README FOR AUTOCAMS RELEASE 1.00a

May 5, 2013

This is the first full release since late November, 2012.

All the files in the 1.00a release are simply unzipped to the C:\CAMS directory except for the items noted below.

Installation Instructions:

1) Backup the files in the CAMS directory.

2) Backup the files in the CAMS\Cal directory

3) Download the following files:
    http://www.davesamuels.com/cams/AutoCams_1.00a_base.zip
    http://www.davesamuels.com/cams/AutoCams_1.00a_scripts.zip
    http://www.davesamuels.com/cams/AutoCams_1.00a_other.zip

4) Unzip the files to the CAMS directory.

5) If you have already been using AutoCams and this is an upgrade instead of a new installation, follow these instructions:

    a) The "...other.zip" file contains two files that contain some of your local settings and parameters. In order to avoid overwriting your settings, we have named these two files such that they won't overwrite your settings.   Your job is to go through the files and add any entries that are new. Also, double-check all the entries and ensure they have the correct settings.   The two files are:
        AutoCams.bat.ini
        AutoCams.Params.ini
    The names in the "...other.zip" file are:
        AutoCams.bat.new.ini
        AutoCams.Params.new.ini

    See the "cams.pdf" documentation, section 24 for details on these settings. Please contact me on the forum if anything is missing or needs further explanation.

    b) Modify the "AutoCams.Params.ini" file and change the "bat_vers" entry to:
    bat_vers=1.00a

    This will cause the menu to display the correct version at the top.

6) If you are new to AutoCams, perform the following steps:

    a) You should download the cams.pdf document and use it to learn how to configure and setup your configuration at your site.   Some of the things you will need to do are:

    • Be sure you have installed and tested your clock synch application.   (Some use Dimension 4

- a freeware download)

- Refer to section 5 in the cams.pdf document for setup instructions:

  - Edit and configure the AutoCams.Params.ini file.

  - Configure the CameraSites.txt files

  - Edit the LASTSETTINGS.txt file

  - Test using CameraLiveViewer

  - Capture a few minutes and calibrate (see sections 6 and 7).

  - Configure the Twilight table (see section 8).

  - Set up a Windows Schedule Task (see section 9) and test that.

What's new in this Release

There are many changes in this release and I will attempt to describe some of the more important ones in this list.

- **New Runtime DLLS** - All the .exe programs have been recompiled with a new Visual Studio version and require updated runtime library DLLs.   If you attempt to run any of the CAMS executables and see an unhandled exception error, you might try copying a different msvcr100 DLL.   The zip file is set to use the 64 bit DLL.   If you are not using 64 bit Windows, you may need to copy the msvcr100_32bit.dll to **msvcr100.dll**.
  - At the same time, a memory overrun has been fix which should avoid intermittent problems some of you may have been seeing.
  - You may also require the new **vcredist_x86.exe**
  - There is also an **s2255.dll** for one of the grabbers.
- A few new programs are worth noting:
  - **FTP_Thumbnails.exe** - This program produces a large bitmap containing an array of thumbnails for each FF file in the specified directory.   There are options for downsampling and skipping files to reduce the size of the output file.   It will produce one bitmap for each camera.   For reasons that I can explain on the forum if you're interested, we can no longer use the AutoCal to hunt for a time during the night for manual calibration.   The FTP_Thumbnail program replaces this function as well as adding some additional nice use cases that we didn't have before.   I have incorporated use of the thumbnails program in the "7d. Manual Calibration" option, where you can optionally choose to produce a thumbnail in order to help you decide on the calibration file.   I've used this and it is very beneficial and speeds up the process.   Also, I have incorporated two new utility menu options.   Option "70. Thumbnails" produces using the default decimation factor (resampling rate) of 1:2 and it skips every 2 minutes if you select the CapturedFiles directory (similar to how AutoCal used to work when used for getting a quick check on the night).   There is a hidden option "70a" which is designed as a fireball check.   You see, extremely bright bolides and super-bolides are filtered out

in the normal meteor detection phase.   This is mainly to filter out very low flying aircraft and helicopters.   However, because of this, some fireballs might be missed. They are easily manually detectable using option 70a.   The 70a fireball detection doesn't skip any files, but the decimation factor is set to 7.   This makes the file size manageable.   When the AutoCams system produces these large thumbnail files, it is designed to delete them by default.   It provide an option for you to keep them otherwise. I'm thinking that we should probably be running the fireball thumbnails every morning.   If you find that we should have something like this as part of the standard daily workflow, mention it in the forum and we can discuss how you'd like it to work.   My initial thoughts are, if we implement this, to delete the bitmaps during option "13. Package Working dirs into SubmissionFiles dirs".   One of the reasons that I incorporated it as a hidden option was that it felt to me that it should replace option "6. Check Skipped Frames and dropped frames".   Lastly, this program is controllable with command-line arguments. There is a stand-alone Thumbnails.bat script that you can use outside of AutoCams.

