 2530 790 1056 current 5	history1  0  0 100  1 22 2218 766 967 history1  6 1	history2 <1 0 103 1 25 2510 811 1023 history2 4
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium  Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25	current <1 0 99 2 14 2530 790 1056 current 5 2 6	history1  0  0 100 1 22 2218 766 967 history1 6 1 3 NEG	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG history2
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium  Potassium  Water	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25 >20 >0.2	current <1 0 99 2 14 2530 790 1056 current 5 2 6 NEG	history1  0  0 100  1 22 2218 766 967 history1  6 1 3 NEG	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25 >20 >0.2 limit/base	current <1 0 99 2 14 2530 790 1056 current 5 2 6 NEG current	history1  0  0 100 1 22 2218 766 967 history1 6 1 3 NEG	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG history2
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium  Potassium  Water  INFRA-RED  Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 100 60 3050 1050 1200 limit/base >25 >20 >0.2 limit/base	current <1 0 99 2 14 2530 790 1056 current 5 2 6 NEG current 1.6	history1  0  0 100 1 22 2218 766 967 history1 6 1 3 NEG history1 1.4	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG history2 1.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m  method ASTM D5185m ASTM D6304  method  *ASTM D7844  *ASTM D7844	0 0 100 60 3050 1050 1200 limit/base >25 >20 >0.2 limit/base >3 >20	current <1 0 99 2 14 2530 790 1056 current 5 2 6 NEG current 1.6 10.0	history1  0  0 100 1 22 2218 766 967 history1 6 1 3 NEG history1 1.4 9.3	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG history2 1.2 8.7
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  CONTAMINANTS  Silicon  Sodium  Potassium  Water  INFRA-RED  Soot %  Nitration  Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m  method  ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304  method  *ASTM D7844 *ASTM D7624 *ASTM D76185m	0 0 100 60 3050 1050 1200 limit/base >25 >20 >0.2 limit/base >3 >20 >30	current <1 0 99 2 14 2530 790 1056 current 5 2 6 NEG current 1.6 10.0 25.5	history1  0  0 100 1 22 2218 766 967 history1 6 1 3 NEG history1 1.4 9.3 24.6	history2 <1 0 103 1 25 2510 811 1023 history2 4 1 0 NEG history2 1.2 8.7 23.6



# **OIL ANALYSIS REPORT**



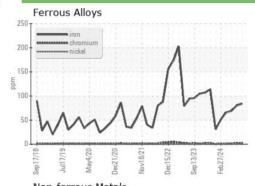


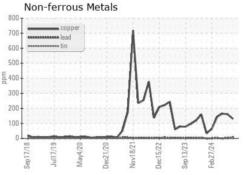


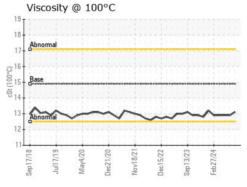
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

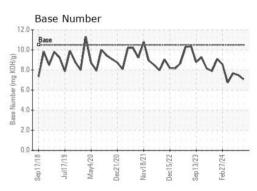
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	14.9	13.1	12.9	12.9	

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: RP0040756 Lab Number : 06218416 Unique Number : 11096613

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 24 Jun 2024 **Tested** : 25 Jun 2024

Diagnosed Test Package : IND 2 ( Additional Tests: FT-IR, KV100, TBN )

: 25 Jun 2024 - Sean Felton

JEWETT, TX US 75846 Contact: JURGEN THOMPSON JThompson@ecomaterial.com

**NRG TEXAS LLC** 

3784 FM 39 SOUTH

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.

T: (903)626-9528 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: (903)626-9772

Report Id: NRGJEW [WUSCAR] 06218416 (Generated: 06/25/2024 18:22:45) Rev: 1

Contact/Location: JURGEN THOMPSON - NRGJEW