

WRMSL and STMSL Quick Start Guide

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IMS graphic user interface for WRMSL.

Welcome

This guide is designed to help the scientists and technicians use the Whole Round Multisensor Logger (WRMSL) and upload the data to LIMS. For detailed information on the WRMSL please refer to the Whole Round Multisensor Logger User Guide.

Processing Samples

Running Cores on the WRMSL

1. Open **IMS Main** from the WRMSL computer desktop (*Figure 1*).
2. The program will initialize all of the instruments and then display the main user interface (*Figure 2*).
3. To set the measurement parameters for each of the instruments select **DAQ: Measurement Editor**. Pro Tip! Always set measurement intervals as whole number divisors of the distance between the sensors (30 cm), or the movement routine will be highly inefficient!
4. In the **Measurement Editor** window, select the instrument you wish to configure and then click in the **Instrument Parameters** window (*Figure 3*).
5. In the **DAQ Parameters** window the user may alter the settings for each instrument and may set the instrument to **online** or **offline** mode. Select **OK**. The changes will be written to the configuration file. (Note: If you hit return, it selects the **CANCEL CHANGES** button. You must click on the **ACCEPT CHANGES** button to apply changes.)
 - a. **GRA Settings** include: Measurement Interval, Edge, Acquire Time, Setting the Instrument Online or Offline, and Setting the Control of the measurements On or Off.
 - b. **MS Settings** include: Measurement Interval, Edge, Number of Points to Average, Setting the Instrument Online or Offline, Setting the Control of the measurements On or Off, and Setting the Drift Correct On or Off.
 - c. **PWL Settings** include: Measurement Interval, Edge, Number of Waveforms to Stack, Voltage Target, Setting the Instrument Online or Offline, and Setting the Control of the measurements On or Off.
6. Select **Finished** in the **Measurement Editor** window. Check that the **System Status** and **DAQ Parameters** displayed on the main interface window (left side of page) have updated to the values specified.
 - a. DAQ Parameters (steps 4 to 6) should be used only when the instruments parameters need to be changed.
7. Set the water core pusher ID by selecting **DAQ: Pusher Setup**. In the window, scan the water core label. When the user selects **Accept** the ID of the water core will be written to the configuration file.
 - a. Use this step only when a different water pusher is used, the program already keeps the information of the regular water pusher.
8. To begin measuring a core, place a section on the track. Top (blue endcap) should be placed nearest the sensors and bottom should be nearest the pusher.
9. Select **Start** from the Main Interface window.
10. Enter the section label identification in the **Whole Round MSL Section Information** window (**Figure 4**). This is typically done using the bar code scanner, but may be done manually or by searching the LIMS database. If scanning the label, make sure the cursor is in the **SCAN** box before scanning the label.
11. Select **Measure**. The pusher will move the core through the instruments and return to its home position once it reaches its furthest limits.
 - a. During a measurement the user may adjust the number of stacked measurements.
12. When the first section is finished the **Whole Round MSL Section Information** window will appear again.
 - a. If there are more sections to be measure place the next section on the track, scan the label, and press measure. Repeat for all sections of the core.
 - b. For best results it is recommended that sections be measured IN ORDER. If it is not possible to measure the sections in order it is recommended that a pusher core is used after each section.
13. Once all of the sections from a core have been measured, place the water core standard on the track and press **Pusher End Sequence**. The standard will push the final section through the sensors and a standard measurement will be made on each sensor.
14. The files will be written to: C:\data\IN.



Figure 1. WRMSL Desktop Icon

 The main WRMSL User Interface Window is a complex dashboard. On the left is a vertical sidebar with the "IMS" logo and version information (10.3, Fix 0, Build 0). Below the logo are menu items: "File", "DAQ", "Motion", and "Instruments", followed by a large "START" button. The "System Status" section shows green indicators for "INSTRUMENTS ONLINE", "DAQ ENGINE ONLINE", "MOTION CONTROLLER ONLINE", and "SYSTEM READY". "Current DAQ Settings" lists "GRA" (Interval 1.0, # 3), "MS2" (Interval 5.0, # 3), and "PWAVE" (Interval 5.0, # 100), all with green status indicators. "Track Positions" shows "X-AXIS 0.00 CM". "Current Operation" is set to "IDLE" with "IMS Configuration Unlocked". The main area contains three overlapping windows:

