4.3 TEST NO. 3

This test was performed to determine the elapsed time required for each water system to recover when the capacity of the system's storage vessel had been withdrawn. As previously stated, recovery is defined to begin at the moment when either the burner fires or the element energizes and the system begins to heat the water in the tank due to a call for heating from the system's thermostat. Recovery is completed once the thermostat is satisfied and the burner ceases firing or the element de-energizes. Since the natural gas-fired instantaneous water heater has the capacity to endlessly provide 8.5 gallons per minute (GPM) of hot water, this test was not performed on this unit.

Prior to conducting the test, each water heater was set to provide an outlet temperature of approximately 135°F at a flow rate of approximately 7.0 GPM. The energy and flow meters were reset to zero. This test is performed by continuously withdrawing 7.0 GPM of hot water from the water heating systems until the tank capacity (40 gallons for both tank systems) has been withdrawn.

All the raw data that was collected during this test can be found in ***Appendix D***. Once the hot water draw began and a consistent flow was established, the inlet and outlet water temperatures were recorded. Once recovery began, the elapsed time, quantity of water withdrawn, and the inlet and outlet temperatures were recorded. Once the tank capacity (40 gallons) had been withdrawn, the draw was concluded and the elapsed time, quantity of water withdrawn, the energy meter reading, and the inlet and outlet temperatures were recorded. Once recovery ended, the elapsed time was recorded and a flow was induced across the outlet thermometer so that the final inlet and outlet temperatures could be recorded.