

Flight Mill Software (LabView Version 8.1)

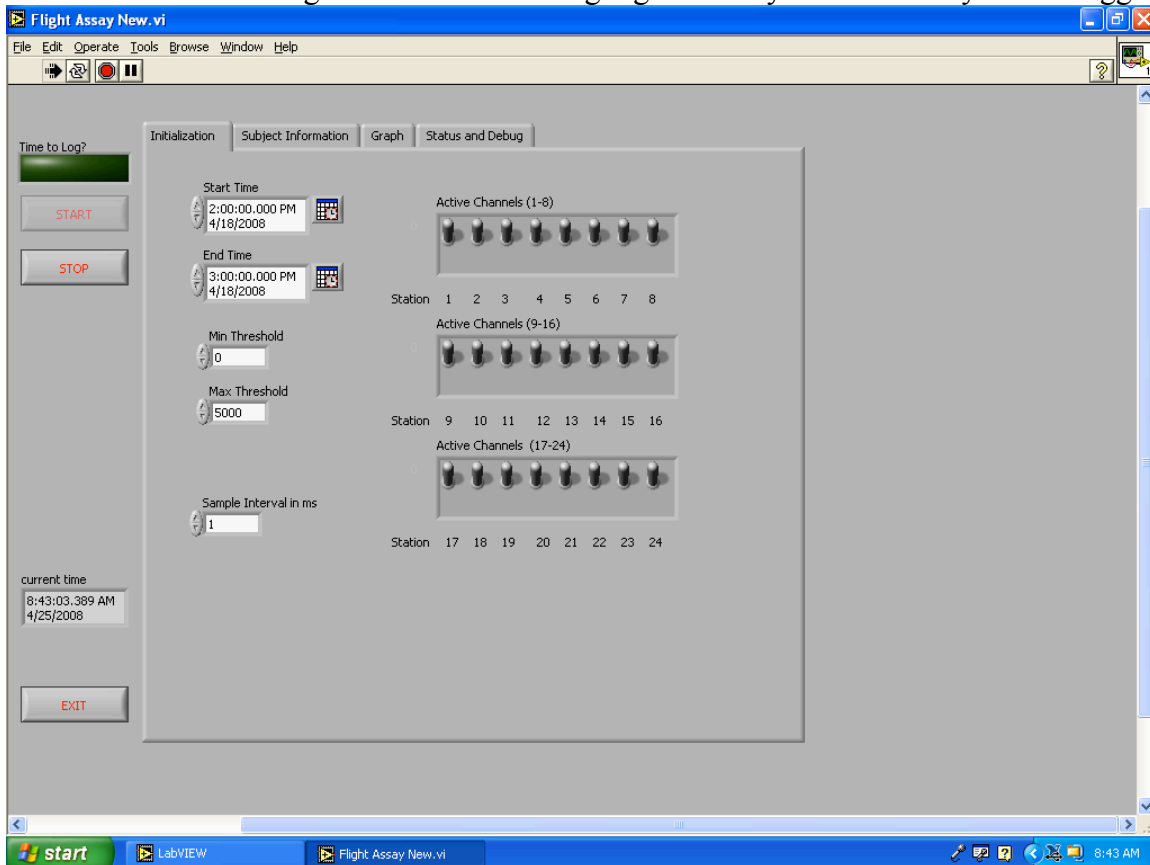
Locate the file Flight Assay New.vi and double-click. This will open and use the other two Flight Assay files provided automatically

General information:

1) The program contains 4 windows. The Initialization window is used to set up and run an assay, the Subject Information window allows the user to specify data about the insects being flown on each mill and this data is saving along with the flight data. Data is automatically saved to an Excel file with a name that reflects the time and date that the assay is initiated. The graph window provides a graphical snapshot of the flights being taken by each individual as a square wave-from diagram. This allows the user a quick view of activity. The final window (Status and Debug) provides the user the opportunity to test each mill to be sure it is operating properly. Each window will be described below

