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HGMF INTERPRETER

Microbial Colony Counter

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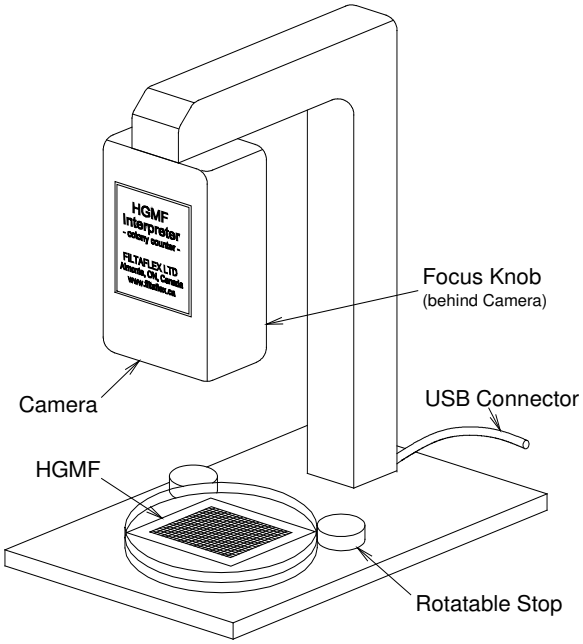


The HGMF Interpreter

UNPACKING YOUR HGMF INTERPRETER

The shipping package contains:

- The HGMF Interpreter Camera unit
- An Installation CD
- This Manual

SYSTEM REQUIREMENTS

- CPU speed 250 MHz or faster
- USB 1.0 or 2.0 port
- 128 MB RAM minimum
- Windows 98 or later
- Internet connection (preferred but not essential)
- 8 MB disc space for program files and database - extra will be required for image storage
- (Note: filed .jpg images of HGMFs occupy approximately 45-60 KB of disc storage space, depending on their complexity)
- Display/Graphics/Monitor - although the HGMF Interpreter will operate at resolutions down to 800x600 pixels, best results will be obtained at settings of 1280x1024 pixels or higher, with "True color" (24 or 32-bit color). A 17" monitor or larger is preferable

INSTALLING THE CAMERA

- Place the Camera on the bench where it will receive normal lab illumination. Avoid direct sunlight and, if possible, illumination variations across Petri dishes caused by shadows from other equipment.
- Plug the Camera's USB connector into your computer's USB port. Windows should detect new hardware and install the correct driver. If you are requested to obtain a driver from an external disk insert the CD, navigate to the folder "Camera Video Drivers" and follow the instructions.

INSTALLING THE SOFTWARE

- Please first read the CD's "README.TXT" file for up-to-date instructions.
- Read the Section below, regarding software piracy.
- Installation is easiest if you have an Internet connection - the Installation program will transmit to the Vendor basic information about the system it is setting up the software on. You will not be asked to type in personal information. You can install the software without an Internet connection but you will have to contact the Vendor to obtain a time-limited Installation Code Number.
- Insert the CD. If Setup does not start automatically use "RUN (CD drive)\SETUP" or navigate to and run SETUP.EXE on the CD.
- It is strongly advised that you use the default folders suggested by the installation program.

GETTING STARTED

- When you press "Start | Programs" you will see "HGMF Interpreter" in the list of programs (it has an "HGMF" icon). To access the program easily in future use the right mouse button to create a desktop shortcut.
- Double click the HGMF Interpreter icon. The program will load.
- Use a pen to make a mark in one corner of an HGMF and place the HGMF in a half-filled Petri dish under the camera. Note the rotatable Stops - set them so that the HGMF aligns centrally under the Camera, as indicated by the onscreen image.

The following adjustments will require several seconds to appear onscreen:

- *Resolution*: From the Interpreter menu select "Tools-Video Format". Check that "Resolution" is set at 640 x 480 pixels.
- *Video Quality:* From the Interpreter menu select "Tools-Video Source" and the tab "Main". Make sure the radio button "Optimized for best image quality" is clicked.
- Observe the HGMF - the mark you made should appear the right way around - if not, from the Interpreter menu select "Tools-Video Source" and the tab "Image". You have options to "Mirror Image" or "Flip Image"
- *Focus:* The Camera was shipped prefocussed. If the image is unfocussed, slowly rotate the knob behind the lens to reach maximum sharpness.

