**Computer Interface Instructions**

**Pacer 2L Control:**

Cable: Straight thru
COM port: User preference
Baud Rate: 4800 Baud
Parity: None
Data Bits: 8
Stop Bits: 1
Flow Control: None

**Kryos Control:**

Cable: Straight thru
COM port: User preference
Baud Rate: 19200 Baud
Parity: None
Data Bits: 8
Stop Bits: 1
Flow Control: CTS/RTS (Hardware)

1. Connect the serial cable from the freezer to a COM port on the computer
2. Using Microsoft Windows
    a) Start → Programs → Accessories → Communications → Hyperterminal
    b) Start the Hyperterminal program.
    c) The program will indicate "Connection Description"
    d) Type in TWLN2 and press return
    e) A box will appear indicating Connect to? Choose the COM port where your serial cable is connected.
    f) Fill in the communications settings according to the information above.
    g) You should now have a direct link between the computer and the TW freezer. If an error message appears, recheck cable and settings to be sure all the communications parameters are correct.
    h) In the Hyperterminal menu go to Transfer → Capture Text.
    i) Type in the filename to store the data (you may consider using either a freezer ID or the control serial number). Note the directory where the file is being saved.
    j) Go to the control and download the data
    Mark 2L – Press Menu → Set-up Unit → <down arrow> 4 times → SEL → Transfer
    Kryos – Press Menu → 4 → 1 → 1 .

    The data has now been transferred to your computer and is ready for analysis.

**Data Analysis:**

Assuming a fairly regular routine with your Taylor-Wharton Cryo-Storage system, the $LN_2$ usage should be consistent and the automatic fills should occur on a regular basis. Looking at the logs will help to determine the amount of time between fills which will assist in determining if the evaporation rate has changed. For instance, the freezer is operating and fills approximately every 72 hours. After a few years you notice that the freezer is now filling every 48 hours. It may be an indication that the NER has changed. It may also be an indication that one of the other operating parameters has changed, such as start fill-stop fill ratio, number of racks, number of times that the freezer is opened, etc. Analysis of the logs can provide an indication that the freezer needs to be checked and can be part of a regular preventative maintenance routine.

**Cable Specifications:**

Cable Connections for printer:

- 9 pin Male DB-9 on each end of cable
- Cable hookup (Cable can be connected either direction)
    - Pin 2 → Pin 3
    - Pin 3 → Pin 2
    - Pin 5 → Pin 5
    - Pin 7 → Pin 8
    - Pin 8 → Pin 7

Cable Connections for computer:

- 9 pin Male DB-9 connects to Kryos, 9 pin Female DB-9 connects to computer
- Cable hookup
    - Pin 2 → Pin 2
    - Pin 3 → Pin 3
    - Pin 5 → Pin 5
    - Pin 7 → Pin 7
    - Pin 8 → Pin 8