

AQS110 – Introduction to Quality and Metrology – Fall 2016  
LABORATORY EXERCISE #9  
**ROOM VALIDATION – Part 2 Data Analysis**

**Purpose**

The purpose of this exercise is to evaluate the temperature consistency of the biotechnology laboratory, using temperature data loggers.

The research question to be answered is the following:

Does the room remain in control? Control is defined as 70°F +/- 2°F

**Format**

A summarized report will be completed by each student that describes

- how the study was conducted
- rationale for selection of data logger locations/frequency
- analysis of data collected

**Due Date** Final report is due beginning of class, December 7, 2016.

**Laboratory Exercise:**

In Part 1 of this exercise, the data loggers were programmed and positioned to collect the temperature data. Now that the data has been collected, it will be retrieved and analyzed.

Each team will evaluate their half of the room. The scheduled usage for Room 214 has been included below. In addition, the data collected from the middle wall section will be provided to each team. This will provide three locations.

Room 214 Usage	
Monday	9:00 – 11:30 a.m.
Tuesday	9:00 – 11:30 a.m. and 5:00 – 9:30 p.m.
Wednesday	9:00 – 11:00 a.m. and 11:30 – 1:00 p.m.
Thursday	9:00 – 11:00 a.m.
Friday	nothing scheduled
Saturday	nothing scheduled
Sunday	nothing scheduled

When there is a large data set, creating a series of graphs can provide a more detailed picture. We will use the middle room data collected during class for analysis. Each team will then need to evaluate their section of the room.

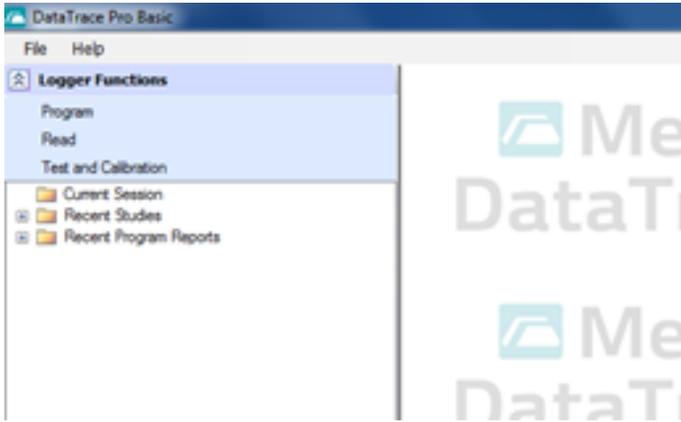
A summary report will be submitted by each individual.

## Procedure

### A. Retrieving Data from data loggers

Place the data logger into the receiver.