- GRA Display:** A plot of Density (g/cm³) vs. Offset (cm). The y-axis ranges from 1.3 to 1.5, and the x-axis from 0 to 150. A control panel below the plot shows "DAQ STATE: IDLE", "MODE: Section", "TYPE: Drift #1", "OFFSET: 0.0", and "DENSITY: 1.00". Other parameters include "LIVE TIME: 0.0 s", "ROI CNT/SEC: 0", "HIGH VOLTAGE: 203.0 v", "NOT VALID" indicator, "TRUE TIME: 0.0 s", "TOTAL CNT/SEC: 0", "TARGET VOLTAGE: 200.0 v", and "STD of FIT: 0.00".
- Magnetic Susceptibility-MS2:** A plot of Susceptibility vs. Offset (cm). The y-axis ranges from 25.0 to 55.0, and the x-axis from 0 to 150. A control panel shows "MS: 0.000", "DAQ STATE: IDLE", "MODE: Section", "TYPE: Drift #1", "OFFSET: 0.0", "RANGE: 1.0", "CORR FACT: 1.000", and "UNIT: SI".
- P-WAVE:** A plot of Velocity (m/s) vs. Offset (cm). The y-axis ranges from 1400.0 to 2800.0, and the x-axis from 0 to 150. A control panel shows "Velocity: 0.0 m/s", "Transducer: Reciprocate", "TIME: 3.000s", "SYS DELAY: 15.747us", "TYPE: Drift #1", "VELOC MIN: 1500.0 m/s", "STACKED: 0", "LINER DELAY: 0.000s", "MODE: Section", "VELOC MAX: 2000.0 m/s", "DISTANCE: 0.000 cm", "DAQ STATE: IDLE", and "VELOCITY FILTER: OFF".

 On the right side of the P-WAVE window, there is a "COMPOSITE Wfms" section with a plot of Amplitude (V) vs. Time (73u to 77u). It includes options for "Stacked & Smoothed", "Raw Stacked", and "Gauss Fit". A "STACK" control is visible on the far right.

Figure 2. Main WRMSL User Interface Window with GRA, MS, and PWL displays.

 The "WRMSL Measurement Editor" window has a dark gray background. At the top, it says "Measurement Editor". Below this is a "Select Instrument" section with a list box containing "GRA", "MS2", and "PWAVE". To the right of the list box is a "Parameters" section with a text area containing:


```
Instrument: GRA
Online?=On
Int= 2.0
Method: Single
Edge= 2.0
Drift=Off
Control=On
```

 At the bottom of the window, there is a "Finished" button. A small note "click in box to edit values" is located above the button.

Figure 3. Measurement Editor Window

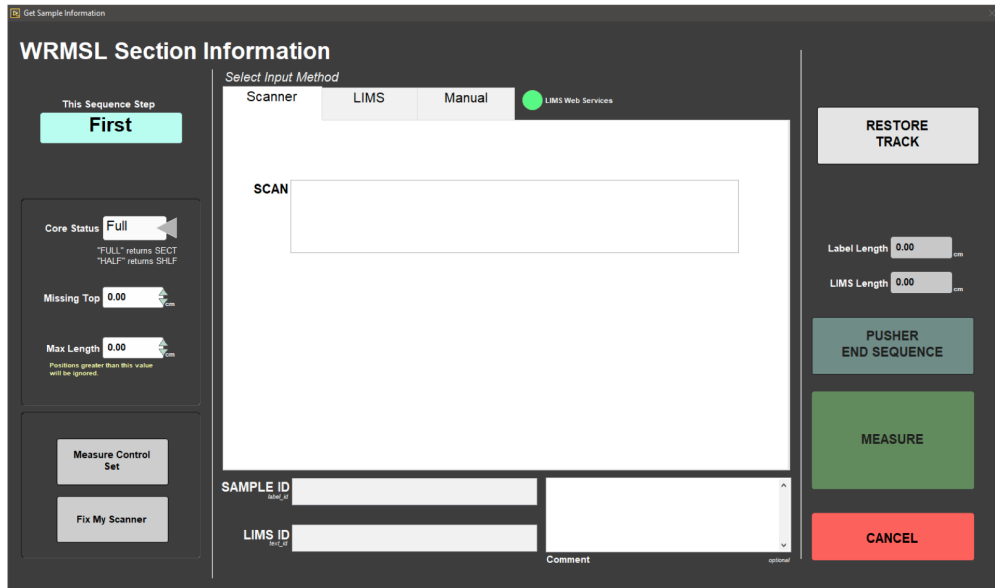


Figure 4. Whole Round MSL Section Information window

Calibration Procedures

Calibrations should regularly be performed for each of the sensors. Calibration utilities are available under Instruments.

