



Functional Test Report

Customer: HongHua

Project: TBD

Site: TBD

Purchase Order: 0023318-00

Date March 3, 2016

Work Order MK-F1064

Revision: 0

Unit Number: 3 of 3

Salesman: Gregg Bare

Coordinator: Derek Torres

Tested By: JIMMY MA

Date 5/19/16

Witness: Wangy Xue

Date 5/19/2016

Company: Honghua America LLC

Title Project Engineer



Test Location: Manufacturing Test Facility, Tomball, Texas

Test Equipment Used for Testing

Make/Model	Description	Serial Number	Calibration Due Date
BALMAC 200	VIBRATION METER	0801021	7/21/16
FLUKE 189	MULTIMETER	85780122	10/13/16
SHARK 100	POWER METER	141-145385834	2/24/2017



Engine/Generator Functional Test Report

Project:

Customer: HongHua S.O. No.: MK-F1064
 Project: TBD Location: TBD
 Equipment ID: Drilling Rig Genset Unit No.: 3 of 3

Equipment tested:

Engine:

Make: Caterpillar Model: 3512C Serial No. LLA05195
 Arrangement ECM Caterpillar
 Number: 250-7623 Software 435-8655 Pkg. ID No.: N/A

Generator:

Make: Kato Model: AA27673014 Serial No. 41244-03
 Arrangement Voltage Caterpillar
 Number: 6P6-3150 Regulator * Control Panel 125-7089
 Voltage 346/600 Connection Wye No. of Leads 6
 Amps 1684 kW 1225 kVA 1750
 Frequency 60 Hz P.F. 0.7 RPM 1200

* Caterpillar CDVR used for testing



Scope:

This report covers the test of a generator set for the assurance of proper operation. This report will provide a record of functional test data for future reference. All blanks on this Test Report will be filled in by the Test Technician.

1.) The test will be witnessed by the customer.

✓

2.) Due to the limits of the test pad equipment, the test will be conducted at 480 VAC.

✓

3.) The load test will be at rated load, 480 V, 60 Hz, 1203 A, 1000 kW, 1.0 PF, for 1 hour at 100% load.

✓

4.) The engine safeties will be simulated for proper function.

✓

5.) During the load test, when the genset has reached operating temperature and while the genset is operating at full load, record the vibration levels.

✓

6.) Record the final service meter reading (SMR) at the end of all testing

✓



Test Record:

1.0 GENSET CONTROLS:

1.1 Engine Safeties

A. Test the emergency shutdown by pressing the emergency stop (E-Stop) pushbutton while the engine is operating at rated speed. Observe the following:

- 1. Verify the engine stops: ✓
- 2. Verify the air inlet shut-offs trip: ✓
- 3. Reset the E-Stop pushbutton : ✓
- 4. Reset the air inlet shut-offs: ✓
- 5. Reset the ECM by placing the engine control switch (ECS) in the Off-Reset position. Follow reset procedures: ✓
- 6. Re-start the engine: ✓

B. "Check Mark" for GOOD "X" FOR FAILS "N/A" for NOT APPLICABLE

Safety	Alarm Design Setting	Shutdown Design Setting	Alarm	Shut-down	CB Trip	Visual Indic.	Audible Indic.
Low Oil Pressure	32 PSI	26 PSI	✓	✓	N/A	✓	✓
High Water Temperature	216 °F	225 °F	✓	✓	N/A	✓	✓
Overspeed	N/A	2124 RPM	N/A	✓	N/A	✓	✓
Emergency Stop	N/A	Button Pushed In	N/A	✓	N/A	N/A	N/A



2.0 Load Test:

Apply load to the genset at 1.0 PF using resistive load banks.

Use the attached test sheet to record load test results. Record test data every 15 minutes. The first and last readings will be taken at no load, 5 minutes before the load test and 5 minutes after the load test.

The load test will be at rated load, 1000 kW, 1.0 PF, for 1 hour;

1 hour at 100% load

✓

3.0 Vibration Test:

See attached sheets.

✓

5.0 Test Completion:

At the completion of all tests, record the final service meter reading.

Verify that all documents are completed, all blanks are filled in, and any required signatures have been obtained.

Make copies of the completed test report. Distribute the original and copies as required.

✓

COMMENTS: _____

Vibration Test

PROCEDURE

SCOPE:

This test procedure covers the functional testing for vibration of the engine, generator, and radiator on Mustang's test stand for assurance of reliable operation of the generator package.

PROCEDURE:

The engine/generator will be started and running under the proper percentage of load. Check the appropriate load condition block on the vibration report. If required, test at each different level of load percentage.