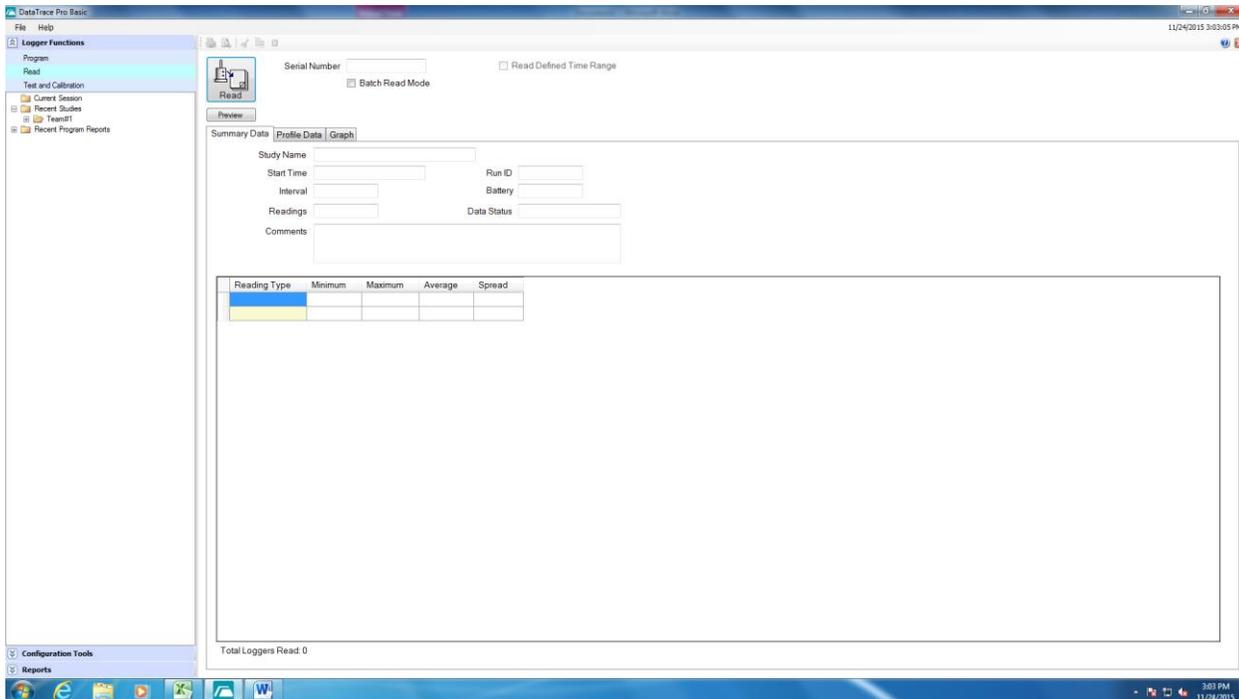
After entering the data logger program, select “logger function” and “read”



