

Avoiding data corruption problems with MobileMapper Pro SD cards

26 July 2007

Some MobileMapper Pro customers have reported recording data on SD cards that they cannot download into MobileMapper Office or read with Windows Explore and a card reader. In some of these cases, the SD card seems to be damaged and is inaccessible by either the MobileMapper Pro receiver or by a card reader. In other cases, job files can be displayed by the receiver but not by MobileMapper Office. Recording data without inserting an SD card into the MobileMapper Pro receiver causes the receiver to log data to internal flash memory. There are no reports of data corruption when logging to internal memory, but internal memory is very limited and SD cards in general are a much more secure memory medium.

A. If you cannot download data off the SD card:

1. Reset the receiver:
 - a. With the receiver off, simultaneously press the **NAV** and **PWR** buttons until you see a small box with two zeroes appear on the screen
 - b. Use the arrow cursor to increment first the right-hand zero to a "2" and the left-hand zero to a "3"
 - c. With the box displaying "32" press the **ENTER** button twice to erase all memory and turn the receiver off. This will NOT delete any files on the SD card
 - d. Turn the receiver on, select a language of operation and re-initialize the receiver to your location
2. Scan the card for errors using Windows Explore and a card reader:
 - a. Place the SD card in the card reader
 - b. Run Windows Explore (or click on the **My Computer** icon on your desktop)
 - c. Right-click the card reader's drive and click the **Properties** option
 - d. Click the **Tools** tab on the Properties window
 - e. Click the **Check Now** button under **Error Checking**
 - f. Check both options to automatically fix file system errors and scan for and recover bad sectors
 - g. Click **Start**

If you do not have a card reader, you may scan the card in the receiver, but this takes about 45 seconds for each megabyte of card storage, so you will want to insert fresh batteries. Then press **MENU > Card Utilities > Test Card**. When the progress bar reads **100%**, press the **ESC** button.

3. Put the SD card in a card reader and use MobileMapper Transfer to put the data from the card to your PC: in MobileMapper Office click **File > Download from GPS**; in MobileMapper Transfer click **File > Connect > PC Drive**

4. If none of this works, the data is probably not recoverable or not displayable in MobileMapper Office. You should reformat the card in the receiver by pressing **MENU > Card Utilities > Format Card**. Then record a short test job to see if the problem persists. If it does persist, the card may be physically damaged and should not be used.
5. If the problem persists with other SD cards, the receiver is defective and should be repaired by Magellan. You may obtain a Return to Manufacturer Authorization (RMA) at <http://pro.magellangps.com/en/support/rma.asp>.

B. Before logging data:

1. Use only SD cards with 128 MB of memory or less. Using 256 MB cards can cause keystroke errors leading to data corruption.
2. SD cards from different manufacturers may be formatted in different ways. Please format all new SD cards inside the MobileMapper Pro receiver before logging any data to it. To do this, turn the receiver on and press the **MENU** button. Press the up arrow twice to the **Card Utilities** option and press **ENTER**. Select the **Format Card** option. Note: this will delete all files from the card. Magellan recommends that you reformat the SD card before every project or on a monthly basis to help prevent problems in the future.
3. Make sure you are using the latest version of MobileMapper Pro receiver firmware. The current version, 6.56, is available for free download from <ftp.magellangps.com> in the /Mobile Mapping/MobileMapper Pro/Firmware/ folder.
4. Make sure you are using the latest version of MobileMapper Office. Version 3.40 is available for free download from the /Mobile Mapping/MobileMapper Pro/Software/ folder of <ftp.magellangps.com>. If you have receiver firmware version 6.56 and certain older versions of MobileMapper Office, you won't be able to download the data into MobileMapper Office.
5. Before you start a new project, you should always reset the receiver according to the instructions in Step A1.
6. Before creating or opening a job, press the **NAV** button until you come to the **Position** screen and can confirm that the receiver has calculated a position.

C. While logging data in the field:

1. If you select the option to record data for post-processing, let ALWAYS close any open feature and then close the job before turning off the MobileMapper Pro receiver or removing its batteries.

2. After opening a job for post-processing wait at least 10 seconds before logging the first feature. Do not close the job until 10 seconds after recording the last feature.
3. If your batteries ever fail while recording a job, replace them and open a new job *using the same feature library*. When you download both jobs using the same session of MobileMapper Transfer, they will be displayed together in the Map Display area as an untitled job. Use the **File > Save As** function to give this untitled job any name you wish and the result will be as though the batteries had never failed. We recommend replacing the batteries when the receiver's Satellite Status screen report that ~ 30% of the charge remains. Most rechargeable batteries either will not supply sufficient voltage to power the receiver or will do so for only a very limited time.
4. If possible, do not record more than about 2 MB of data into the same job – for the same reason that you wouldn't work on a Word document for eight hours without saving it at least a couple times. Instead, close the job and create a new job *with the same feature library*. After you transfer the multiple files to MobileMapper Office using MobileMapper Transfer utility, all of them will be opened in the map display of MobileMapper Office as an untitled job (but only if they were all recorded using the same feature library). By clicking **File > Save As**, you can combine all of the data in a single job. You can also combine any number of jobs, if all were created with the same feature library, by clicking **File > Import**, selecting **Job Files (*.mmj)** in the **Files of type** field and browsing for the job.
5. It takes twice as much time for electronic devices to access SD cards with twice as much memory. This can affect performance, and MobileMapper Pro is not immune to it. The maximum size SD card we recommend for MobileMapper Pro is 128 MB. If you want to take more memory to the field, take more than one card. Just remember to close any feature and then the job before you replace the SD card.
6. Sometimes the SD card socket inside the MobileMapper Pro receiver becomes loose and fails to hold the card tightly. When this happens data can be corrupted on the card and essentially lost. When you try to download the corrupted file(s), the receiver will display a "Data Card Loose" error message and MobileMapper Office will be unable to download the corrupted data. A temporary work-around is the place 1-2 cm of Scotch tape on the underside of the SD card just below the 9 copper contact strips. No part of any of these contacts should be covered with tape. This will make the SD card fit more tightly in the receiver and prevent the "Data Card Loose" error. Re-insert the card, reset the receiver (see Step A1) and then format the card by pressing **MENU > Card Utilities > Format Card**.

7. Another work-around is to remove the SD card from the receiver, insert fresh batteries and turn the receiver back on - without any card inside. Without an SD card, the MobileMapper Pro receiver will record data to internal flash memory. Because data corruption occurs only when writing to SD cards, not using a card prevents data corruption. Assuming a 1 Hz logging rate and minimal descriptions, there is enough flash memory in a MobileMapper Pro for about:

- 16 hours of real-time positions
- 2.7 hours of positions for post-processing
- 3.6 hours of reference station data

A more serious problem in not using a card is that if the receiver loses power while a job is open, the entire job will be lost. Because battery life is affected by ambient temperature, battery age, etc., it is extremely important to check the remaining charge frequently by pressing the **NAV** button until you come to the **Satellite** screen with its charge indicator at the bottom. Before the indicator says there is one-quarter charge left:

- Close any open feature immediately
- Close the job
- Turn off the receiver
- Replace the batteries