OCEAN DRILLING PROGRAM

MOISTURE AND DENSITY (MAD)

USER'S MANUAL

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Introduction

This document was developed to provide the user with basic information about the Moisture and Density (*MAD*) software program. The *MAD* program was developed to work in conjunction with the balances and the pycnometer. All *MAD* windows, functions and options are explained in detail.

Document Layout

This document is broken into several sections, including two appendices. The first four sections describe administrative functions such as starting the program and setting defaults. The next four encompass setting up reports and samples, and calibrating the balance and pycnometer. The next three sections describe how to measure and record the mass and volume, and how to run through the entire process. The final two sections are appendices. Appendix A includes installation and setup information. Appendix B includes all file format information.

Starting MAD

For the First Time

The very first time that *MAD* is started, the following warning appears (see Figure 1). This message indicates that the program cannot find the folder where the data files for *MAD* are located. This data path must be set before the program will run properly.

> **Note: the data path need only be set the very first time *MAD* is run. After that, only change the data path if you change the location of saved data.**

1. Double click on the *MAD* icon to start the program. The following message will appear:
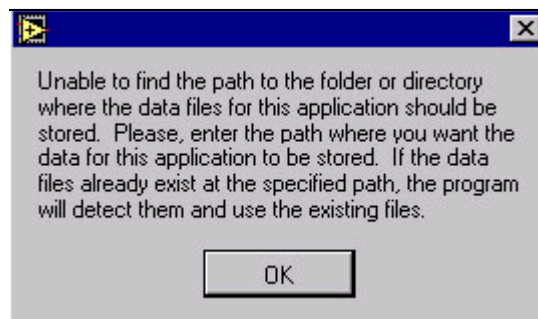
Figure 1. Data path warning.

2. Click **OK**. This opens the "Input Datapath" window (see Figure 2).
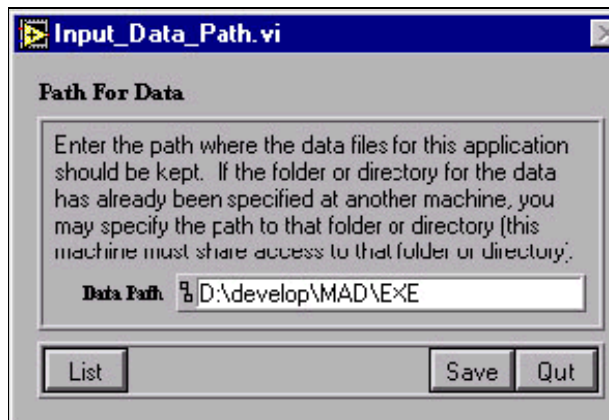
Figure 2. "Input Datapath" window.

3. If you already know the data path, type it into the "Data Path" field. If not, click on the **List** button. This opens a navigational dialog box (see Figure 3).
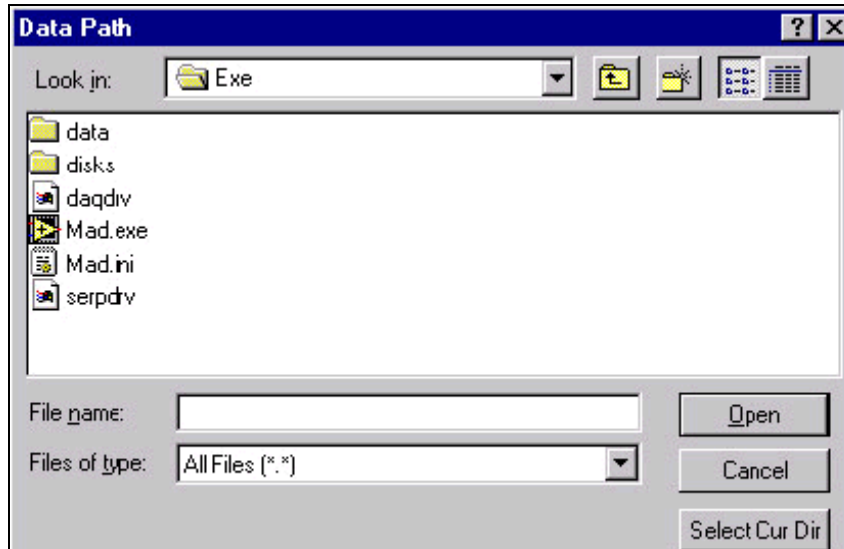
Figure 3. Set data path here.

4. Navigate through the box until you find the location where you want to save the *MAD* data files. Click on the **Select Cur Dir** button. The data path is now set.

The very first time *MAD* is started you should also receive the following warning (see Figure 4). If you receive this warning at any other time, please notify the IS group. Click **Continue**.
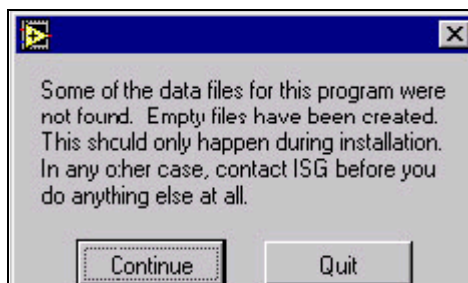
Figure 4. Empty file warning.

Next, a message will appear asking if you want to set the beaker types (see Figure 5). Click **Yes** to open the "Beaker Type List" window (See "Beakers" p. 6); click **No** to continue. You can also set the beaker types at any time from the "Options" window.

Figure 5. Beaker message.

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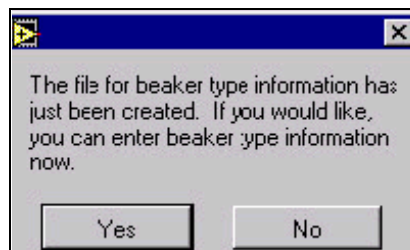
Next, a message will appear asking if you would like to set the calibration standards. Click **Yes** to open the "Control List" window for setting the calibration standards (See "Standards" p. 9); click **No** to continue. You can also set these standards at any time from the "Admin Options" window.

Finally, a message will appear asking if you would like to set the user options. Click **Yes** to open the "Options" window (See "MAD Options" p. 5); click **No** to continue. You can also set these standards at any time by clicking on the **Options** button on the main menu.

Once the data paths is set and the other options are set or closed, the main menu of *MAD* should become active (see Figure 6). The next time you start *MAD*, you will not see any of the previous warnings or messages. The main menu should be the only window available.
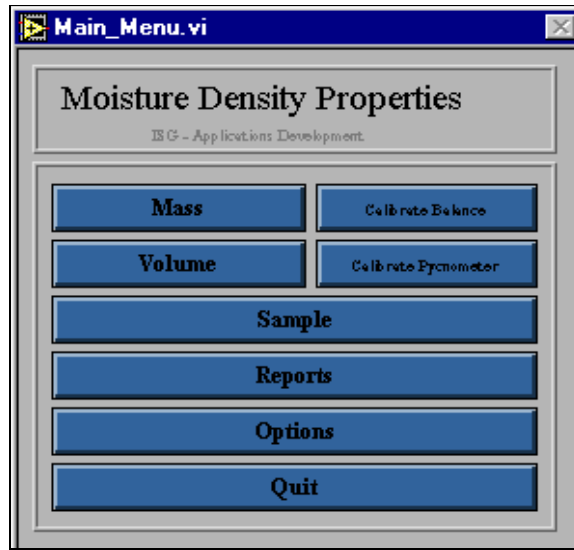
Figure 6. The MAD Menu Window.

Ocean Drilling Program

MAD Options

Multiple options, including pycnometer and balance information, are set at the "Options" window. Besides the options on the window face, there are also several buttons.

Note: if you plan to use the ODP defaults for all settings, disregard the rest of this section except for "Uploading Samples." Also, disregard the "Administrative Options" section. To set the ODP defaults, click on the **Use ODP Defaults** button on the "Options" window.