GRA Calibration

1. Select **Instruments: GRA Calibrate** and the **GRA Calibration** window will open (*Figure 5*).
2. Place the GRA standard (standard with the telescoped aluminum in *Figure 6*) on the track with the top (end with blue tape) nearest the sensors. The aluminum must be level, A level line is drawn on the bottom of the core. Also, make sure that the ridge of the bottom endcap fits into the groove of the pusher (*Figure 7*). You may need to loosen the screws of the black plate on the pusher, just enough for it to slide.
3. Press **OK**. The pusher will move the core into the GRA sensor range.
4. The data points will be visible on the GRA Calibration graph. When the calibration measurements have completed, the window will display a density check. You may choose to apply or cancel the values at this time (*Figure 8*).
5. After you select apply the data will be written to the configuration file.
6. GRA Calibration is complete.

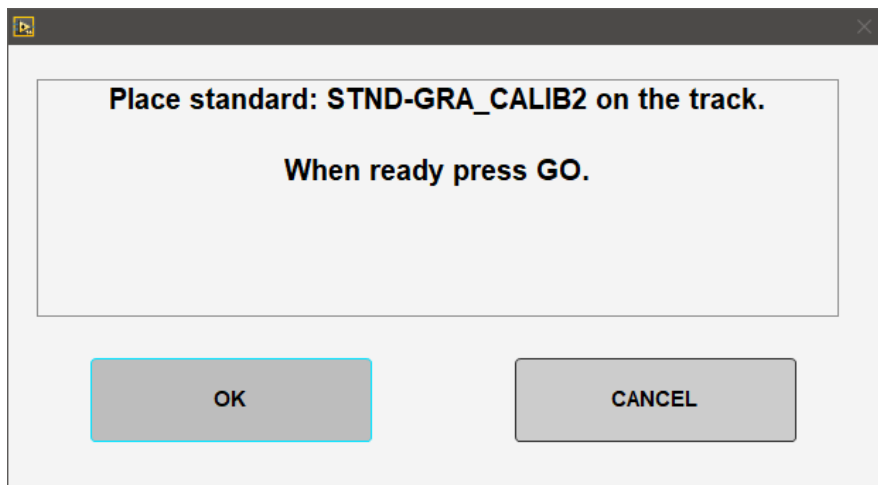


Figure 5. GRA Calibration window.

