

Test number	LPR20130618-001
Test requestor	Michael Bobacock
Test engineer	Honore Hodary
Test date	June 18, 2013

RV Heat Test

1. Objective

The objective of this test is to evaluate the capability of the heater to maintain the RV temperature to the Setpoint (70 °F) under extreme cold temperature (0 °F).

2. Equipment

- (1) Forest River RV, model Trilogy
- (1) Dometic environmental test chamber
- (24) Temperature sensor, type T thermocouples
- (1) Data acquisition system, Model ChartScan 1400

3. Procedure

1. Start the test chamber and set the Micristar controller temperature Setpoint to 70 °F.
2. Soak the RV at 70 °F for 24 hours. This will allow the temperature inside the RV to reach equilibrium.
3. Install the thermocouple trees in the following locations: two in the bedroom, one in the bathroom, three in the kitchen/dining area.
4. Place one thermocouple (not trees) in the gray tank, and one in the basement.
5. Check the data acquisition system to make sure that all thermocouples are correctly connected to the data acquisition system.
6. Turn the thermostat on and set the temperature Setpoint to 70 °F, Mode to Heat, and FAN to Hi.
7. Close all windows and doors.
8. Set the the Micristar controller temperature Setpoint to 0 °F. This will drop the temperature in the test room to approximately 0 °F.
9. Allow the test to run for eight hours.
10. Stop the test and turn off the Micristar controller.
11. Save the test data.

4. Data

Figure 1 below shows the temperature versus time chart. As can be seen, the temperature inside the RV was approximately 70 °F when the test started. It took the test chamber approximately four hours to drop the temperature to 0 °F. The air temperature from the heater air outlet was approximately 140 °F.

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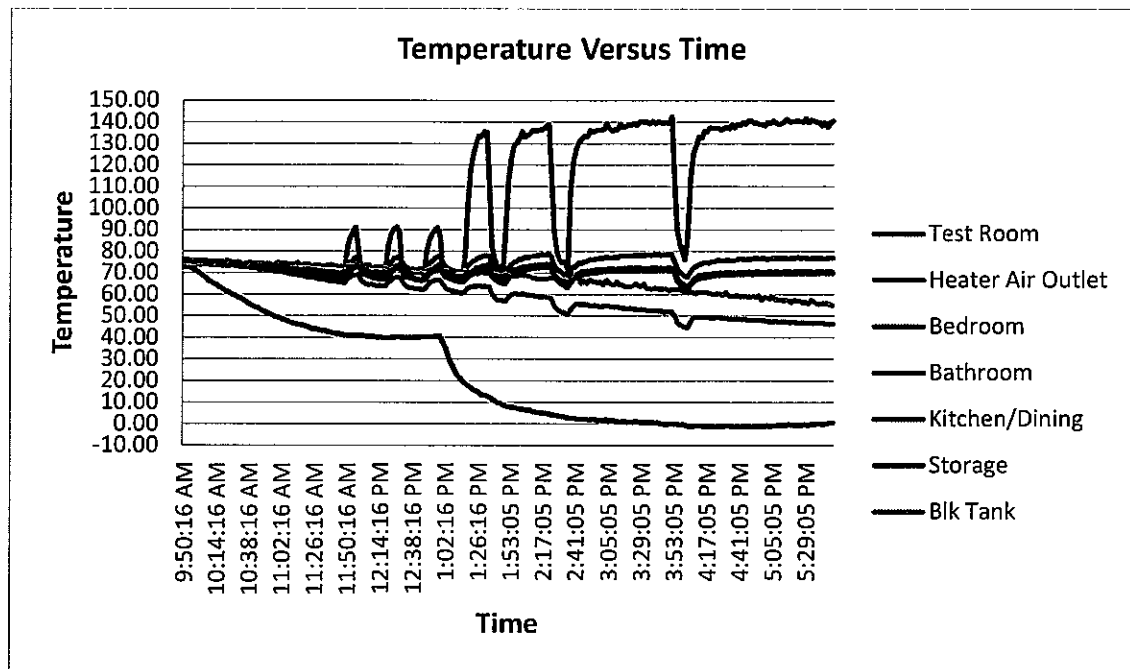


Figure 1: Temperature versus time chart.

5. Conclusion

The total test time was 8 hours. The lowest temperature that the RV was exposed to during the test was approximately 0 °F, for approximately four hours.

The average temperatures in different parts of the RV at the end of the test were recorded as follows: 70 °F in the bedroom, 77 °F in the bathroom, 70 °F in the kitchen/dining area, 55 °F in the black tank, and 46 °F in the in the storage compartment.