From the main menu, click on the **Options** button to open the "Options" window (See Figure 7).
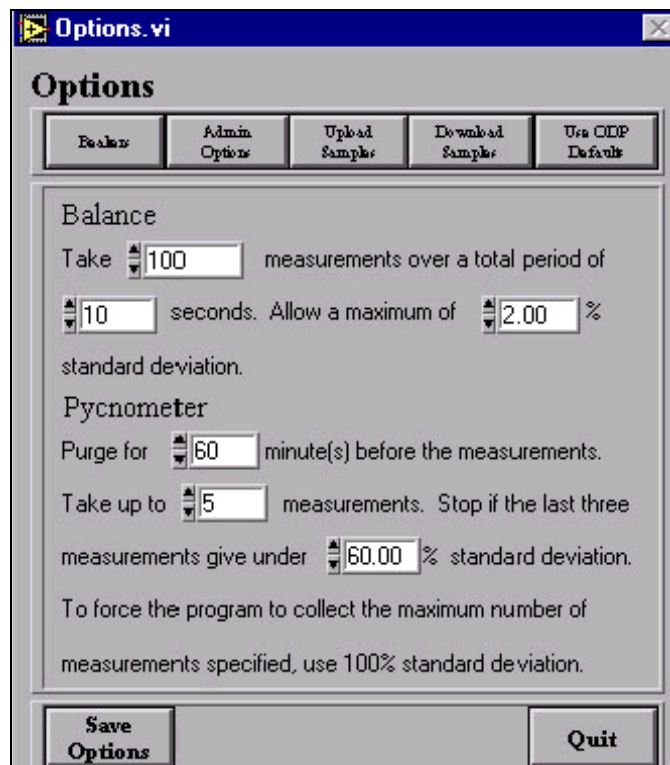
Figure 7. Set Options at this window.

Balance and Pycnometer Options

Set Pycnometer and Balance settings on the window face by either using the up and down arrow keys or entering them manually. **Balance** settings include the number of measurements taken in a set amount of time and the standard deviation to allow. **Pycnometer** settings include the purge time, number of measurement, and the standard deviation.

> **Note: Holding down the Shift key while clicking on an arrow speeds up the scrolling process.**

Button Options

The "Options" window has four buttons that open to individual windows. Use these buttons to select beaker types, to download sample from the database, and to upload samples and their associated data back to the database.

Beakers
Click on **Beakers** to open the "Beaker List" window (see Figure 8).
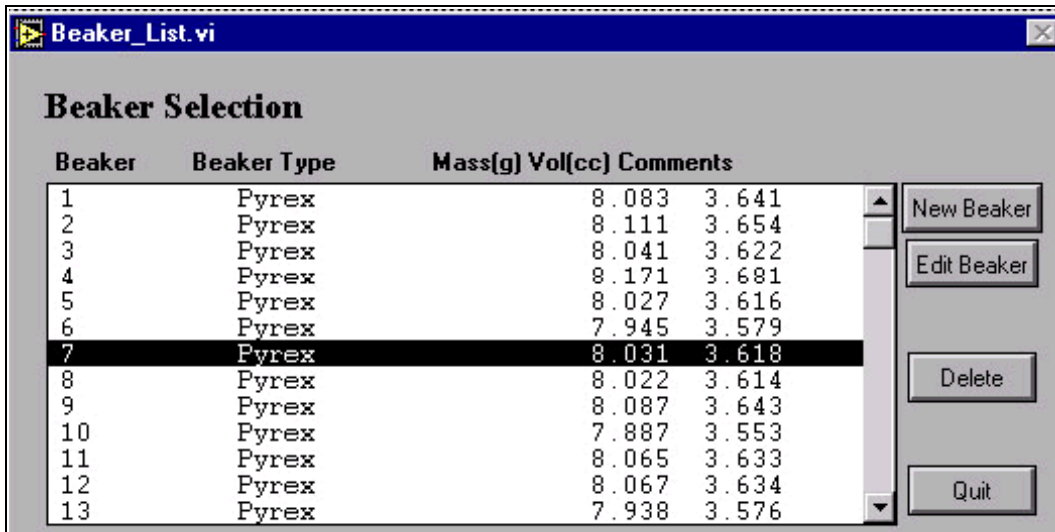
Figure 8. The "Beaker List" window.

- Click **once** on a beaker type to select it for use during analysis. Click **twice** to open the beaker's info screen, which includes the beaker ID, type, mass, volume, and comments.

- Add a new beaker by clicking on the **New Beaker** button. This opens the "Beaker ID" window (see Figure 9). Type information into the entry blanks or use the up and down arrows to set the information. Click **Save** before quitting.
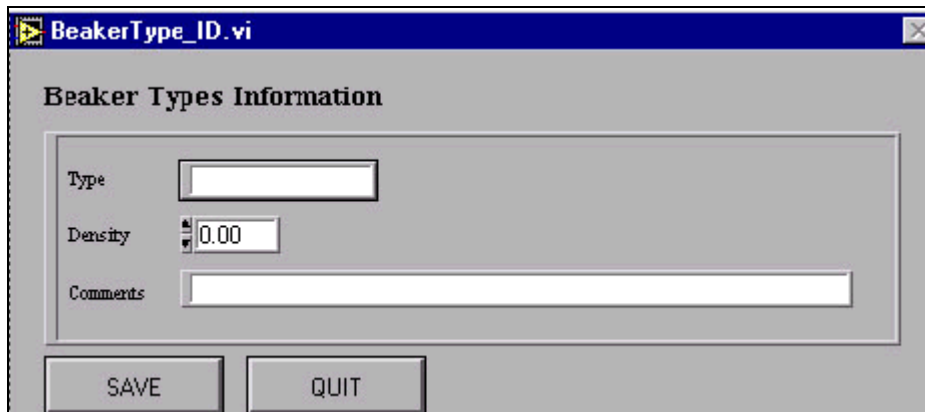
Figure 9. "Beaker ID" window.

- Edit a beaker type by clicking on it once, then the **Edit Beaker** button. This opens the information box for that beaker. Edit any of the settings and then click **Save**.

- Delete a beaker type by highlighting it and clicking the **Delete** button.

Upload Samples

Click on **Upload Samples** to open the "Sample Upload" window (see Figure 10). Use this window to upload samples and their associated data back to the database. Do this by selecting the samples, then clicking on the **Upload** button.
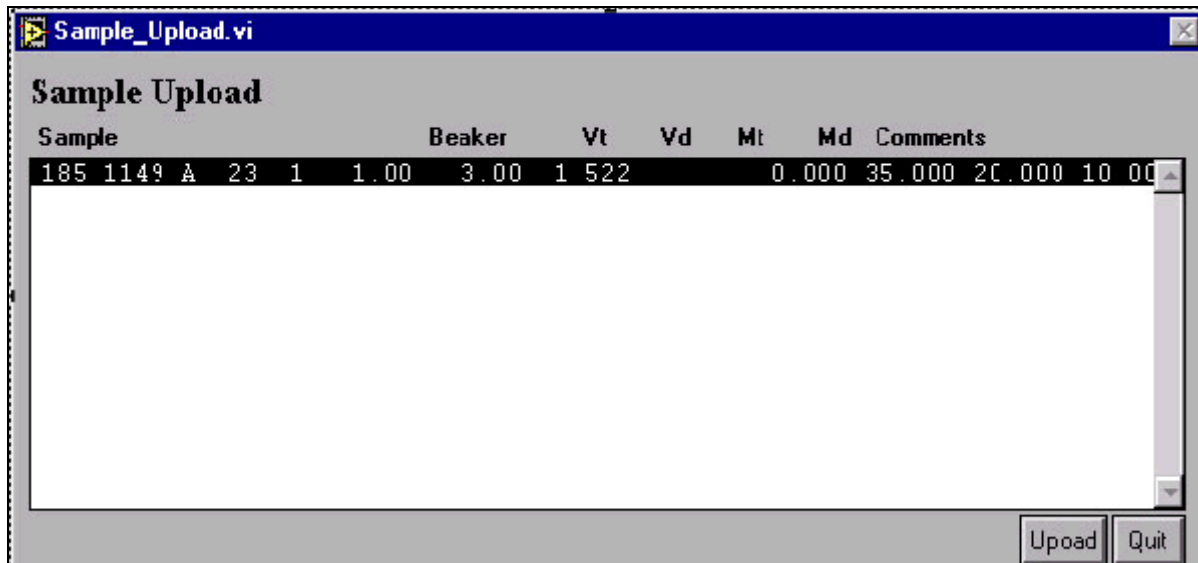
Figure 10. "Sample Upload" window.

Download Samples

To download samples from the database for analysis, click on the **Download Samples** button. This opens a login box, which provides access to the database (see Figure 11). Enter your username, password, and host. Click the "Remember Password" box if you want the program to retain the password during subsequent logins.

Figure 11. Login for central database.