- **SPFF_SingleFileViewer.exe** - This program allows you to review one or more FF files - similar to how Confirmation works.   It allows you to review the full 8.5 seconds of the selected FF file.   You can go [F]orward to the next file in the directory or [B]ackward to the previous file in the directory.   However, it doesn't overwrite your FTPdetectinfo*.txt file in your confirmation directory.   It has a few nice features and a few features that I wish it had.   My workaround for some of the missing features is implemented in options "72. Single File Viewer (first file)" and "73. Single File Viewer (choose starting file)".   Option 72 is based on option 73, so I'll explain option 73. When you run option 73, a file chooser dialog appears allowing you to select the starting file to watch.   Unlike with confirmation, the camera associated with that file become the only camera that it will review.   For that reason, I have implemented in these AutoCams options to specify the camera and go back into the program.   A word of caution in selecting the starting file... You may be fooled into believing that you're working on the directory related to the AutoCams capture session (based on date/time). However, since autocams has no way to know what the executable remembers, it may display the open file dialog in a directory that is different from the one you are focusing on.   Just be careful with that.   Once you select the starting file, the window at the top-left will be the "Video Payback of Sequence".   There is also the same 8.5 second video, but all the stars are removed.   The Max Pixel thumbnail displays a static image that may or may not have a streak.   The Save Commands window allows you to (1) Write AVI file, (2) Write JPEG mean, sig, maxpix, maxfrm (without AVI), and (3) Write AVI and JPEGs.   The thing I like about this program is that it allows me to review an odd event or a very bright event... PLUS... it allows you to capture a full-resolution video of the event.   When you choose to produce a video, you can tell it how many consecutive FF files to include with the video.   Every 34 seconds of video adds an additional 1GB to the AVI file.   Lastly, this program is controllable with command-line arguments.
- **FTP_Confirmation.exe** -   Now has a static Max Pixel view.   This is really a nice addition.   In using it the last several weeks during confirmation, it is much easier to pick out birds and airplanes.
- **Option 7d Manual Calibration** - This routine has been improved to incorporate the new thumbnails viewer.   In addition, the math has been fixed to produce more reliable results when it tries to give you a hint as to your starting RA and DEC values.
- **Logging** - The logs now follow the session that was actively being worked on.   They are

migrated into the appropriate Logs directory of the corresponding SubmissionFiles directory for safekeeping.
- **Camera2LiveViewer.exe** and **Camera4LiveViewer.exe** - These programs allow you to test multiple cameras working at the same time without saving the captured images to disk.

Other changes include:

- **7unzip.bat** - Logging improved.
- **AutoCams.bat**
  - Moved the version tracking into the AutoCams.Params.ini file.
  - Waits 6 seconds before starting to allow for a calling script to complete writing to the log files. This corrects a confusing log where it would jumble and intermix log information from two scripts at once. Minor annoyance.
  - Improved logging to redirect the log file to the SubmissionFiles directory or to a Logs\session directory.
  - Improved performance of directory lookups in option 3.   Also improved the heuristic to be able to tell which ArchivedFiles directory matches the CapturedFiles session directory. That way, it doesn't ask the user so many questions.
  - Manual Calibration now asks which camera you're calibrating.   You have to calibrate each separately.
  - Hopefully, the calibration file indicator is finally corrected.
  - Manual Cal now incorporates the thumbnail previewer.
  - Improved the code around launch option "44. Multi-tasked Meteor Detection" better.   It now automatically calls option "44b. Merge Detect" after a successful "44".
  - Fixed small bug in Option 53. Meteor Movies.
  - Changed how it launches option 54. Coincidence.
  - I haven't yet incorporated the two new Camera2LiveViewer and Camer4LiveViewers.   I shall do that in the next release.
  - Improvements and bug fixes in option 61. Pre-DVD Archive.
  - I added option 71. Spectral Prescreen.   I haven't seen it work because it only works on spectral files.   I will probably remove that.
- **CaptureTwoAndDetect.bat**
  - This script provides all the logic for both single/dual capture with/without simultaneous detection.   Before it starts, we've added a 6 second delay to allow the FTP_LaunchCapture.bat script a chance to finish writing to the log files so as not to jumble the log sequencing.
  - It now supports aborting upon failure instead of going on to AutoCams in autonomous mode.
  - Logging was improved.
  - It supports a kind of simulation mode, which is controlled by settings in the AutoCams.Params.ini file.
  - It now reads the CaptureStats.log file and reports on various issues that have arisen during capture.
  - We've added the ability for it to automatically perform the multi-tasked meteor detection and merging of the resulting partial detect files afterward.
- **CheckFreeSpace.bat**
  - Improved/fixed calculation of MB/GB/etc by having str_math.bat call powershell to do the math.

