

OIL ANALYSIS REPORT

Area [22229] 40-204

Component **Diesel Engine**

CONOCO PHILLIPS GUARDOL ECT 15W40 (--- GAL)

Sample Rating Trend



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

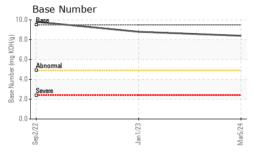
Fluid Condition

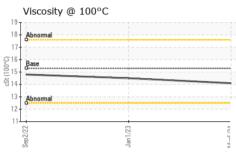
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info WC0836088 WC0754781 WC0709431 Sample Date Client Info D5 Mar 2024 01 Jan 2023 02 Sep 2022 1507 1280			Sep	2022	Jan 2023 Marži	024	
Sample Date Client Info U5 Mar 2024 01 Jan 2023 02 Sep 2022 Machine Age hrs Client Info 2302 1507 1280	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 2302 1507 1280 Oil Age hrs Client Info 795 228 242 Oil Changed Client Info Changed Changed Changed Sample Status Image: Client Info Changed NORMAL NORMAL NORMAL CONTAMINATION method Imitibase current history1 history2 Fuel WC Method >2.2.1 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0	Sample Number		Client Info		WC0836088	WC0754781	WC0709431
Oil Age hrs Client Info 795 228 242 Oil Changed Clanged Changed Changed	Sample Date		Client Info		05 Mar 2024	01 Jan 2023	02 Sep 2022
Client Info	Machine Age	hrs	Client Info		2302	1507	1280
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	Oil Age	hrs	Client Info		795	228	242
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method >0.21 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >51 6 7 10 Chromium ppm ASTM D5185m >51 4 1 <1 Nickel ppm ASTM D5185m >55 <1 <1 <1 <1 Silver ppm ASTM D5185m >5 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	CONTAMINATION	l	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>2.1	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.21	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >11 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td>WEAR METALS</td> <td></td> <td>method</td> <td>limit/base</td> <th>current</th> <td>history1</td> <td>history2</td>	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>51	6	7	10
Titanium	Chromium	ppm	ASTM D5185m	>11	<1	<1	<1
Titanium	Nickel	ppm	ASTM D5185m	>5	<1	<1	0
Aluminum ppm ASTM D5185m >31 2 2 3 Lead ppm ASTM D5185m >26 0 <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead ppm ASTM D5185m >26 0 <1 <1 Copper ppm ASTM D5185m >26 0 <1 <1 Tin ppm ASTM D5185m >4 0 <1 <1 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 85 80 88 93 Barium ppm ASTM D5185m 0 <1 <1 <1 Molybdenum ppm ASTM D5185m 5 3 2 Manganese ppm ASTM D5185m 5 3 2 Manganesium ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Silver	ppm	ASTM D5185m	>3	0	0	<1
Lead	Aluminum	ppm	ASTM D5185m	>31	2	2	3
Copper ppm ASTM D5185m >26 0 <1 <1 Tin ppm ASTM D5185m >4 0 <1	Lead	ppm	ASTM D5185m	>26	0	<1	<1
Tin	Copper		ASTM D5185m	>26	0	<1	<1
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 85 80 88 93 Barium ppm ASTM D5185m 0 <1 <1 Molybdenum ppm ASTM D5185m 5 3 2 Manganese ppm ASTM D5185m 5 3 2 Manganesium ppm ASTM D5185m 350 687 718 706 Calcium ppm ASTM D5185m 1800 1281 1312 1313 Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Solium<					0	<1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 85 80 88 93 Barium ppm ASTM D5185m 0 <1	Vanadium		ASTM D5185m		0	<1	0
Boron	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 5 3 2 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 350 687 718 706 Calcium ppm ASTM D5185m 1800 1281 1312 1313 Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current	Boron	ppm	ASTM D5185m	85	80	88	93
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 350 687 718 706 Calcium ppm ASTM D5185m 1800 1281 1312 1313 Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 <t< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td><1</td><td><1</td></t<>	Barium	ppm	ASTM D5185m		0	<1	<1
Magnesium ppm ASTM D5185m 350 687 718 706 Calcium ppm ASTM D5185m 1800 1281 1312 1313 Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7414	Molybdenum	ppm	ASTM D5185m		5	3	2
Calcium ppm ASTM D5185m 1800 1281 1312 1313 Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/.mm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.mm *ASTM D7414	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 1000 1005 1053 1048 Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION meth	Magnesium	ppm	ASTM D5185m	350	687	718	706
Zinc ppm ASTM D5185m 1100 1179 1230 1246 Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Calcium	ppm	ASTM D5185m	1800	1281	1312	1313
Sulfur ppm ASTM D5185m 3500 4156 4533 3928 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 3 INFRA-RED method limit/base current history1 history2 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Phosphorus	ppm	ASTM D5185m	1000	1005	1053	1048
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Zinc	ppm	ASTM D5185m	1100	1179	1230	1246
Silicon ppm ASTM D5185m >22 5 5 6 Sodium ppm ASTM D5185m >31 2 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Sulfur	ppm	ASTM D5185m	3500	4156	4533	3928
Sodium ppm ASTM D5185m >31 2 2 2 Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 3 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Silicon	ppm	ASTM D5185m	>22	5	5	6
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Sodium	ppm	ASTM D5185m	>31	2	2	2
Soot % % *ASTM D7844 >3 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Potassium	ppm	ASTM D5185m	>20	3	3	3
Nitration Abs/cm *ASTM D7624 >20 7.9 7.8 8.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.4 18.7 20.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Soot %	%	*ASTM D7844	>3	0.3	0.3	0.4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Nitration	Abs/cm	*ASTM D7624	>20	7.9	7.8	8.9
Oxidation Abs/.1mm *ASTM D7414 >25 12.6 12.6 13.8	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.4	18.7	20.7
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.5 8.4 8.8 9.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.6	12.6	13.8
	Base Number (BN)	mg KOH/g	ASTM D2896	9.5	8.4	8.8	9.8



OIL ANALYSIS REPORT

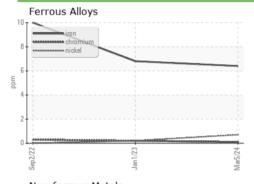


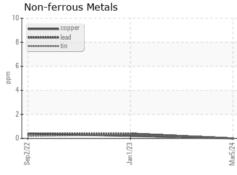


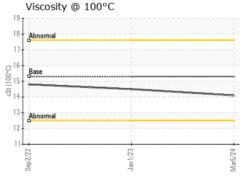
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.21	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

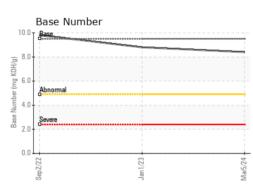
FLUID PROPER	HES	method	iimit/base		nistory i	nistory∠
Visc @ 100°C	cSt	ASTM D445	15.3	14.1	14.5	14.8

GRAPHS













Laboratory Sample No.

: WC0836088 Lab Number : 06133020 Unique Number : 10952485

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

Tested Diagnosed Test Package : CONST (Additional Tests: TBN)

: 29 Mar 2024 : 31 Mar 2024

: 31 Mar 2024 - Wes Davis

MANHATTAN ROAD AND BRIDGE 5601 S 122ND E AVE

TULSA, OK US 74146

Contact: BEN CALDWELL kevin.marson@wearcheck.com T: (918)728-5749

* - 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)