Once access is established to the central database, the "Import Samples" window will become active (see Figure 12).
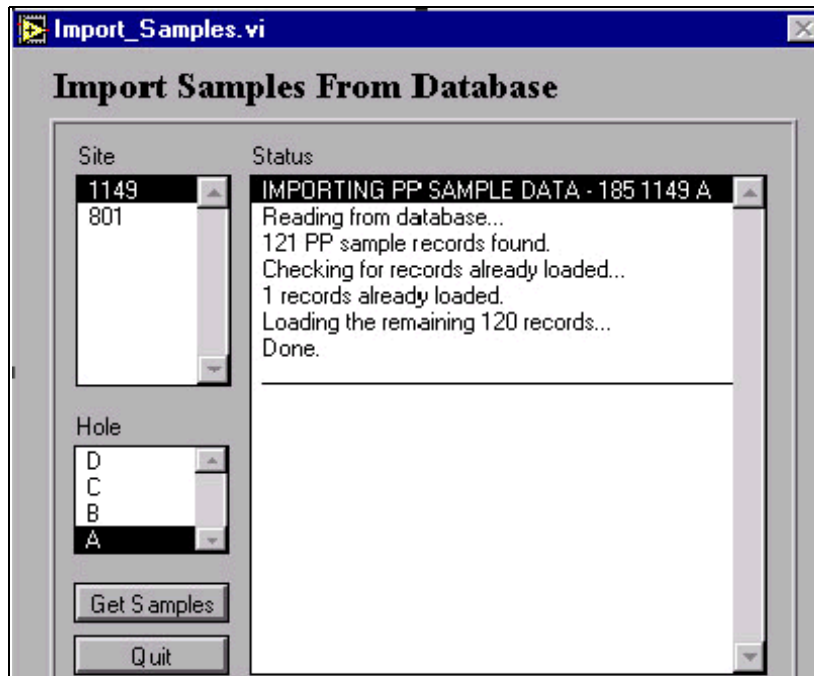
Figure 12. "Import Samples" window.

> **Note: the Sites and Holes available on this window correspond to the Leg number selected on the "Administrative Options" window (See "MAD Administrative Options" p. 9).**

1. Select a Site, then a Hole by clicking on them once.
2. Click on the **Get Samples** button. The program will notify you that the samples for your selected Site and Hole are being collected from the database.
3. Once the samples are retrieved, they will be available for selection from the "Sample List" window (See "MAD Sample" p. 12).

Use ODP Defaults
Use this button if you want to set all defaults according to ODP standards. These are set automatically upon clicking the button.

Admin Options
See "MAD Administrative Options" p. 9

> **Note: Be sure to click the *Save Options* button before quitting the "Options" window.**

MAD Administrative Options

In addition to the data paths, there are several more administrative options that must be set before proceeding. Once these options are set, they do not need to be changed again. Access to these windows requires administrative password privileges.

Default Options

Several default options must be set on this window (see Figure 13). The options are listed on the **Admin** window: current leg number, pycnometer settings, and pycnometer serial port. Click on the up and down arrows to set the default values or enter them manually. If you decide to use the ODP defaults, these options are already set (See "Use ODP Defaults" p. 8).

> **Note: Holding down the *Shift* button while clicking on an arrow speeds up the scrolling process.**
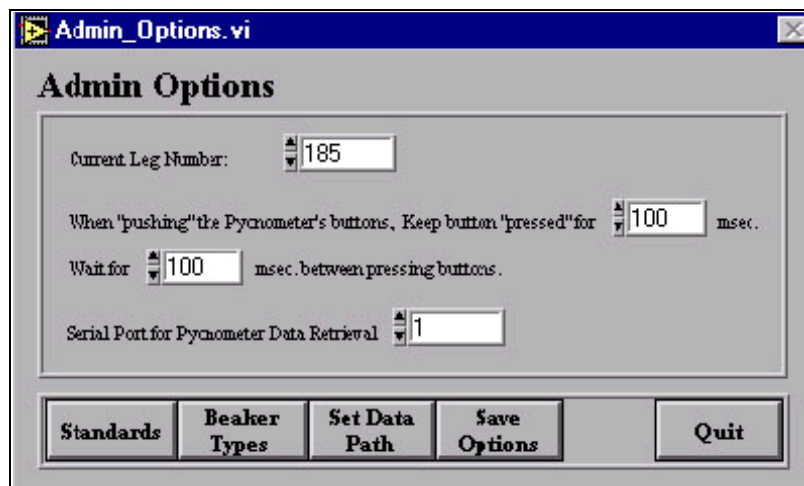
Figure 13. "Admin Options" window.

Button Options

There are three button options, including setting data paths (See "For the First Time" p. 2). Click on any button to access its respective window.

Standards

Click on **Standards** to open the "Calibration" window. This window displays a list of all current calibration standards. From this window you can add a new standard, or edit or delete an existing one (See Figure 14).
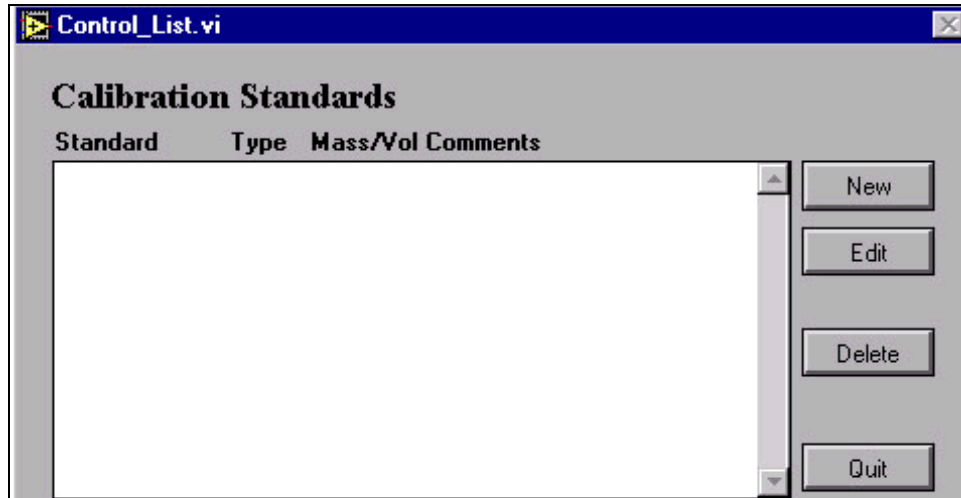
Figure 14. The "Calibration Standards" window.

- Click on a calibration standard **once** to select it for use during analysis. Click on it **twice** to open a screen containing that standard's information (e.g. type, volume).

- Click on **New** to add a new standard. This opens the "Calibration Standard Info" window. Use the up and down arrows to set info or type it in manually (See Figure 15).
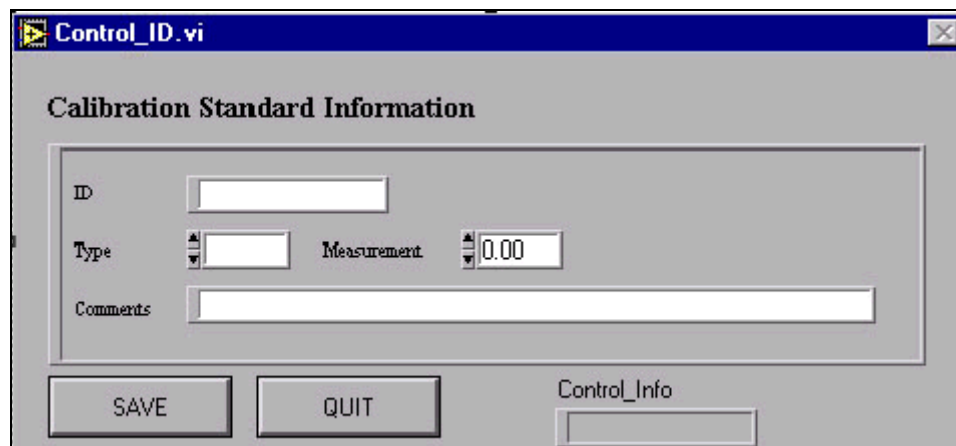
Figure 15. Example of entry blanks and up/down arrows.

- To edit a standard, click on the name and then the **Edit** button. This opens its "Calibration Standard Info" window. Type information into the entry blanks or use the up and down arrows to edit the standards.

- Delete a standard by highlighting it and clicking the **Delete** button. A message appears asking if you really want to delete the standard. Click **OK** to continue or **Cancel** to stop.

- Always be sure to **Save** after making any administrative changes.

- Press **Quit** to leave the window.

Beaker Types

Th "Beaker" window is almost identical to the "Calibration Standards" window. From here you can enter new beaker types, or edit or delete existing ones. See "Beaker Types" p. 11, for more information.

Set Data Paths

See "For the First Time" p. 2, for details on how to set the data path.

Save Options

Be sure to click on the **Save Options** button before quitting this window. This saves all administrative options, including those displayed on the window face.

Quit

This button exits the "Admin Options" window only. The *MAD* program remains open.