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RV Pull-down Test

1. Objective

To evaluate the capability of the air conditioner to cool the RV under extreme heat condition (100 °F). The test will examine the amount of time it takes for the air conditioner to bring the RV temperature to the Setpoint or to reach stabilization.

2. Equipment/parts List

- (1) Forest River RV, model Trilogy
- (1) Dometic environmental test chamber
- (24) Temperature sensors, type T thermocouples
- (1) Data acquisition system, model PointScan 1400

3. Procedure

1. Start the test chamber and set the Micristar controller temperature setpoint to 100 °F.
2. Soak the RV at 100 °F for 24 hours. This will allow the RV to reach equilibrium.
3. Install the thermocouple trees in the following locations: two in the bedroom, one in the bathroom, and three in the kitchen/dining area.
4. Check the data acquisition system to make sure that all thermocouples are connected correctly.
5. Turn the air conditioner on and set the thermostat temperature Setpoint to 55 °F, Mode to COOL, and FAN to Hi.
6. Close all windows and doors.
7. Allow the test to run for eight hours.
8. Stop the test and turn off the Micristar controller.
9. Save the test data.

4. Data

Figure 1 shows the temperature versus time chart. As can be seen, the test room temperature Setpoint was set at 100 °F and remained at 100 throughout the test. The temperature inside the RV did not reach equilibrium after eight hours. That is, the temperature was still dropping when the test stopped. So, the temperature could have dropped below 68 °F if the test continued beyond eight hours.

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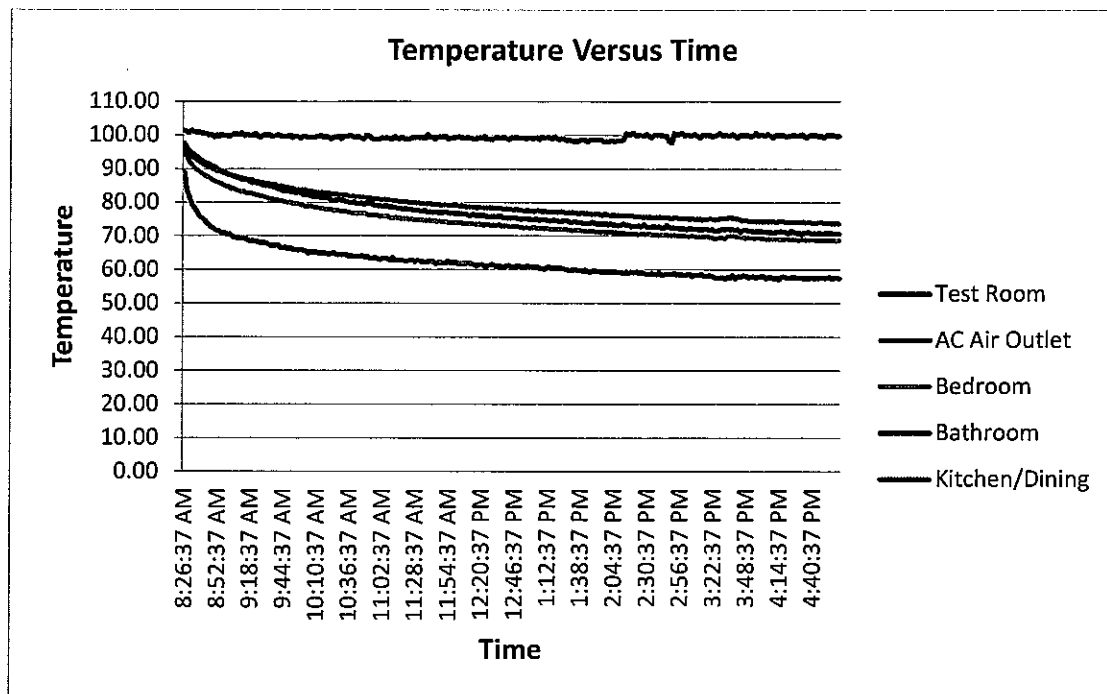


Figure 1: Temperature versus time chart

5. Conclusion

The total test time was eight hours. The temperature inside the trailer did not reach equilibrium after eight hours (see figure 1). That is, the temperature was still dropping when the test was stopped.

The average temperatures in different parts of the trailer were recorded as follows: 68 °F in the bedroom, 70 °F in the bathroom, and 73 °F in the kitchen/dining area. Based on the above numbers, the temperature differential was approximately 30 °F. That is, the temperature dropped by approximately 30 °F (from 100 °F to 70 °F).