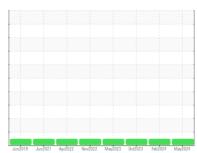


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id FSP137973

Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (--- QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

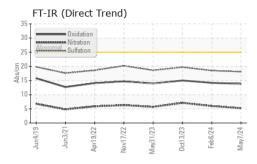
Fluid Condition

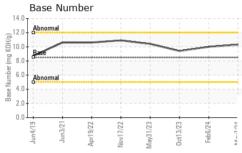
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

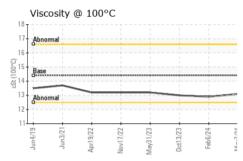
SAMPLE INFORMATION method limit/base current history1 history2			Jun2019 .	Jun2021 Apr2022 Nov20	22 May2023 Oct2023 Feb2024	May2024	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		WC0932991	WC0891684	WC0861059
Machine Age mls Client Info 0 132799 127181 Oil Age mls Client Info 0 0 0 0 Oil Changed Client Info Changed Change			Client Info		07 May 2024	06 Feb 2024	13 Oct 2023
Oil Changed Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed Changed Sample Status Changed Changed Changed Changed Changed Changed Changed NORMAL NORMA		mls	Client Info		-	132799	127181
Oil Changed Sample Status Client Info Changed NORMAL NORMAL <th< th=""><th>•</th><th>mls</th><th>Client Info</th><th></th><th>0</th><th>0</th><th>0</th></th<>	•	mls	Client Info		0	0	0
CONTAMINATION	-		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >10.0 3 11 8 Chromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >4 <1 0 <1 Silver ppm ASTM D5185m >4 <1 0 <1 Aluminum ppm ASTM D5185m >40 0 0 0 Silver ppm ASTM D5185m >40 0 0 0 Aluminum ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 10 0	CONTAMINATIO	N	method	limit/base	current	history1	history2
WEAR METALS method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 3 11 8 Chromium ppm ASTM D5185m >20 0 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	lron	ppm	ASTM D5185m	>100	3	11	8
Titanium ppm ASTM D5185m 0 <1	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	<1
Aluminum ppm ASTM D5185m >20 <1	Titanium	ppm	ASTM D5185m		0	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	<1	<1
Copper ppm ASTM D5185m >330 2 3 3 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 2 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 0 0 <1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 59 61 56 Manganese ppm ASTM D5185m 100 59 61 56 Manganesium ppm ASTM D5185m 100 1084 1110 994 Phosphorus ppm ASTM D5185m 150 995 1084 1060 Zinc ppm ASTM D5185m 1232 1267 1201	Aluminum	ppm	ASTM D5185m	>20	<1	2	3
Tin	Lead	ppm	ASTM D5185m	>40	0	0	0
Trin	Copper	ppm	ASTM D5185m	>330	2	3	3
Cadmium ppm ASTM D5185m 2 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 0 0 <1 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 59 61 56 Manganese ppm ASTM D5185m 100 59 61 56 Manganesium ppm ASTM D5185m 450 980 1022 918 Calcium ppm ASTM D5185m 3000 1084 1110 994 Phosphorus ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m >25 2 3 3 CONTAMINANTS method limit/base current		ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		2	0	0
Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 59 61 56 Manganese ppm ASTM D5185m 100 1 <1 <1 Magnesium ppm ASTM D5185m 450 980 1022 918 Calcium ppm ASTM D5185m 3000 1084 1110 994 Phosphorus ppm ASTM D5185m 1150 995 1084 1060 Zinc ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 59 61 56 Manganese ppm ASTM D5185m 1 <1	Boron	ppm	ASTM D5185m	250	0	0	<1
Manganese ppm ASTM D5185m 1 <1	Barium	ppm	ASTM D5185m	10	0	0	0
Magnesium ppm ASTM D5185m 450 980 1022 918 Calcium ppm ASTM D5185m 3000 1084 1110 994 Phosphorus ppm ASTM D5185m 1150 995 1084 1060 Zinc ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30	Molybdenum	ppm	ASTM D5185m	100	59	61	56
Calcium ppm ASTM D5185m 3000 1084 1110 994 Phosphorus ppm ASTM D5185m 1150 995 1084 1060 Zinc ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/:nm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/:nm *ASTM D7415	Manganese	ppm	ASTM D5185m		1	<1	<1
Phosphorus ppm ASTM D5185m 1150 995 1084 1060 Zinc ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION meth	Magnesium	ppm	ASTM D5185m	450	980		918
Zinc ppm ASTM D5185m 1350 1232 1267 1201 Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <td< th=""><th>Calcium</th><th>ppm</th><th>ASTM D5185m</th><th>3000</th><th>1084</th><th>1110</th><th>994</th></td<>	Calcium	ppm	ASTM D5185m	3000	1084	1110	994
Sulfur ppm ASTM D5185m 4250 3694 3915 3154 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Phosphorus	ppm	ASTM D5185m	1150			
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Zinc	ppm	ASTM D5185m	1350	1232	1267	
Silicon ppm ASTM D5185m >25 2 3 3 Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0			ASTM D5185m	4250	3694	3915	3154
Sodium ppm ASTM D5185m >158 4 3 5 Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	CONTAMINANTS	3	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 4 5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0					2		
INFRA-RED		ppm		>158			
Soot % % *ASTM D7844 >3 0.1 0.2 0.4 Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Potassium	ppm	ASTM D5185m	>20	4	4	5
Nitration Abs/cm *ASTM D7624 >20 5.2 6.0 7.1 Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 18.1 18.5 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Soot %	%	*ASTM D7844	>3			
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Nitration	Abs/cm	*ASTM D7624	>20	5.2	6.0	7.1
Oxidation Abs/.1mm *ASTM D7414 >25 13.8 14.2 15.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.1	18.5	19.7
	FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.5 10.3 10.0 9.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	14.2	15.0
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	10.3	10.0	9.4

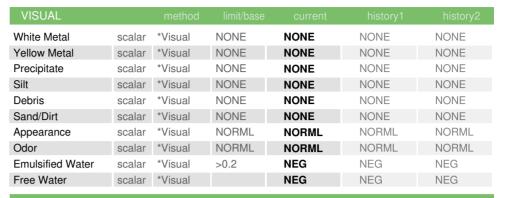


OIL ANALYSIS REPORT

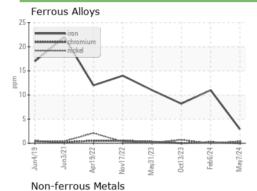


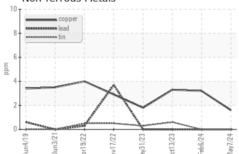


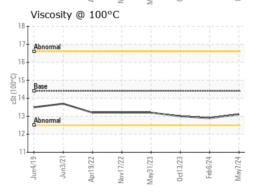


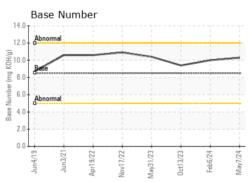


FLUID PROPER	TIES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.1	12.9	13.0













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06209549 Unique Number : 11077010

: WC0932991 Test Package : FLEET

Received **Tested**

: 15 Jun 2024 Diagnosed : 15 Jun 2024 - Wes Davis

: 13 Jun 2024

8801 EXCHANGE DRVIE ORLANDO, FL

US 32809 Contact: CRAIG EVANS evans_craig@sbcglobal.net

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: FREORL [WUSCAR] 06209549 (Generated: 06/15/2024 17:00:23) Rev: 1

Contact/Location: CRAIG EVANS - FREORL

T:

F:

FRESHPOINT