MAD Reports

You can query two types of reports from *MAD*–graphs and tables. From the main menu, click on the **Reports** button to activate the "Report" window (See Figure 16).
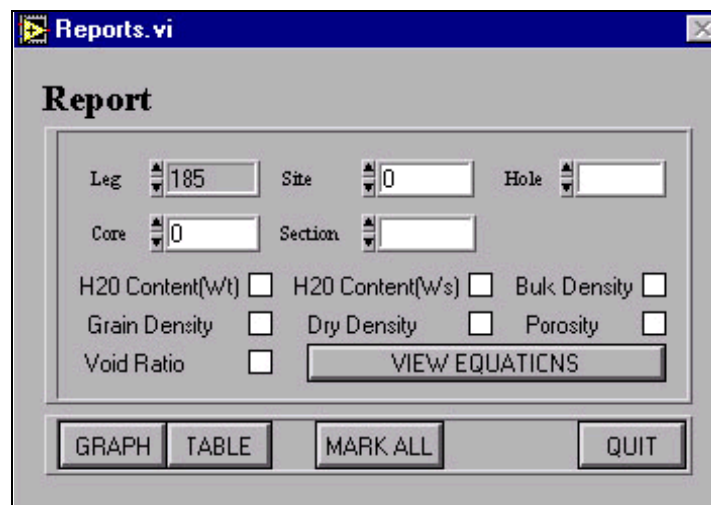
Figure 16. Select report information from this window.

Setting Information

- First, select all leg information. The **leg number** is a default to the current leg. Select the Site, Hole, Core and Section by using the up and down arrows. A **leg**, **site**, and **hole** must be selected or a warning is displayed on the screen.

- Select report topics by clicking the box next to one or more selections. Click once to place an "X" in the box; click again to remove the "X". You can also select all report top-

ics by clicking on the **Mark All** button. Deselect all topics by clicking this button again.

Report Type

Graph

Graphical reports can display only one report topic at a time. If you have more than one topic selected, the program will display an error. Once a topic is selected, click on the **Graph** button. *MAD* displays a graph with the topic's data from the leg, site, hole, etc., that you selected. View equations used to generate the graph by clicking on the **View Equations** button.

Table

A table can display more than one topic at a time. Select one or more topics and click on the **Table** button. This displays a table of data based on your leg information and selected topic(s).

MAD Sample

Add, Import, Edit, or Delete samples for analysis from the "Sample Selection" window. This window is opened by clicking on the main menu's **Sample** button, or from the main **Volume** or **Mass** windows. This section describes how to utilize this window starting from the main menu.

1. Click on the **Sample** button to open the "Sample Selection" window (See Figure 17).
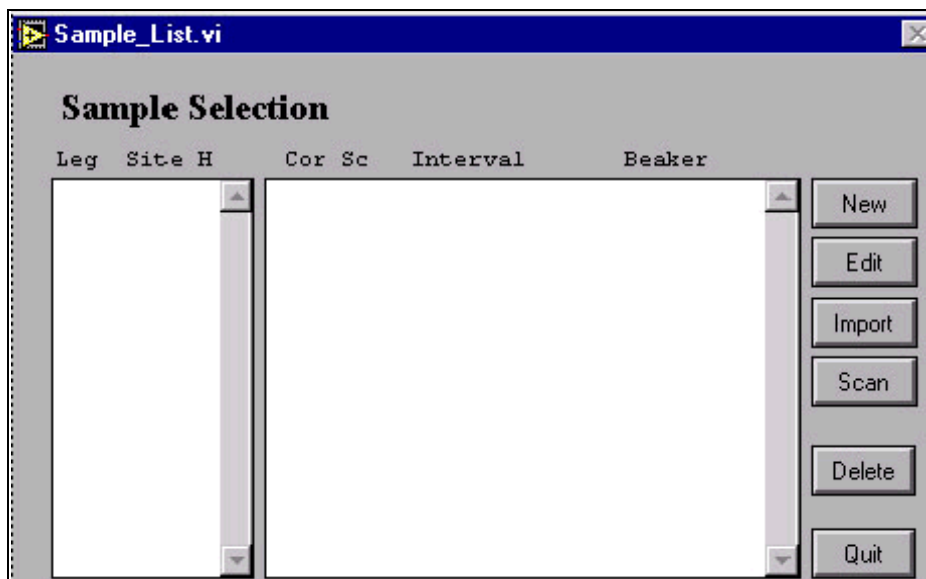
Figure 17. Select samples for analysis at this window.

2. Select a **leg**, **site**, and **hole** from the list on the left side of the window. Use the up and down arrows to scroll through the list.

3. A list of corresponding samples is displayed on the right side of the window. **During analysis, you will select samples from this list at the main "Mass" or "Volume" windows**.

4. **Add a new sample** to the list by clicking the **New** button. This opens the "Sample ID" window (See Figure 18).

Figure 18. Add a new sample at this window.

- Enter values by using the up and down arrows, or manually by first clicking on the **Manual Entry** button, then entering the values.

- Select a beaker type by clicking the **List** button and highlighting a beaker in the displayed list. Click the **Select** button to select the beaker.

- For a wet volume only, click in the "fixed volume" box and set the values for the activated "wet volume" box.

5. **Edit a sample** by clicking on it first, then the **Edit** button. This opens the sample's "Sample ID" window (See Figure 18 above). Edit any information and be sure to click the **Save** button before quitting.

6. You can also **add a new sample by scanning it in**.

- Click the **Scan** button to open the scanning "Sample ID" window, which has entry blanks for the top and bottom ODP barcodes (See Figure 19).

- Click on the top or bottom box to activate the field, then scan the respective code. Do this for both barcodes.

- The information settings (e.g. leg, site, hole) are set automatically, but can be edited at this window. Be sure to **Save** before exiting.

Figure 19. Scan a new sample at this window.

7. **Delete a sample** by highlighting it, then clicking the **Delete** button. A message asks if you really want to delete the sample. Click **OK** to continue or **Cancel** to stop.

8. **Import samples** for analysis by clicking on the **Import** button. For more information on importing samples from the database, See "Download Samples" p. 7.

Calibrating the Balance

Before sample analysis, calibrate the balance to assure that it is functioning properly. Click on the **Calibrate Balance** button to open the "Balance Calibration" window (See Figure 20).
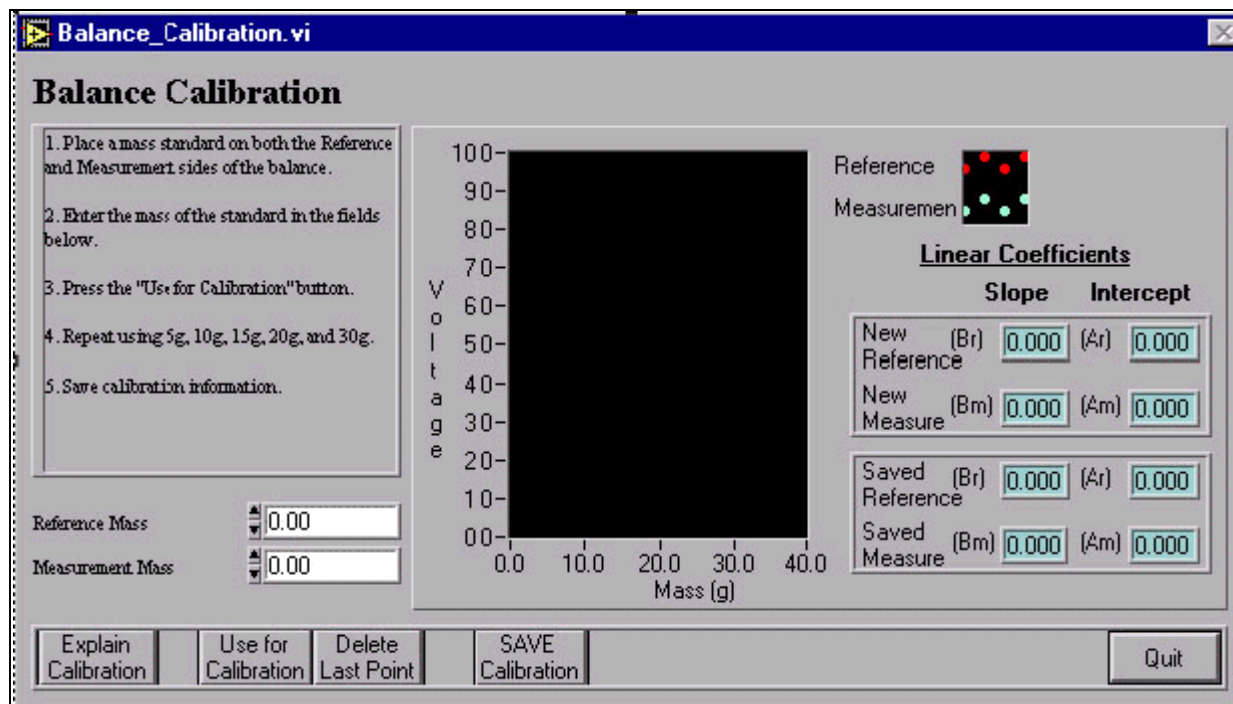
Figure 20. Calibrate the balance at this window.