Double BEARING GENERATOR

Measure and record the vibration meter reading for horizontal, vertical, and axial directions for each of the following 4 monitoring points.

1. At the front of the engine, perpendicular to the front main bearing, in line with the crankshaft.
2. The rear end of the engine, perpendicular to the rear main bearing, in line with the crankshaft.
3. The front of the generator, perpendicular to the front generator bearing, in line with the rotor.
4. The rear of the generator, perpendicular to the rear generator bearing, in line with the rotor.

The vibration levels recorded are in thousandths of an inch (mils) displacement. The meter is unfiltered. Vibrations of all orders are represented in the measurement. The maximum reading allowed is 8 mils displacement (0.008") in any axis.

Vibration Record

Customer HongHua Work Order MK-F1064 Unit Number 3 of 3

Driver Make: Caterpillar Model 3512C Serial Number LLA05195

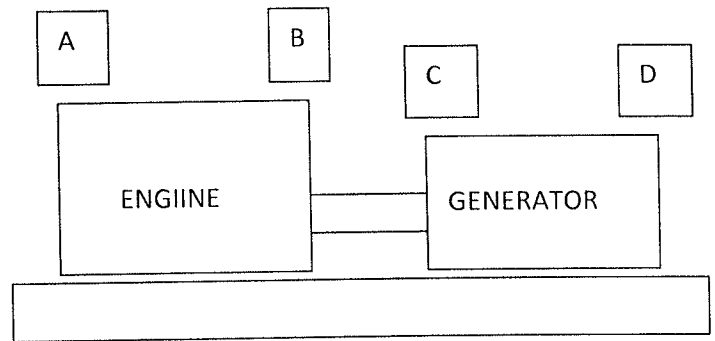
Driven Make: Kato Model AA27673014 Serial Number 41244-03

Coupling Make: Caterpillar Part Number 5N-3765 Type Viscous

LEGEND

- RECORDING POINT
- PLAIN BEARING
- BALL BEARING
- RIDGID COUPLING
- FLEX COUPLING
- PILLOW BLOCK
- out, DRIVER
- out, TRANS. or GEAR
- in, DRIVEN

EQUIPMENT SKETCH



H=Horizontal V=Vertical A=Axial

Record Point	<input type="checkbox"/> 0% Load		<input type="checkbox"/> 25% Load		<input type="checkbox"/> 50% Load		<input type="checkbox"/> 75% Load		<input checked="" type="checkbox"/> 100% Load	
	Mils Displ	In./Sec.	Mils Displ	In./Sec.	Mils Displ	In./Sec.	Mils Displ	In./Sec.	Mils Displ	In./Sec.
A H									1.46	N/A
V									1.23	N/A
A									2.32	N/A
B H									1.61	N/A
V									1.98	N/A
A									2.24	N/A
C H									1.75	N/A
V									1.26	N/A
A									2.38	N/A
D H									2.37	N/A
V									2.46	N/A
A									2.47	N/A



LOAD TEST REPORT

Customer: HongHua Project: TBD S.O. MK-F1064

Engine:	Caterpillar	Generator:	Kato	Control Panel:	Caterpillar
Make/Model	3512C Petroleum	Make/Model	AA27673014	Make/Model	125-7089
Serial Number	LLA05195	Serial Number	41244-03		
Rating:	1103 kW @ 1200 RPM	Rating:	600 Volts	Unit Number	3 of 3

TEST CONDITIONS: TEST LOCATION Mustang CAT Tomball Test Facility TYPE OF TEST Standard 1 Hour Load Test

Time	Volts	Amps Ø 1	Amps Ø 2	Amps Ø 3	kW	PF	Hz	RPM	Boost Press PSI	Fuel Press PSI	Jw Temp °F	Oil Press PSI	After Cooler °F	Left Exh °F	Right Exh °F	Amb Temp °F
10:15	480	0	0	0	0	1	60	1200	1	68	145	84	75	361	347	73
10:20	480	1212	1219	1217	1003	1	60	1200	34	65	178	74	84	372	1002	73
10:35	478	1218	1224	1223	1013	1	60	1200	36	64	180	69	95	399	1033	74
10:50	478	1218	1225	1223	1013	1	60	1200	36	64	180	69	95	399	1033	74
11:05	478	1219	1225	1223	1013	1	60	1200	36	64	180	69	95	399	1035	74
11:20	478	1218	1225	1223	1012	1	60	1200	36	64	180	68	95	399	1033	75
11:25	478	0	0	0	0	1	60	1200	2	68	174	74	81	439	423	75

Final Service Meter Reading 3.8764 Hours

Tested By: JIMMY MAH Witness: Flammy Xson Date: 5/19/16