The following screen will appear

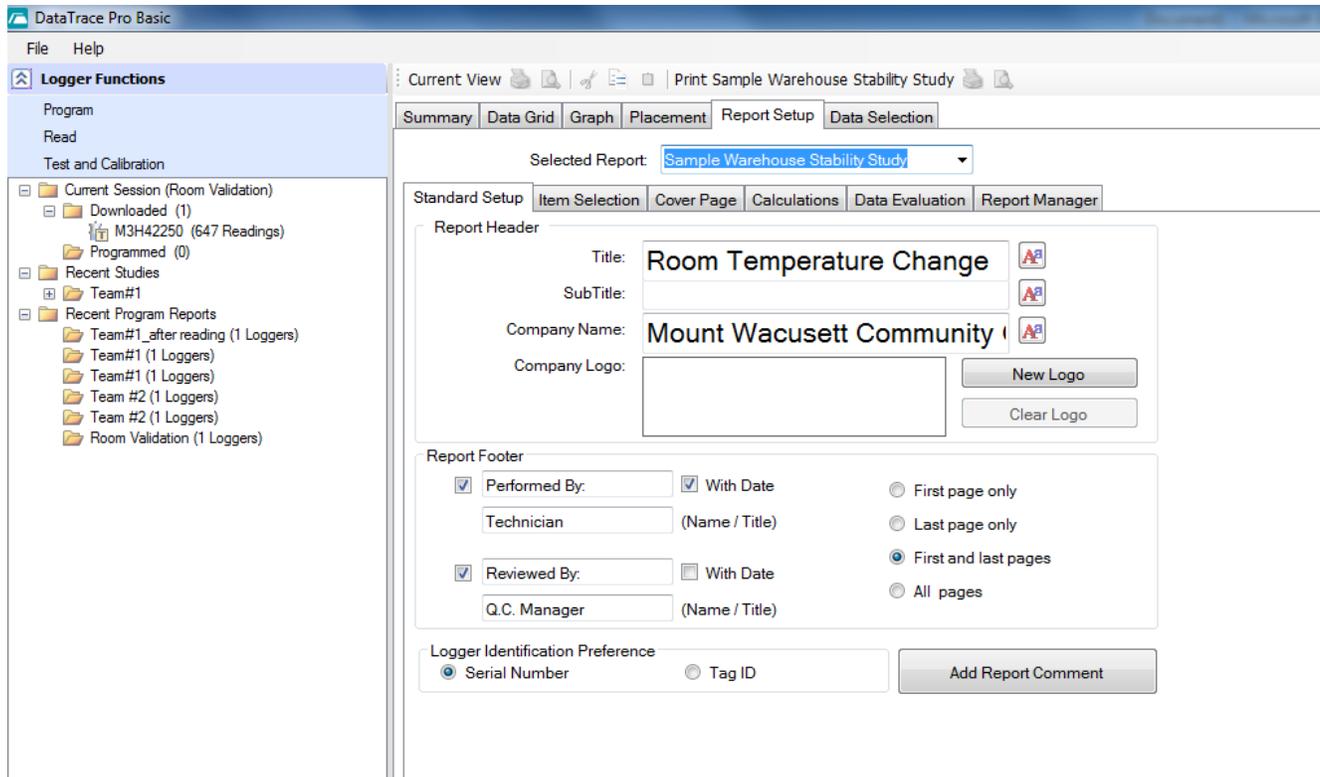
Click on the Read button

The data download will begin. When complete



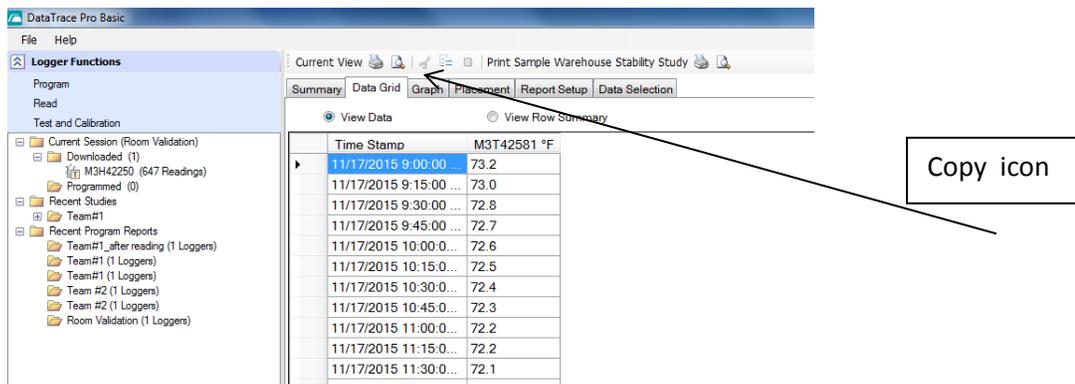
Click on the Current Session “downloaded”  
 The Serial number for the device just downloaded should be included in the list.  
 Click on this and the screen with the tabs below will appear

Tab through “summary”, data grid, graph to review the data.



At this point, the data download is complete. The values now need to be transferred to Excel, so that they can be further analyzed.

Return to “data grid” tab.  
 Highlight all the data and copy (see arrow below).  
 Once copied, paste the data into Excel®.



- B. Report format will be to present the study design, data collected and analysis in a professional manner with correct spelling and grammar. Graphs supporting the discussion and conclusion shall also be included.
- a. Suggested section headings
    - Purpose
    - Sampling Location Selection and Rationale
    - Sampling Frequency Rationale
    - Data Evaluation
    - Discussion / Summary
    - Conclusion (was room in control, is further study needed)
  - b. The report shall address/answer the following questions
    - i. Is the room in Control?
    - ii. Were there excursions (out-of-control)?
    - iii. If excursions were present, are they explainable? How?
  - c. Data evaluation mean, median, mode – are they the same/similar?
    - i. Does the data appear normal?
    - ii. Describe the results in terms of shape and dispersion.
    - iii. Were there differences in the data when the two locations are compared?
  - d. Discussion - now that data has been collected, would you
    - i. change the location, frequency;
    - ii. two data loggers is limiting, how many more are needed?