Calibration Explanation

Click on **Explain Calibration** for an explanation of why the balance must be calibrated.

Calibration Directions

1. Follow the directions on the screen to calibrate the balance.

2. The compiled graph of all weight standards is displayed on the main "Balance Calibration" window (See Figure 20 above). Verify that the correct standard mass is weighed.

Deleting a Data Point

If you need to delete the last data point because of error or otherwise, click on **Delete Last Point**.

Calibrating the Pycnometer

Opening the Calibration Window

Before sample analyses, calibrate the pycnometer to assure that it is measuring properly. Click on the **Calibrate Pycnometer** button to open the "Pycnometer Calibration" window (See Figure 21).
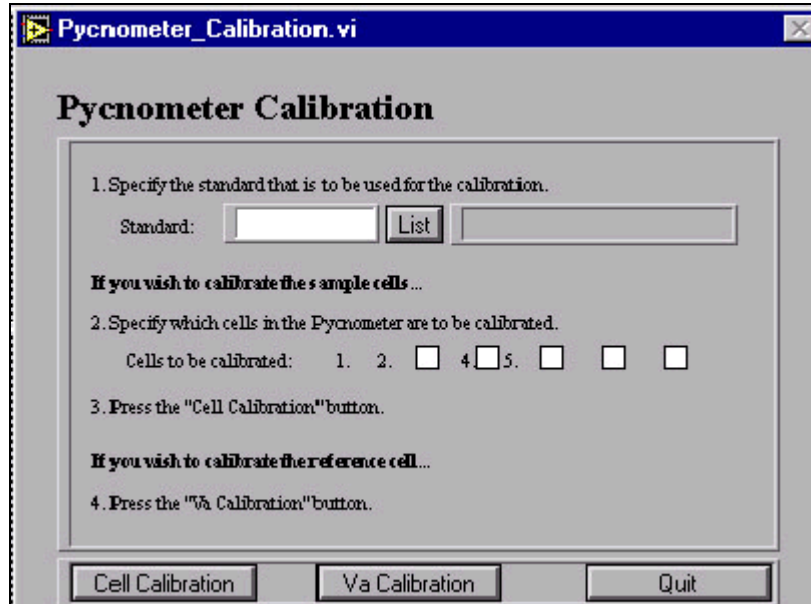
Figure 21. Calibrate the pycnometer at this window.

Sample Cell Calibration Directions

1. Specify the standard to be used for the calibration. Click the **List** button to display available standards. From the list, highlight one and press the **Select** button.

2. Specify the cells in the pycnometer to be calibrated. Select one or more by clicking in the box next to the cell number, which places an "X" in the box.

> **Note: from this point on, the program takes you step-by-step through the calibration by using interactive message boxes. Some are displayed in the following directions.**

3. Press the **Cell Calibration** button. Follow the directions on the message and press **OK**.
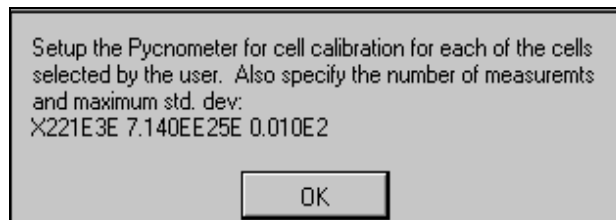
4. Put the calibration sphere in the cells marked for calibration, then click **OK**.

5. The program goes to calibration for the next shere (See below). Click **OK**.
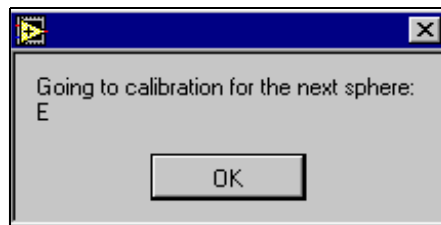
6. Follow the directions in the next message box (See below) and click **OK** when done.
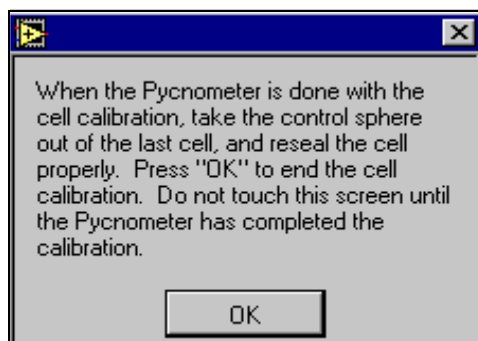
7. If you would like a printout of the calibration factors, be sure the printer is set up to the pycnometer and click **Yes** on the message box. If not, click **No**.

8. Once the calibration is done, reset the pycnometer back to the main menu and click **OK** on the message box.

Va Calibration

Calibrating the **reference cell** is slightly different than the sample cells:

1. Select a standard for the calibration by clicking the **List** button, which displays the available choices. Highlight your choice and click **Select**.

2. Click the **Va Calibration** button.

> **Note: from this point on, the program takes you step-by-step through the calibration using interactive message boxes. Some are displayed in the following directions.**

3. Follow the directions in the displayed message box and click **OK** (See below).

Reset the Pycnometer, and select a Va
calibration for the small Va, and send the
volume of the calibration sphere to the
Pycnometer:
X212 7.140E

OK
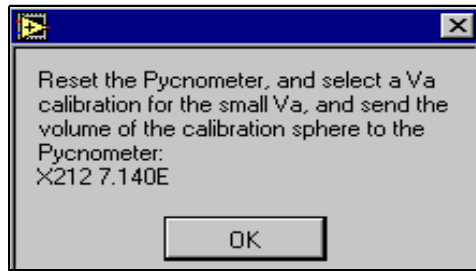
4. Make sure the pycnometer and all the cells are empty and properly sealed because the program is about to start the blank run. Click **OK** to continue.

5. Click **OK** on the next message box to start the blank run.

6. Follow the directions in the displayed message box and click **OK** (See below).

When the Pycnometer is done with the blank
run, put the calibration sphere in CELL # 4;
make sure it is sealed properly, and press
"OK" to continue the Va calibration. Please,
do not touch this screen until the blank run
is completed.

OK   Cancel
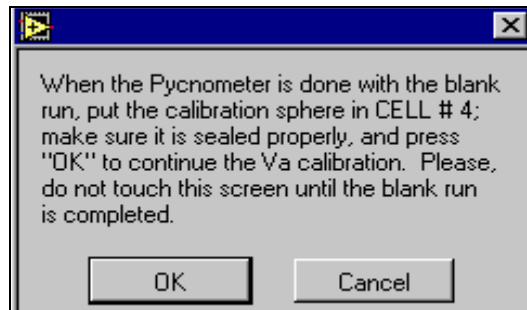
7. To start the run with the sphere in cell #4 click **OK**.

8. Follow the directions in the displayed message box and click **OK** (See below).

When the Pycnometer is done with the
Va calibration, take the control sphere
out of cell 4, and reseal the cell properly.
Press "OK" to end the Va calibration. Do
not touch this screen until the Pycnometer
has completed the Va calibration.

OK
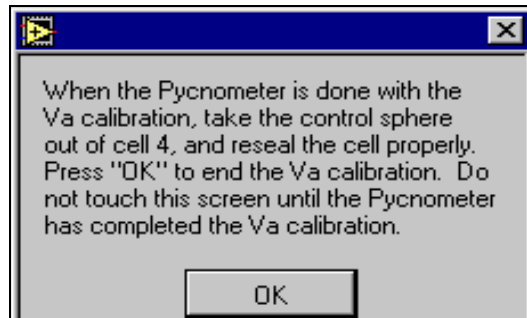
9. If you would like a printout of the calibration factors, be sure the pycnometer is connected to the printer and click **Yes** on the message box. If not click **No**.