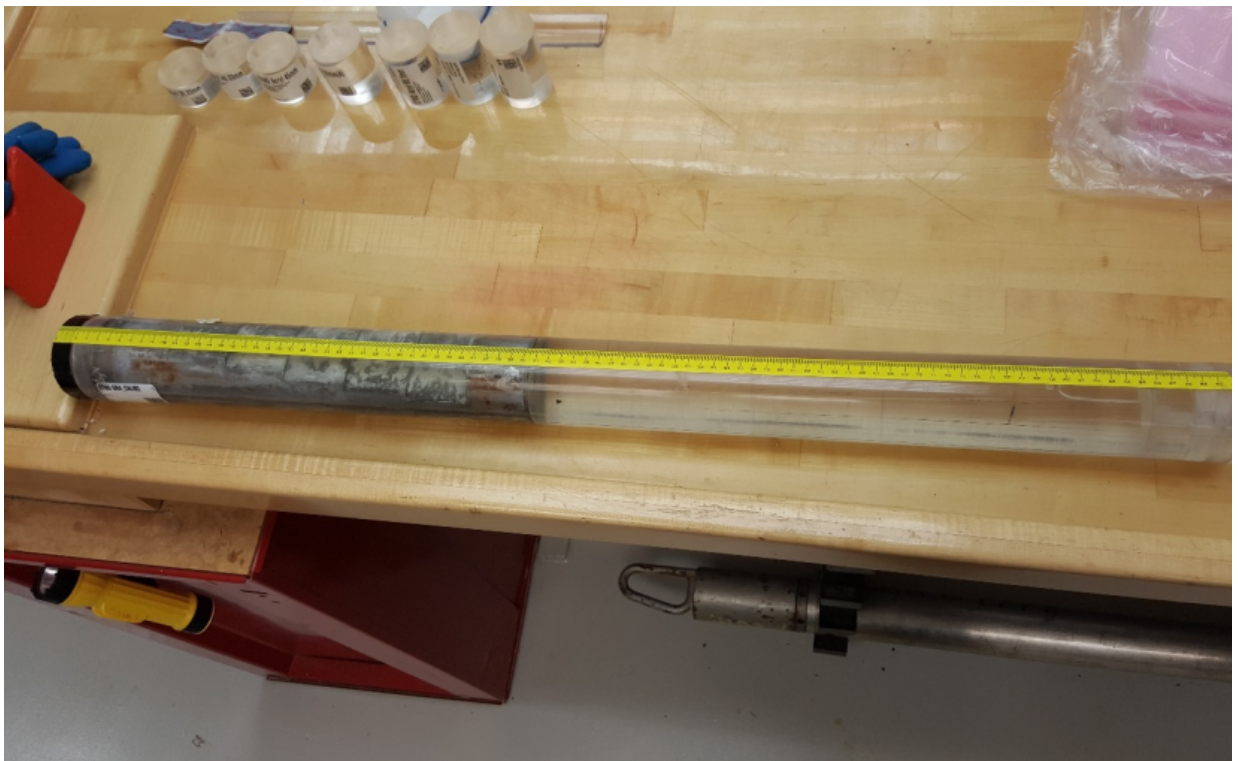


Figure 6. GRA Standard with telescoped aluminum at the top of the standard

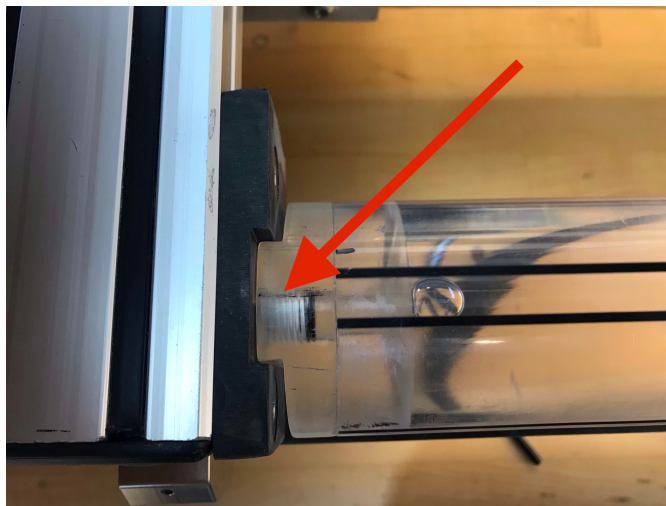


Figure 7. Correct positioning of the Al-water standard on the track

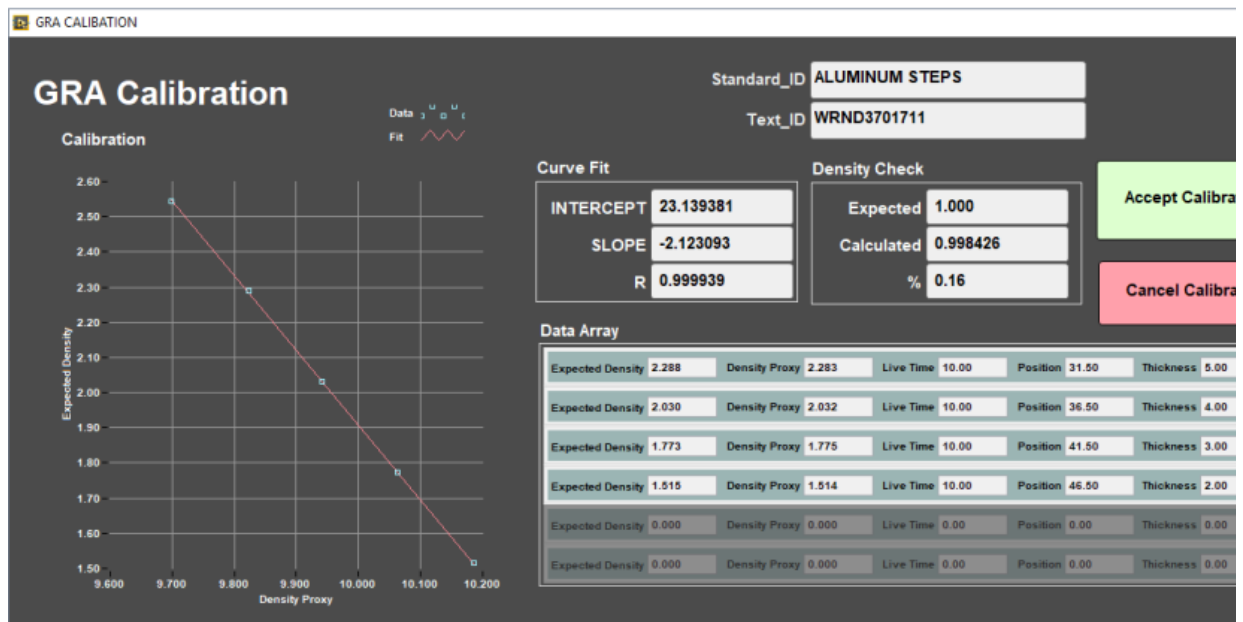


Figure 8. GRA Calibration after data acquisition

PWL Calibration

1. In the **Instrument** menu, select **PWL: Calibrate-Utility** and the **PWL Calibration Utility** window will open (Figure 9).
2. Follow the steps on the right side of the **PWL Calibration Utility** window. Note: **Liner Delay correction** is excluded when using the Aluminum standard.
3. Place the aluminum standard between the transducers. Close the transducers. Aluminum standard width is 76.25mm. Select **Laser Offset Correction**. Confirm that the **Distance** matches the standard's width.
4. Enter the Aluminum Standard velocity. 6295.00 m/s. Select **Determine System Delay**. Verify that the **Velocity** matches the Aluminum Standard's velocity.
5. Open transducers. Remove Aluminum Standard.
6. Position the Water Standard between transducers. Close transducers. Turn on **Liner Delay**. Enter the water's temperature (water room temperature) under **Temperature**. Select **Auto H2O Velocity Update**. Liner Thickness is 2.580 mm. Click Determine Liner Velocity.
7. **Accept Changes**.
8. Open transducers and remove the water standard.

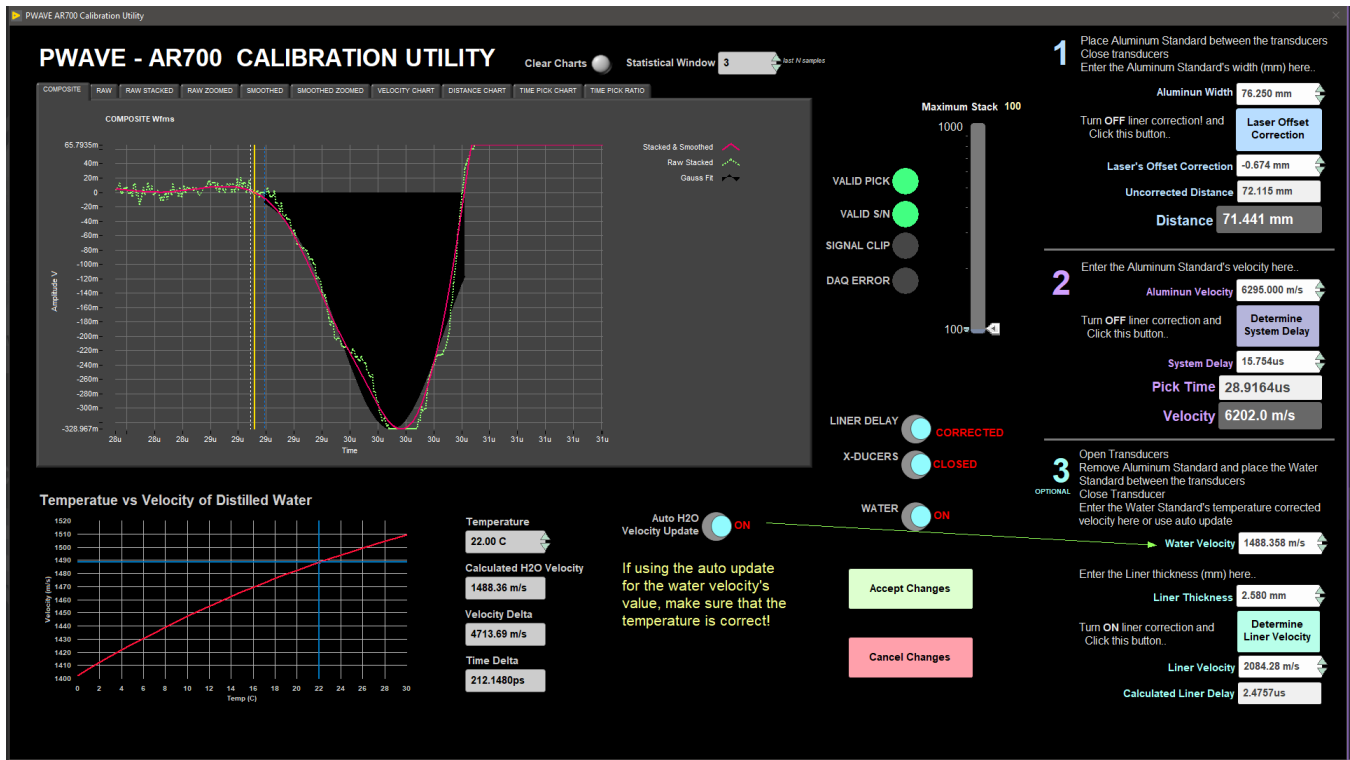


Figure 9. PWave Calibration Utility.

Adjusting Measurement Parameters for the Waveform

You can use the controls Requested Stack and Threshold in **PWL Calibration Utility** window to adjust the measurement parameters to obtain a better waveform (*Figure 8*). These parameters may need to be adjusted if the section material has changed.

Requested Stack: Sets the number of waveforms to average to increase the signal-to-noise ratio. Note: stack should not be any lower than 50.

Threshold: A millivolt value is used to find the first arrival peak. For more information on the first arrival determination, see **Appendix 1** in **WRMSL User Guide**. Note: Threshold bar should be above 10m.

Uploading data To Lims

To up load the data into LIMS, MegaUploadaTron (MUT) must be running. If not already started do the following:

1. On the desktop click the **MUT** icon on the task bar (*Figure 9*) and Login.
2. The **LIMS Uploader** window will open (*Figure 10*).
3. Check **Automatic Upload** in the lower right hand corner and click minimize. MUT will run in background. The uploaded data will move from C:\data\IN to C:\data\archive. If there is any problem with the uploading of the file, it will go to C:\data\error.

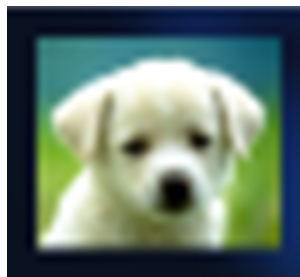


Figure 9. MUT Icon.

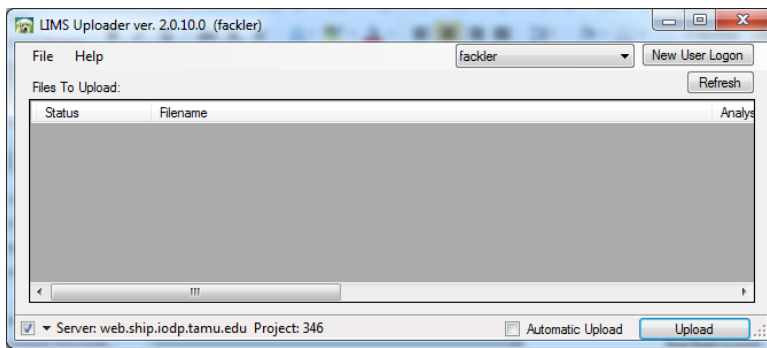


Figure 10. LIMS Uploader Window

Credits

This document originated from Word document *Whole Round Multi Sensor Logger (WRMSL)* by B. Novak, edited by T. Cobb and S. Frazier. Credits for subsequent changes to this document are given in the page history.

Archived Versions

- [WRMSL Quick Start Guide](#) (2013 vintage): Physical Properties Whole Round Multi Sensor Logger (WRMSL) Quick Start Guide