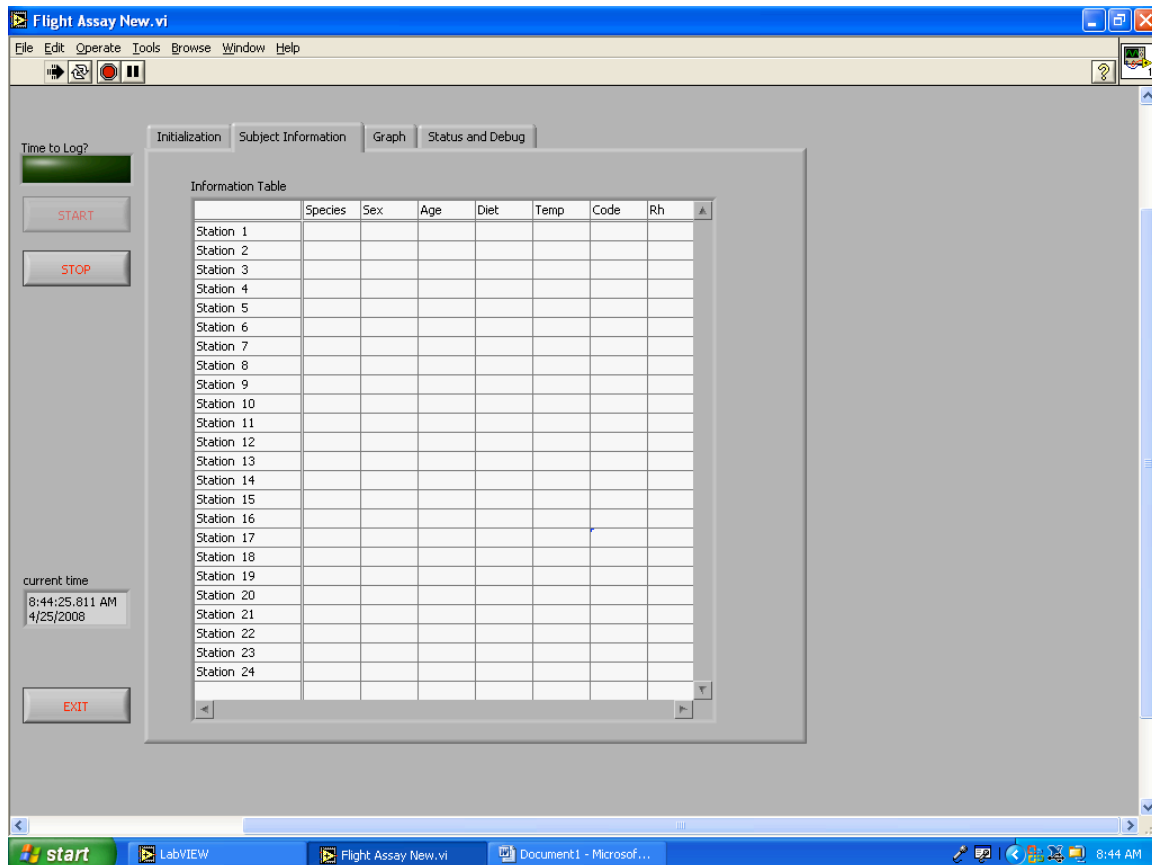
INITIALIZATION

- 1) Click on the bold arrow on the top menu bar to start the program. To stop the program click on the red “stop-sign” symbol.
- 2) Once started you can adjust the start and stop times, the threshold values, the sample interval and the mill you want active for a particular run (toggle switches to the right).
- 3) By default, all the mills are active. Click on a toggle to change its status.
- 4) An assay is normally run for 24 hours but any interval can be specified with start and stop times. Click on the calendar icon to set the times
- 5) The threshold values define the window of valid flights to count. The minimum value is zero msec by default and this is probably best. This will count any flight that completes one rotation so long as it is shorter than the maximum threshold.
- 6) The maximum threshold allows you to differentiate between actually flights (insect beating its wings) and rotations that may continue to occur once the insect has stopped flying but the arm is still in motion. This will depend on the insect being tested. By default the value is 5000 msec (5 seconds).
- 7) The sample interval tells the system how often to monitor the hall-effect sensor. This interval needs to be short so the default is 1 msec
- 8) Once all parameters are set, click on the Start button. Once the real time reaches the start time the “time to log” button will turn bright green and you know the system is logging data.