10. Once the calibration is done, reset the pycnometer back to the main menu and click **OK**.

Measuring Mass

All mass measurements are displayed on the "Balance" window (See Figure 22).
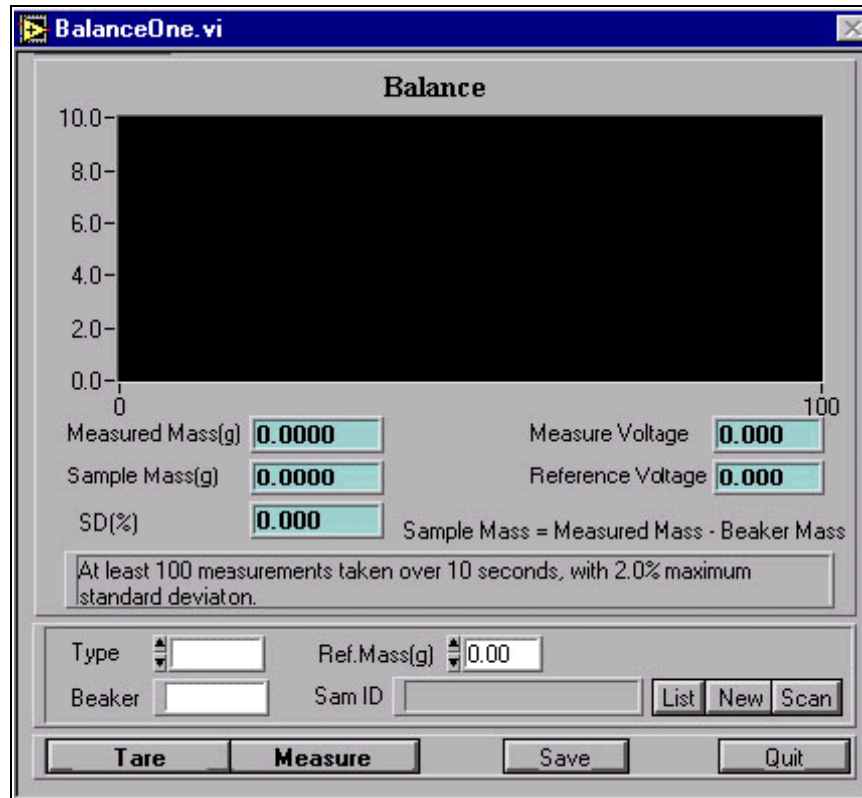
Figure 22. Mass Measurements are displayed here.

Selecting Samples

Before weighing a sample, you must select its correct sample identification. Either **select** it from the list of uploaded samples, enter a **new** sample ID, or **scan** a sample in using its bar code.

Selecting from a List

1. Click on the **List** button to display the samples already entered into the Janus database.

2. Click on the current leg number to display all samples entered for that leg (See Figure 23).
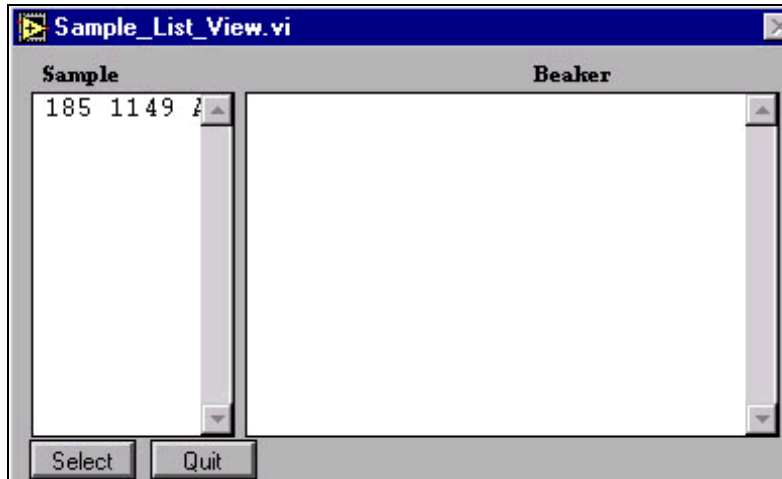
Figure 23. Select samples here.

3. Click on the ID of the sample you want to analyze.

4. Click on **Select** to export the sample ID to the "Sam ID" box on the "Balance" window.

Entering a New Sample

1. Click on the **New** button to open the "Sample ID" window (See Figure 24).

Figure 24. Enter a new sample here.

2. Enter sample information in the entry fields. Use the **Tab** key to navigate through the boxes. Use the up and down arrow keys to set the information and use the **List** button to select a beaker type.

3. Click on the **Save** button to save the new sample ID.

4. To select this new sample for a measurement, use the **List** button on the "Balance" screen

(See "Selecting from a List" p. 19).

Scanning a New Sample

1. Click on the **Scan** button to open the "Sample ID" window for scanning.

2. Click in the "ODP Barcode Top" box to activate it, and then scan the top barcode on the sample.

3. Click in the "ODP Barcode Bottom" box to activate it, and then scan the bottom barcode on the sample.

4. Notice that all sample information is automatically entered on the screen. Click **Save** to save the new sample.

5. To select this newly scanned sample for a measurement, use the **List** button on the "Balance" screen (See "Selecting from a List" p. 19).

Selecting a Sample Type

Select a sample type in the "Type" entry box. Use the up and down arrows to scroll through the list. Select either "Wet," "Dry" or "Control".

Measuring Controls

If you selected "Control" as your sample type, the screen face will change slightly. Select a control to measure by clicking on the **List** button. This opens a list of control types. Click on the control you want and press the **Select** button. This displays the control in the entry box next to the **List** button.

Selecting a Beaker Type

Select a beaker type only if your sample is "wet" or "dry." Enter the beaker type into the available entry box.

Entering a Reference Mass

Enter a reference mass into the "Ref. Mass" entry box. Use the up and down arrows to set the mass.

Taring the Balance

Tare the balance before measuring your first sample, or anytime the free balance is not recording zero, by clicking on the **Tare** button.

Measuring a Sample

Once all sample and beaker information is entered, the sample is ready to be measured. Click on the **Measure** button.

The *MAD* program takes at least 100 measurements over a ten second interval, with a maximum

standard deviation of 2.0%. These measurements are recorded on the graph.

The average measurements are recorded in the green boxes under the graph (See Figure 25). The **Measured Mass** is the mass of the beaker plus the sample. The **Sample Mass** is the measured mass minus the beaker mass. The standard deviation is also recorded. Be sure to **Save** the information before running the next sample.

Figure 25. Recorded Measurements.

Measuring Volume

Set the pycnometer to measure sample volume. Open this window from the main menu by clicking on **Pycnometer** (See Figure 26).

Figure 26. The "Pycnometer" window.

Entering Information

1. Select "Wet, Dry" or "Control" as the cell type for cells 1-5 using the up and down arrows.

2. If you selected "wet" or "dry" as the cell type, click on the **List** button to display a list of beakers. From this list, first select the current leg number in order to display all available beakers. Next, click on your beaker of choice, then the **Select** button (See Figure 27).
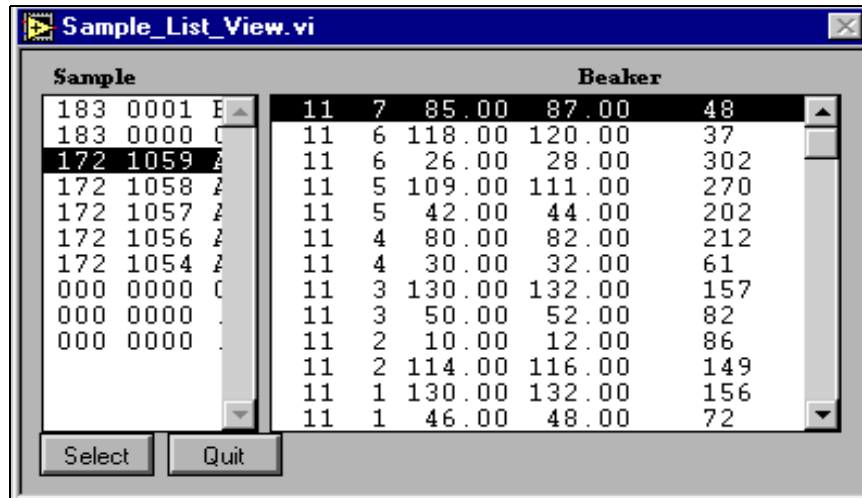
Figure 27. Select the beaker here.

3. If you selected "control" as the cell type, click on the **List** button to display a list of control standards. Click on the standard you want and then the **Select** button.

4. Once the beaker or standard is selected, the **sample ID** or **control description** is automatically displayed on the "Pycnometer" screen.

Entering a New Sample

To enter a new sample that is not already in the Janus database:

1. Click on the **New Sample** button. This open the "Sample ID" window.

2. Set all sample information using the up and down arrow. Select the beaker type using the **List** button.

3. Click **Save** to save the new sample.

4. To use the new sample, you must now select it using the **List** button on the "Pycnometer" window (See "Selecting from a List" p. 19).

Measuring a Sample

1. Once all the sample information is entered, allow the sample to purge for one minute.

2. Click on the **Measure** button. The volume information and standard deviation are recorded in the green boxes.

The MAD Process

This section is a brief overview of the process for handling samples. Moisture and Density measurements are taken on core samples by a process that involves several steps. The *MAD* software handles many of these steps, though this section does not go into software details. It only provides the cross-references.