- Fixed a calculation problem regarding number of seconds in a day and number of MB in a GB.
- There is a chance that it won't work for those who have older versions of windows. For those of you who have this issue, you're supposed to be able to download and add powershell to your older systems from microsoft.
- **CheckTwilight.bat**
  - Fixed math issues for disk space calculation
- **str_math.bat**
  - changed to forward math problems to powershell.
  - Sometimes uses the -command "[math]::round(!bat_estFreeMB!,3)" option for rounding and truncating to a number of digits.
- **Coincidence.bat**
  - The FTP_Coincidence.exe is only available to network coordinators and it needs to remain proprietary. It is not included as part of AutoCams. However, AutoCams has implemented and it facilitates the calling of the coincidence program.
  - There were several changes to the coincidence script including:
    - improved robustness, error checking, and logging.
- **CoincidenceUpload.bat**
  - This script was designed by me (a network coordinator) to share my coincidence results with other team members. The script does this as follows:
    - It reads an ftp upload command file "ftp_upload.txt". This file has 4 text lines in it that any network coordinator can use for this same purpose:
      ```
      bat_ftppassword=password
      bat_ftpsite=davesamuels.com
      bat_ftpuser=user
      bat_ftpdir=web/cams/coincidence
      ```
    - Checks to see if Coincidence has been run and checks to see if it actually found any coincidences (by checking the size of the SummaryOrbit file)
    - Then it copies only the informational files that pertain to the coincidence results to a temp directory, and makes a zip file out of that directory. Of course, the zip file is md5 hashed and checked to see if it is the empty zip file hash.
    - Then it uploads the zip file to the server specified in the ftp_upload.txt file and then downloads a separate copy (for verification testing). During this procedure, it performs a before/after hash check and also unzips the contents to a temp directory
    - All the temp files, zip files, and such are cleaned up before ending.
- **CreateCalFileList.bat**
  - Performance improvements and minor bug fixes.
  - Logic added to not perform if it already exists.
- **FixDetectPaths.bat**
  - fixed minor bug in locating the detect file in some cases.
- **GetDetectFile.bat**
  - Fixed a bug that wasn't properly detecting when no directory was specified in argument 2
- **GetFFDirectoryListing.bat**
  - Fixed bug in listing multiple cameras and properly identifying the first/last FF file for each camera as opposed to the first/last for the directory.
- **indent_*.bat**
  - Improved the logging and fixed the ability to use RedirectLogs.bat to redirect the log output to a new location.

- **indent_pause.bat**
  - Added debugging code to facilitate a poor-man's break point and variable query option.
- **MakeCaseListing.bat**
  - Improved ability to detect failure so a calling routine has the option to not continue if this script returns and error code.
- **MergeDetect.bat**
  - Improved logging and help text.
- **MergeDetectFiles.bat**
  - Improved logging and help text.
- **MovieFromDetect.bat**
  - Makes an AVI file from the confirmedFiles dir and zips it.
  - Improved logging
- **ParseDir.bat**
  - Improved logging and help text.
- **RedirectLogs.bat**
  - New script to redirect the log files while processing. This is essential when running options 3, 13, 14, 15 and when initially starting.
- **SkippedFrames.bat**
  - Fixed bug when multiple cameras are used in reporting first/last file on a per-camera basis. It was reporting the last file for each camera as the last file of the last camera.
- **StageFromConfirmed.bat**
  - Lots of changes this time for this script.
  - Added ability to move the log files during and after the procedure.
  - Improved performance by changing how long directories are scanned.
  - Improved performance by changing how extremely long detect files are scanned and patched.
  - Improved logging
  - Improved proper handling of failures and abort options
  - Improved handling of when the call to "submit.email.bat" fails.
  - Added new output showing the MeteorCount, FF DIR, and CAL Dir.
- **str_math.bat**
  - A new script to handle decimal math better. Originally, it was able to specify the number of decimal digits, but I found it was too slow to perform division, which was the main purpose (as well as handling numbers bigger than 2gb). So now it calls powershell.
- **StripHeader.bat**
  - Improved help text.
- **StripHeaderNASA.bat**
  - Fixed help text typo
- **StripHeaderVBS.bat**
  - improves performance when having to write out an extremely large detectfile. It generate VBS code to do it and then calls the VBS script.
  - Improved logging and help text.
- **submit.email.bat**
  - fixed several problems the affected reliability.
  - improved ability for the calling script to detect when this script fails and react accordingly.
  - Improved logging and outputs
- **Thumbnails.bat**

- See the discussion above
- **ValidateCal.bat**
  - Fixed some bugs
  - Added checking for A, C, and Mean O-C values.   Reports if they aren't right.
  - Improved help text.
- **ZipDir_7za.bat**
  - Made a bunch of changes in Febrary but I don't remember exactly what they are now.   Seems to have something to do with how option 61 runs.
- **ZipLogs.bat**
  - Fixed bugs in logging and added the new logging code.