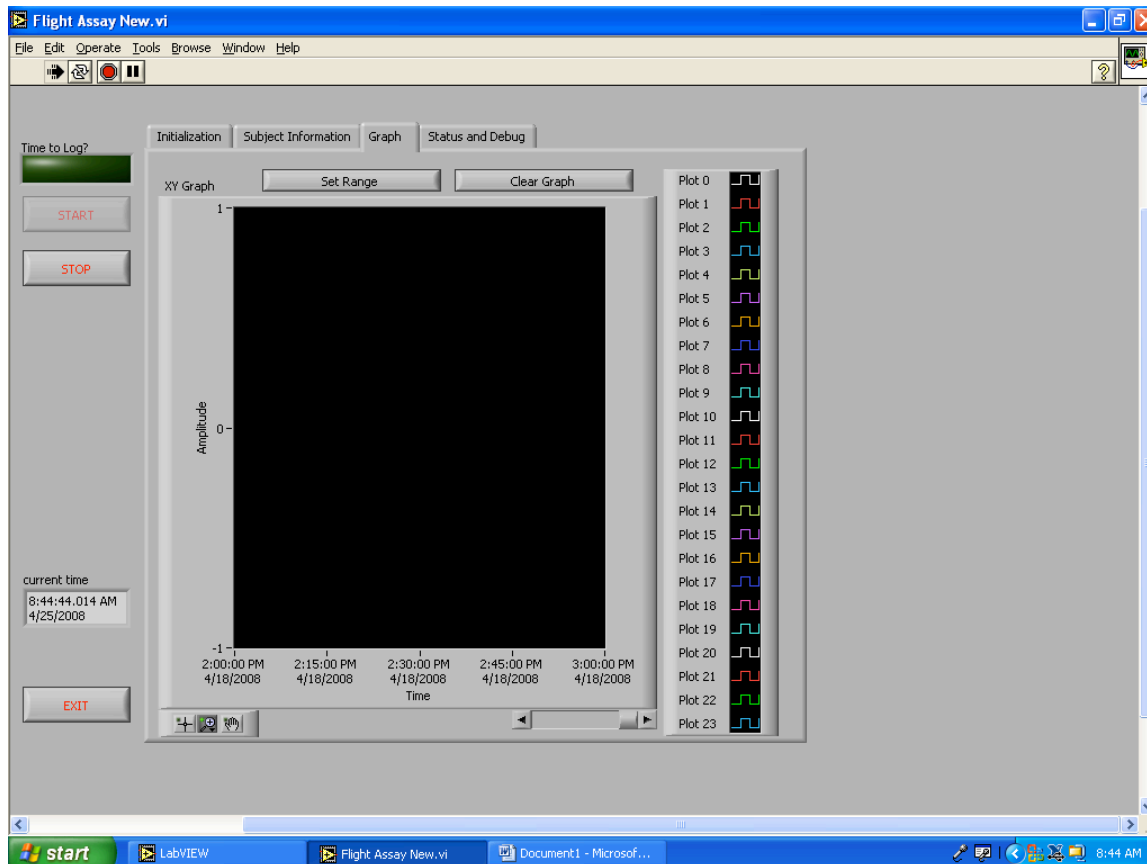
SUBJECT INFORMATION

- 1) The subject information window allows the user to specify information about the subjects being flown. This information will be saved to each line of data and allow further sorting later on in the Excel file.
- 2) Although it looks like an excel table it does not allow the use of cursor keys to navigate – this is a limitation of the table function in LabVIEW. To move from cell to cell you need to click on the cell of interest and enter data.



GRAPH

- 1) This window provides a quick view of flight activity by each insect. When the insect is flying the waveform is high and when resting it is low. The buttons at the top can be used to modify the view.
- 2) This function is a bit quirky, once again a limitation of LabView.



STATUS AND DEBUG

- 1) This window allows the user to test the flight mill system and also provides some summary information on each channel. It was developed mainly to help the programmer debug the software.
- 2) The “Value from Card” line shows the status of each mill. If you rotate an arm on the flight mill you should see the green light flicker from green to black as the magnet on the flight arm passes over the sensor. Green is magnet not over the sensor and black is magnet over the sensor. This is a quick way to check that the polarity of the magnets on the flight arm disk are correct, and that they are close enough to the hall-effect sensor to trigger a signal.
- 3) The Status chart is just another quick way to check progress. Only the most recent flight will be logged here. The user can scroll through all 24 channels using the button to the left of the chart.