Collecting the Samples

1. Samples are collected at the sampling table and placed in a beaker.

2. The sample ID information is entered into the database.

3. A barcode is produced which identifies the sample.

4. Each beaker used for *MAD* samples is identified by a number, which is printed on the barcode label.

5. When the sample is collected, a scoop, or measurement, may be taken. This method, know as "A" or "Fixed Wet Volume" measurement, gives the wet sample volume.

> **Note: this measurement type is only recommended if the sediment is runny and the sample has no gas pickets, so as to ensure a proper volume measurement.**

Measuring the Wet Sample Mass

> **Note: the wet mass measurement must always be taken in order to calculate the Moisture and Density properties.**

1. Use the *MAD* software to complete this step (See "Measuring Mass" p. 19).

2. Sometimes a wet volume measurement (method "B") is also taken. This is an optional step because the method can be imprecise if there are any gas pockets. This method can also be done with the *MAD* software (See "Measuring Volume" p. 22).

Drying the Samples

1. Place the samples in an oven for 24 hours.

2. Because the sample must be completely devoid of moisture, **do not set them out in the open after the drying process**. This can cause the samples to collect moisture.

3. Place all samples in the dry holding cabinets after drying.

Re-Weighing the Samples

1. Measure and record the dry mass using the balance (See "Measuring Mass" p. 19)

    > **Note: the dry mass measurement is required for *MAD* property calculations.**

2. After the dry mass measurement, the dry volume (method "C") can be taken. Use the *MAD* software to operate the pycnometer (See "Measuring Volume" p. 22).

    > **Note: at least one of the three volume measurements (A, B, or C) must be taken. The dry volume measurement is the preferred method of operation.**

Storing the Samples

1. Place the sample in a plastic bag with the corresponding barcode label.

2. Matching the beaker number on the barcode label with the number on the beaker identifies the bag.

    > **Note: this step is very important as these residues are often used by other scientists for analysis.**

Exporting Sample Data to Janus

Once samples are analyzed and the data recorded, they are ready to be uploaded to the central Janus database. See "Appendix B. File Formats" p. 29 for details on uploading.

Appendix A. MAD Installation and Setup

This appendix explains how to setup and install the Moisture and Density (*MAD*) equipment and software.

What You Need

1. A PC compatible computer with a minimum of 32 MB of RAM (64 MB recommended).
2. A hard disk drive with at least 50 MB of free space.
3. At least a 15" monitor.
4. A laser printer supported by your system (if you plan to print reports).
5. Excel (only if you plan to export data to Excel).
6. LabView drivers for the National Instruments card.
7. At least one pycnometer.
8. Two balance pods (???).
9. The connecting cables and interface box, as provided with the software.

Setting up the Hardware

Please refer to the figure on the next page for all the connection details.

1. Connect the serial port using the cable provided. This should be a straight connection from the pycnometer to the computer.
2. Connect the digital controls using the cable provided.
3. The cable end marked "Pycnometer" ends in a 16 pin connector and two loose leads. To connect this cable, follow these steps.

    • Disconnect the cable coming from the keypad to connector "P6" inside the pycnometer.

    • Plug the 16 pin connector of the cable provided (female end) in its place.

    • Plug the keypad cable into the back of the 16 pin connector (male end).

    • Connect the two loose leads to the two terminals of the reset button (order does not matter).
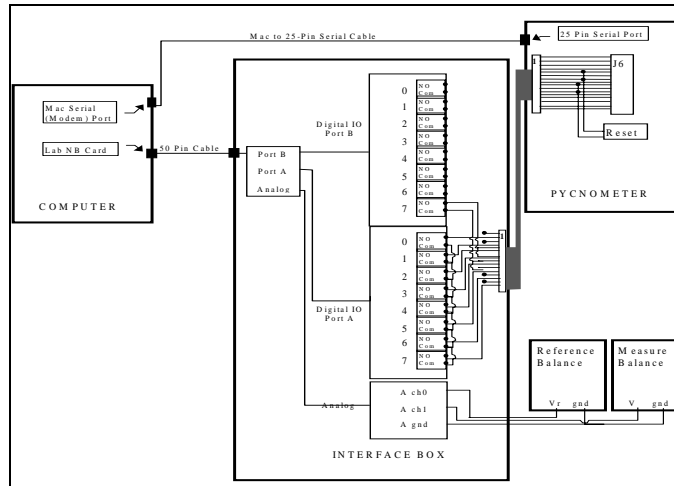
4. The end of the cable marked "Pycnometer" ends in 10 loose leads. These are connected to digital port A and B of the LAB-ND card. Follow these steps:

   • Connect all the commons in Port A together.

   • Connect one of the shortest leads (pins 5&7) to B-7-common (Port B, Bit 7, "common" out).

   • Connect the other short lead (Pins 9&11) to B-7-NO (normally opened).

   • Connect the next shortest lead (Pin 2) to A-0-NO.

   • Connect the following pins to their respective ports:

      pin 4 to A-1-NO

      pin 6 to A-2-NO

      pin 8 to A-3-NO

      pin 10 to A-4-NO

      pin 12 to A-5-NO

      pin 14 to A-6-NO

      pin 16 to A-7-NO

5. Connect the balance voltages

   • Connect the reference side balance voltage to the first analog input channel (A0).

   • Connect the measurement side balance voltage to the second analog input channel (A1).

Installing the Software

The software is provided as a CD or on the software server. The install is a basic windows installation:

1. Put the CD in the drive, or make sure you are connected to the software server.

2. Using your desktop explorer, navigate until you find the install program in the *MAD* folder on the CD or the server.

3. Double click on the file's icon to start the program that installs *MAD*.

4. The program prompts you for the location and name of the folder where you want the software installed.

5. Provide the location and name of the folder where you want the software installed. **There are no special requirements for the naming or locations of this folder**.

Starting MAD for the First Time

The very first time *MAD* is started, the program will prompt you for some extra setup information. This will also occur if all the *MAD* data files are removed (This should be done at each port call to ensure that each leg is started with a clean, empty data set).

1. The program warns that it is not able to locate its data and file setups. This is OK. The program will create those files for you.

2. For each of the different setup screens, the program asks if you would like to enter the setup information. Answer "NO" to each prompt.

> **Note: the program will use the defaults prescribed by ODP to create the setup files and run the instruments.**

3. You may change the setup of these screens at any time during the operation of *MAD*.

Appendix B. File Formats

MAD Local Database Files

Beaker Type

Table 1: Beaker Type

Beaker Type	Density	Comments
Alum	2.75	Aluminum
Pyrex	1.85	Pyrex

Calibration

Table 2: Calibration

Time Stamp	T	Mref	Bref	Mmeas	Bmeas
1996/05/14 11:32	B	0.000	0.000	0.000	0.000
1996/05/14 11:32	P	0.000	0.000	0.000	0.000
1996/05/17 12:06	B	0.725	0.458	0.559	0.426
1996/06/06 10:13	P	0.000	0.000	0.000	0.000
1996/06/06 10:33	P	0.000	0.000	0.000	0.000
1996/12/02 11:12	P	0.000	0.000	0.000	0.000
1996/12/04 16:02	P	0.000	0.000	0.000	0.000
1996/12/04 16:31	P	0.000	0.000	0.000	0.000
1996/12/04 16:41	P	0.000	0.000	0.000	0.000

Table 2: Calibration

Time Stamp	T	Mref	Bref	Mmeas	Bmeas
1996/12/05 09:12	P	0.000	0.000	0.000	0.000
1996/12/05 10:00	P	0.000	0.000	0.000	0.000
1996/12/10 09:45	P	0.000	0.000	0.000	0.000
1996/12/10 10:39	P	0.000	0.000	0.000	0.000
1996/12/16 14.23	P	0.000	0.000	0.000	0.000

Controls

Table 3: Controls

Control	Type	M-or-V	Comments
Sm-wgt	mass	5.00	small weight
Sm-sph	volume	7.07	small sphere

Control-Sample
Control   Type   Expect   C   Measur   StdDev   Time Stamp

Datapath.ini
Macintosh HD: Applications: LabVIEW 4: Data

Options

Table 4: Options

Time Stamp	Bmea	BSecs	Bal.SD	Pmea	PmaxSD	PPurge
1996/05/14 11:31	100	10	2.00	5	0.01	1
1996/05/14 11:32	100	10	2.00	5	100.00	1
1996/05/14 11:32	100	10	2.00	5	100.00	1
1996/05/14 11:36	100	10	2.00	5	100.00	1
1996/05/14 13:39	100	10	2.00	3	100.00	1
1996/12/02 11:18	100	10	2.00	5	100.00	1
1996/12/02 11:18	100	10	2.00	5	100.00	1
1996/12/02 11:18	100	10	2.00	5	100.00	1
1996/12/04 18:12	100	10	2.00	5	100.00	3
1996/12/04 18:43	100	10	2.00	5	100.00	1

