

OIL ANALYSIS REPORT

Area
020
Machine Id
10673
Component
Diesel Engine



Sample Rating Trend



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.

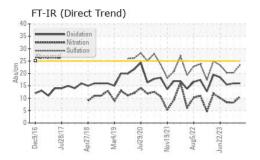
Fluid Condition

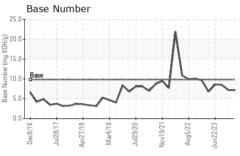
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

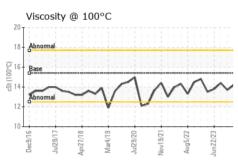
Sample Date	x13)		SZUT6 JUIZU	II/ Aprzulo Marzula	JUIZUZU NOVZUZI AUGZUZZ	Jun2023		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Machine Age hrs	Sample Number		Client Info		GFL0117870	GFL0076961	GFL0091182	
Oil Age	Sample Date		Client Info		19 Apr 2024	24 Nov 2023	23 Aug 2023	
Colient Info	Machine Age	hrs	Client Info		17709	17064	0	
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG NEG	Oil Age	hrs	Client Info		645	600	600	
CONTAMINATION method limit/base current history1 history2	Oil Changed		Client Info		Not Changd	Changed	Not Changd	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water Glycol WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 55 7 31 Chromium ppm ASTM D5185m >5 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2	
NEG NEG NEG NEG NEG NEG	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >75 55 7 31 Chromium ppm ASTM D5185m >5 <1	Water		WC Method	>0.2	NEG	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>75	55	7	31	
Titanium	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1	
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	<1	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0	
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0	
Copper ppm ASTM D5185m >100 <1 2 <1 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>15	11	<1	6	
Vanadium	Lead	ppm	ASTM D5185m	>25	0	<1	0	
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 4 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 60 65 56 66 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current	Copper	ppm	ASTM D5185m	>100	<1	2	<1	
ADDITIVES	Tin	ppm	ASTM D5185m	>4	<1	<1	<1	
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0	
Boron	Cadmium	ppm	ASTM D5185m		0	0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 60 65 56 66 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 875 1037 Calcium ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1150 1058 927 1125 Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m 20 <1 <1 <1 INFRA-RED method limit/base curren	Boron	ppm	ASTM D5185m	0	6	4	4	
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 939 875 1037 Calcium ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1150 1058 927 1125 Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium ppm ASTM D5185m 1010 939 875 1037 Calcium ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1150 1058 927 1125 Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 <th< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>60</td><th>65</th><td>56</td><td>66</td></th<>	Molybdenum	ppm	ASTM D5185m	60	65	56	66	
Calcium ppm ASTM D5185m 1070 1106 1011 1196 Phosphorus ppm ASTM D5185m 1150 1058 927 1125 Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1	
Phosphorus ppm ASTM D5185m 1150 1058 927 1125 Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m >26 9 3 6 Sodium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m	1010	939	875	1037	
Zinc ppm ASTM D5185m 1270 1262 1179 1401 Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	1070	1106	1011	1196	
Sulfur ppm ASTM D5185m 2060 3236 2459 3866 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1	Phosphorus	ppm		1150	1058	927	1125	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1	Zinc	ppm	ASTM D5185m	1270	1262	1179	1401	
Silicon ppm ASTM D5185m >25 9 3 6 Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 2.4 0.7 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	Sulfur	ppm	ASTM D5185m	2060	3236	2459	3866	
Sodium ppm ASTM D5185m 24 4 19 Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 2.4 0.7 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	CONTAMINAN	ITS	method	limit/base	current	history1	history2	
Potassium ppm ASTM D5185m >20 <1 <1 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 2.4 0.7 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	Silicon	ppm	ASTM D5185m	>25	9	3	6	
INFRA-RED	Sodium	ppm	ASTM D5185m		24	4	19	
Soot % % *ASTM D7844 >6 2.4 0.7 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	Potassium	ppm	ASTM D5185m	>20	<1	<1	<1	
Nitration Abs/cm *ASTM D7624 >20 10.6 8.2 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 23.4 20.2 20.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	Soot %	%	*ASTM D7844	>6	2.4	0.7	0.9	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm 'ASTM D7414 >25 16.0 16.0 15.5	Nitration	Abs/cm	*ASTM D7624	>20	10.6	8.2	8.3	
Oxidation Abs/.1mm *ASTM D7414 >25 16.0 16.0 15.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	23.4	20.2	20.3	
	FLUID DEGRADATION method limit/base current history1 history2							
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.2 7.2 8.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.0	16.0	15.5	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.2	7.2	8.5	



OIL ANALYSIS REPORT



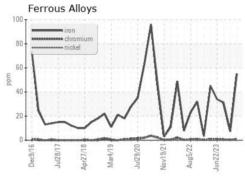


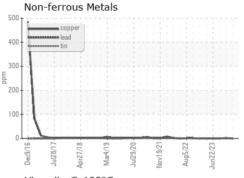


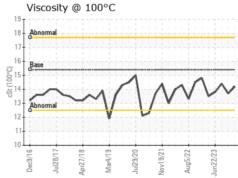
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

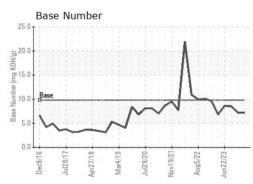
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	13.7	14.4

GRAPHS













Report Id: GFL020 [WUSCAR] 06157360 (Generated: 04/24/2024 10:59:10) Rev: 1

Laboratory Sample No. Unique Number : 10992783

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0117870 Lab Number : 06157360

Received **Tested** Diagnosed

: 23 Apr 2024 : 24 Apr 2024 : 24 Apr 2024 - Wes Davis

GFL Environmental - 020 - Alamance

703 East Gilbreath St Graham, NC US 27253

F: (336)229-0526

Test Package : FLEET Certificate 12367 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.

richard.belcher@gflenv.com T: (800)207-6618

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: JEREMY SHORES

Contact: