
MI5 Multishot Orientation Tool Quick Start Guide

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Introduction

This guide is meant to help technicians set up the MI5 multishot orientation tools, deploy the tools, and collect and process the data after a survey. Currently there are 3 multishot tools each operated by Aceeca Meazura Palm Pilots.

Procedures

This section includes procedures for:

1. Starting an orientation survey (see [Starting a Survey](#)).
2. Ending the survey and collecting the data from the tool (see [Ending a Survey and Collecting Data](#)).
3. Downloading the data to a PC from the Palm and applying calibration data (see [Managing and Downloading Data to a PC for processing](#)).

Starting a Survey

1. Place 6 AA batteries into the multishot tool by removing the screw at the T-slot end. Twist the T-slot end counter-clockwise and remove the end. Batteries should be placed with positive end in first.
2. Check the O-rings on the battery plug and place a small amount of silicon lubricant (DC 111) on the O-rings.
3. Replace the T-slot end. Note there is a small pin that locks into the J-slot to secure this end piece. Once these are aligned press the end piece in and turn it clockwise. Replace the screw.

Note: A light at the other end of the tool should be flashing. This light indicates when the tool is active and will stop flashing after the tool has been inactive for a minute. The tool may also beep.
4. Turn on the Palm Pilot and open *Inclin*.
5. Select **Survey**.
6. Give the survey a unique name (8 characters). It is advised that the name be the site name and first core that will be oriented with the tool (e.g., 1440A1H).
 - The file name cannot include special characters: !@#\$%^&()_{}~`
 - It is not advisable to use the default time and date stamp as the survey name, as it will appear as an 8 digit number after the survey and the name will have little meaning.
7. Select **OK**.
8. In the SPECIFY SURVEY START TIME window select **By Delay** and input a *Start Delay* (minutes) value of 0; select **OK**.
 - This will start the survey immediately and the tool will collect data.
 - The **By Time** option is not typically used. This option allows the user to set a time when the survey will begin. Setting the time leaves room for more error.

9. In the SHOT INTERVAL (sec) window, set the interval to 10 sec and select **OK**. The tool will take a measurement every 10 sec.
10. In the HEADER INFORMATION window, leave the **Declination** (east of north) set to 0.
 - OPTIONAL: Select the **Details** button to open another window.
 - In the DETAILED INFORMATION window enter site name, date of survey (may automatically fill in, but check that it is accurate), and operator name. Select **OK**. Once back in the HEADER INFORMATION window, select **OK**.
11. INITIATE SURVEY window will appear. Connect the probe to the Palm Pilot via the interface cable and the Palm HotSync cable.
 - The probe connector is under the brass cap by the indicator light.
 - Align the pins properly when connecting the interface cable to the multishot tool. Twist the outer shell of the connector until it clicks into position.
 - Connect the serial port ends of the HotSync and interface cables and plug the HotSync cable into the Palm.
 - Once connections are made, Select **OK**.
 - The Palm displays a status window as it begins to communicate with the tool. The Palm checks memory capacity and battery life. An INFORMATION window shows the results. Press **OK**.
 - a. If the battery life is nearing 8.4 V, the batteries should be switched out.
 - b. If there is data still stored on the probe, stop the setup process, clear the probe after ensuring the data have been downloaded, and then restart the survey setup process.

If the memory is nearing capacity, once you press **OK** the Palm displays a CONFIRM window and asks if you want to continue. At this point select **NO** and clear the probe before starting a survey. ENSURE THE DATA HAVE BEEN DOWNLOADED TO A COMPUTER BEFORE CLEARING THE PROBE.

If the probe is not cleared, a COMMUNICATIONS ERROR may display. Error should clear after probe is cleared.
12. Grease the O-ring inside the cap with a small amount of silicon lubricant.
13. Replace the brass end cap. The green light will flash once per second, and a red light should flash once every 10 sec. The red light indicates when the tool is taking an orientation measurement.
14. The MONITOR SURVEY window displays on the Palm while the probe collects data.
 - DO NOT SELECT DONE ON THIS SCREEN. The **Done** button ends the survey.
 - The Palm can be shut off while the survey is running or it will automatically sleep after it sits inactive. Place the Palm in a location where it will not be handled until the survey is complete.
15. Apply silicon lubricant to the O-ring on the outside of the instrument cap and to the two O-rings on the end seal with the key.
16. Place the tool inside the pressure case.
17. Attach the end seal with key to the tool and hand screw the end seal into the pressure case.
18. Pass the tool to the Core Techs.

Ending a Survey and Collecting Data

1. Turn the Palm on.
2. Select **Done** in the MONITOR SURVEY window. Palm will now display the main *Inclin* window.
3. Select **Collect Data** on the *Inclin* main window.
4. In the COLLECT DATA window, select **Recover Data**.

- Select **YES** to confirm action.
- Next a window will ask you to connect the probe to the Palm. Once connected select **YES**.
- The Palm will begin recovering data from the tool. While this is occurring a RECOVER DATA window will display and recover data record count will display. When the Palm is done recovering data the Palm will return to the main *Inclin* window.

This process may take a while for long surveys. Make sure the Palm battery is charged or that the Palm is plugged in. When the recovery is complete, the Palm will go to sleep.

Note that if you recover data to a Palm that did not start the survey, no data will appear in **Manage Data**, but the survey is on the Palm. Every time you select **Recover Data** the Palm stores this data until you HotSync (i.e., 5 recover data commands will result in your .txt file containing the survey 5 times.)

Managing and Downloading Data to a PC for processing

1. Select **Manage Data** (surveys only appear here if they were started and recovered onto the same Palm).
2. The resulting SELECT SURVEY window shows the data stored in the Palm and allows you to process and view survey results, select holes for re-download or re-HotSync from the tool, or delete data from the Palm.
 - You will see a check box for selecting holes, an index value, the name of the hole, and the tool serial number.
 - **Bold face** hole names mean the data has not been HotSync'd with a computer.
 - An asterisk after a hole name means the data have not been downloaded from the tool yet. (Note: Using the **Recover Data** function will not remove the asterisk, so the asterisk should always appear.)
3. Once you see your survey in this list, select **Cancel** then **Home** on the Palm.
4. Connect the Palm to the PC via the USB HotSync cable. The computer may ask you to identify which Palm you are using (Vanilla Ice, Ice T, or Ice Cube).
5. Select **HotSync** in the Palm main menu. The data can be downloaded to the JR6 computer, the DescLogik computer, or the downhole lab computer, which all have *Inclin* installed.
6. In the HotSync window **Local** should be selected and the connection type should be **Cradle/Cable**.
 - If **Cradle/Cable** is not indicated, select the **HotSync** tab in the upper left hand corner and select **Connection setup**. Select **Cradle/Cable** from the menu.
7. Press **HotSync** button on Palm. The Palm should chime to indicate the HotSync is in progress and a progress window should appear on the PC.
 - If the Palm does not chime and the progress window doesn't appear on the PC, cancel the HotSync. Retry the HotSync.
8. When the HotSync is complete, navigate to the *Inclin* data folder and check to ensure a .raw file and a .txt file are in the recover folder.
 - .raw is the calibration file for the tool.
 - .txt is the recovered unprocessed data.

The .txt file appears to only download to an individual computer once. If there is an issue, you may need to recover data again from the tool. **This is why you should not delete data from the probe until all .txt files are backed up.**
9. Change the .txt file name from the generic name (Data 001.txt) to the hole/survey name (U1449A1H.txt). The .raw and .txt files should have the same name.
10. Copy these files to a backup folder. These raw files should not be edited.

11. Open and run the *CreateInclinfile.exe* program
 - The .txt file data is not useful unless the calibration is applied. *CreateInclinfile.exe* will format a file that can be opened and processed in *Inclin*. *CreateInclinfile.exe* can only be run on computers with *Labview Runtime*.
 - Save the file with the hole/survey name and indicate that it is an edited file and add a .raw extension (e.g., U14491Hedit.raw).
12. Open the new file created by *CreateInclinFile.exe* in *Inclin*.
13. Ensure the data table includes all of the variables (hole ID, dip, azimuth, temperature, magnetic tool face, magnetic field strength, magnetic dip, accelerometer output, Mag-X, Mag-Y, and time).
14. Save.
15. The .prn file will be the data with the calibration applied and the file will include headers.
16. Identify the parts of this file that correspond to times when individual cores were oriented.

Appendix

Clearing Data from the Multishot Tool

The MI5 tool has a large capacity memory, but it is best not to run the tool for a new survey if the memory is more than 50% full. Our standard procedure is to clear the probe after the data has been downloaded and backed up. DO NOT clear the probe until the data is backed up, as you may need to recover the data again. There is a threshold value for the percentage of full memory on the tool that will prevent a new survey from being started. It will cause a communications error after you attempt to start a new survey with the memory almost filled. To avoid this error the user must clear the data from the probe. Ensure the data is already downloaded to a computer and that the files are readable before clearing the probe.

1. Go to the *Inclin* main window (screen with Survey, Collect Data, and Manage Data).
2. Tap on the **Inclin** tab in the upper left corner.
3. Tap on the **Options** tab that is displayed.
4. Select **Clear Probe**.
5. The Palm will ask if you wish to ABORT the action. Select **NO** if you wish to clear the probe.
6. The next window will ask if you wish to continue. **After this point the data are not recoverable.** Select **YES**.
7. An information window will appear and state "Probe Memory is Cleared"; select **OK**.

Clearing the Palm Memory

The recover data function we use to generate our files downloads a large number of data points. To remove surveys from the Palm (after they have been downloaded to the PC and processed) follow these steps.

1. Select **Manage Data**.
2. Place a check mark in the box next to the survey name. Tap on the **Select Survey** tab in the upper left hand corner. Press **Delete Selected**.
 - A window will appear warning the user that holes names cannot be repeated for new holes until the probe memory has been cleared.
 - Try to clear the probe prior to clearing the Palm to avoid any communication errors.
 - Select **OK**.
3. A confirm window will appear. Select **YES** to delete the hole from the Palm.

4. If the data has not been saved to a computer or downloaded to the Palm yet, the Palm will ask you to confirm the action once again. Select **YES** if you wish to continue with the delete process.

Software and Applications

CreateInclinFile.exe – Application for combining raw data with tool calibration information. The resulting .raw file can be opened in *Inclin* where the data will be calibrated.

Inclin – Program from Icefield tools that applies the calibration information to the raw data and outputs a variety of statistics for each measurement.

File Formats

.txt file - contains the recovered data from the orientation tool

.raw file - contains the calibration information for each tool. The .raw files are combined with the .txt files using *CreateInclinFile4.exe* and are then saved as new .raw files. The new file is readable by *Inclin*.

.prn - Output file from *Inclin* that includes headers with the data variables for the entire survey.

.out - Output file from *Inclin* that contains the data variables for the entire survey.

.edt - Output file from *Inclin* with the calibration data and raw data from the MI5 tool.