Samples

Leg Site H Cor Sc Top(cm) Bottom S# Beaker-ID U F Vt(ml) Vt(sd) C Wn Mt-(g) Vd(ml) Vd(sd) C Dn Md-(g) Comments

Settings

Table 5: Settings

Time Stamp	Leg	P.Tol.	B.Tol.	BeaDen	SeaSal
1996/05/14 11:31	100	2.000	2.000	2.700	0.035
1996/05/14 11:31	165	2.000	2.000	2.000	2.000
1996/12/02 12:01	169	2.000	2.000	2.000	2.000
1996/12/04 15:46	000	2.000	2.000	2.000	2.000

Beakers
8.059 3.504
129	Pyrex	8.233 3.580
130	Pyrex	8.150 3.543
131	Pyrex	8.003 3.480
132	Pyrex	8.044 3.498
133	Pyrex	7.965 3.463
134	Pyrex	8.283 3.601
135	Pyrex	8.023 3.488
136	Pyrex	8.204 3.567
137	Pyrex	8.127 3.533
138	Pyrex	8.158 3.547
139	Pyrex	8.059 3.504
140	Pyrex	7.967 3.464
141	Pyrex	8.106 3.524
142	Pyrex	8.006 3.481
143	Pyrex	8.144 3.541
144	Pyrex	8.022 3.488
145	Pyrex	8.059 3.504
146	Pyrex	8.131 3.535
147	Pyrex	8.188 3.560
148	Pyrex	8.100 3.522
149	Pyrex	8.002 3.479
150	Pyrex	7.994 3.476
151	Pyrex	8.027 3.490
152	Pyrex	7.996 3.476
153	Pyrex	8.377 3.642
154	Pyrex	8.243 3.584
155	Pyrex	8.104 3.524
156	Pyrex	8.025 3.489
157	Pyrex	8.093 3.519

158	Pyrex	8.101	3.522
159	Pyrex	8.002	3.479
160	Pyrex	8.053	3.501
161	Pyrex	8.052	3.501
162	Pyrex	8.080	3.513
163	Pyrex	8.097	3.520
164	Pyrex	7.992	3.475
165	Pyrex	7.991	3.474
166	Pyrex	8.280	3.600
167	Pyrex	8.054	3.502
168	Pyrex	8.063	3.506
169	Pyrex	8.120	3.530
170	Pyrex	7.953	3.458
171	Pyrex	8.396	3.650
172	Pyrex	8.013	3.484
173	Pyrex	8.349	3.630
174	Pyrex	7.976	3.468
175	Pyrex	8.273	3.597
176	Pyrex	8.024	3.489
177	Pyrex	8.195	3.563
178	Pyrex	8.257	3.590
179	Pyrex	8.113	3.527
180	Pyrex	8.132	3.536
181	Pyrex	8.027	3.490
182	Pyrex	7.977	3.468
183	Pyrex	8.075	3.511
184	Pyrex	8.024	3.489
185	Pyrex	8.149	3.543
186	Pyrex	8.322	3.618
187	Pyrex	7.985	3.472
188	Pyrex	8.017	3.486
189	Pyrex	7.942	3.453
190	Pyrex	8.145	3.541
191	Pyrex	8.201	3.566
192	Pyrex	8.017	3.486
193	Pyrex	8.019	3.487
194	Pyrex	8.038	3.495
195	Pyrex	7.977	3.468
196	Pyrex	8.022	3.488
197	Pyrex	7.961	3.461
198	Pyrex	8.068	3.508
199	Pyrex	7.979	3.469
200	Pyrex	8.228	3.577
201	Pyrex	8.278	3.599
202	Pyrex	8.073	3.510
203	Pyrex	8.012	3.483
204	Pyrex	8.100	3.522
205	Pyrex	8.085	3.515
206	Pyrex	8.341	3.627
207	Pyrex	8.051	3.501
208	Pyrex	8.006	3.481

209	Pyrex	8.001	3.479
210	Pyrex	8.030	3.491
211	Pyrex	8.041	3.496
212	Pyrex	8.268	3.595
213	Pyrex	8.269	3.595
214	Pyrex	7.998	3.477
215	Pyrex	7.997	3.477
216	Pyrex	8.100	3.522
217	Pyrex	8.022	3.488
218	Pyrex	8.081	3.513
219	Pyrex	7.994	3.476
220	Pyrex	8.132	3.536
221	Pyrex	8.154	3.545
222	Pyrex	8.164	3.492
223	Pyrex	8.014	3.484
224	Pyrex	8.105	3.524
225	Pyrex	8.092	3.518
226	Pyrex	8.021	3.487
227	Pyrex	8.036	3.494
228	Pyrex	8.154	3.545
229	Pyrex	8.234	3.580
230	Pyrex	8.102	3.523
231	Pyrex	7.974	3.467
232	Pyrex	7.956	3.459
233	Pyrex	7.993	3.475
234	Pyrex	7.956	3.459
235	Pyrex	8.117	3.529
236	Pyrex	8.270	3.596
237	Pyrex	8.115	3.528
238	Pyrex	7.989	3.473
239	Pyrex	8.039	3.495
240	Pyrex	8.086	3.516
241	Pyrex	8.077	3.512
242	Pyrex	8.075	3.511
243	Pyrex	8.029	3.491
244	Pyrex	8.041	3.496
245	Pyrex	8.067	3.507
246	Pyrex	8.092	3.518
247	Pyrex	8.132	3.536
248	Pyrex	8.056	3.503
249	Pyrex	8.085	3.515
250	Pyrex	8.072	3.510
251	Pyrex	8.145	3.541
252	Pyrex	8.420	3.661
253	Pyrex	8.073	3.510
254	Pyrex	7.989	3.473
255	Pyrex	8.099	3.521
256	Pyrex	8.038	3.495
257	Pyrex	8.013	3.484
258	Pyrex	8.052	3.501
259	Pyrex	7.863	3.419

260	Pyrex	8.213	3.571
261	Pyrex	8.045	3.498
262	Pyrex	8.073	3.510
263	Pyrex	8.110	3.526
264	Pyrex	8.067	3.507
265	Pyrex	7.992	3.475
266	Pyrex	8.094	3.519
267	Pyrex	8.100	3.522
268	Pyrex	7.908	3.438
269	Pyrex	7.985	3.472
270	Pyrex	8.041	3.496
271	Pyrex	7.928	3.447
272	Pyrex	8.060	3.504
273	Pyrex	8.053	3.501
274	Pyrex	7.972	3.466
275	Pyrex	8.072	3.510
276	Pyrex	8.094	3.519
277	Pyrex	8.256	3.590
278	Pyrex	8.028	3.490
279	Pyrex	8.026	3.490
280	Pyrex	8.080	3.513
281	Pyrex	8.151	3.544
282	Pyrex	8.000	3.478
283	Pyrex	8.075	3.511
284	Pyrex	8.109	3.492
285	Pyrex	8.037	3.494
286	Pyrex	8.092	3.518
287	Pyrex	8.089	3.517
288	Pyrex	8.049	3.499
289	Pyrex	8.073	3.510
290	Pyrex	8.024	3.492
291	Pyrex	8.036	3.494
292	Pyrex	8.044	3.497
293	Pyrex	8.037	3.494
294	Pyrex	7.959	3.460
295	Pyrex	8.077	3.492
296	Pyrex	8.046	3.498
297	Pyrex	8.042	3.497
298	Pyrex	8.080	3.513
299	Pyrex	8.162	3.549
300	Pyrex	8.244	3.584
301	Pyrex	8.288	3.604
302	Pyrex	8.047	3.499
303	Pyrex	8.113	3.492
304	Pyrex	8.035	3.494
305	Pyrex	8.159	3.547
306	Pyrex	8.030	3.491

307	Pyrex	8.336	3.624	
308	Pyrex	8.019	3.487	
309	Pyrex	8.172	3.553	
310	Pyrex	7.971	3.466	
311	Pyrex	8.153	3.545	
312	Pyrex	7.963	3.462	
313	Pyrex	8.032	3.492	
314	Pyrex	7.996	3.477	
315	Pyrex	8.006	3.481	
316	Pyrex	8.260	3.591	
317	Pyrex	7.907	3.438	
318	Pyrex	8.132	3.536	
319	Pyrex	8.106	3.524	
320	Pyrex	7.983	3.471	
321	Pyrex	8.073	3.510	
322	Pyrex	7.940	3.452	
323	Pyrex	8.191	3.561	
324	Pyrex	8.151	3.544	
100	Pyrex	8.341	4.509	Make believe beaker

MAD Export Files for Janus Upload

MAD Export Files for Microsoft Excel