That's it! Your HGMF Interpreter should be ready to use. If you still experience problems, contact the Vendor via:

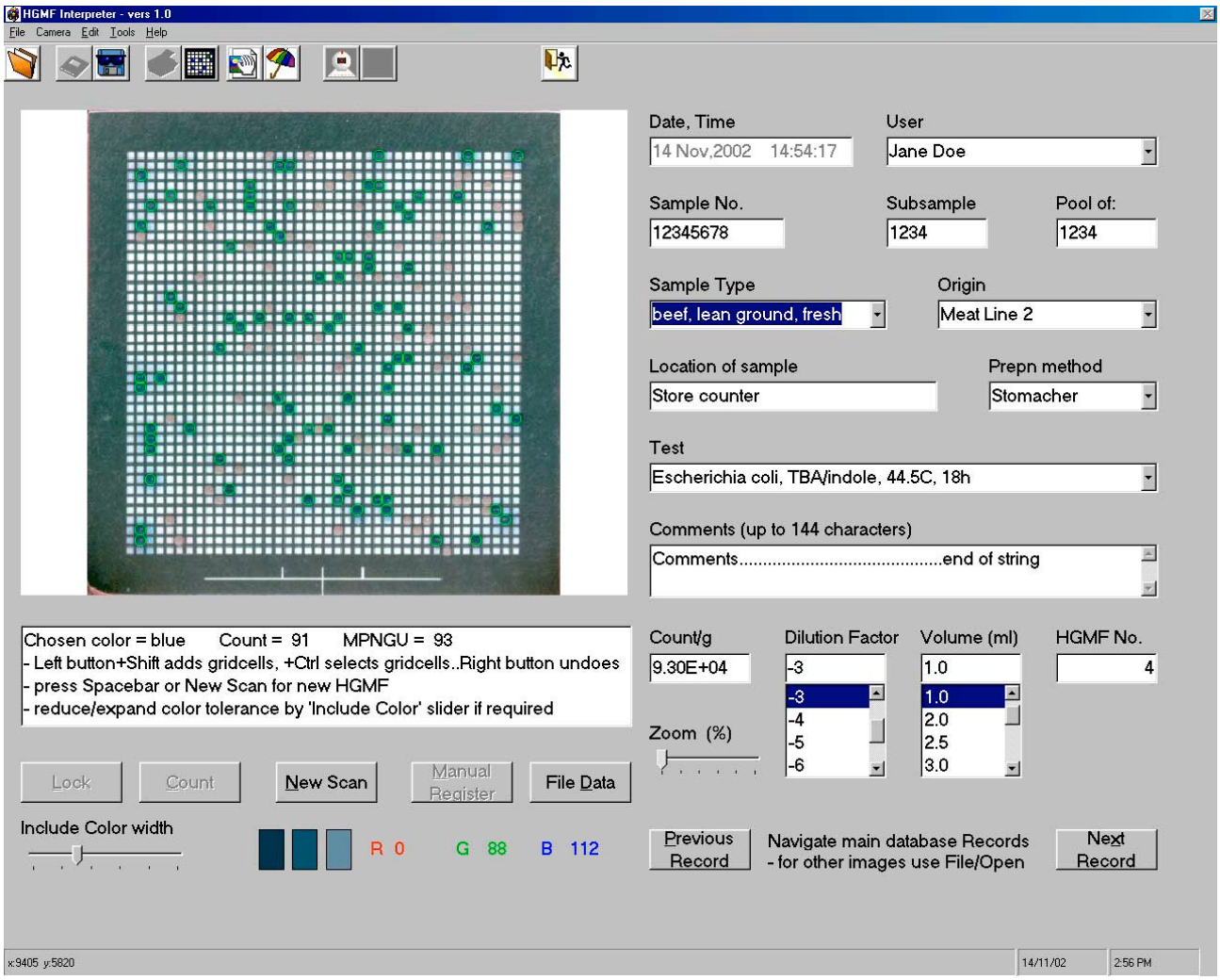
- Tel: 613 256 3066
- Fax: 613 256 8681
- Email: tsharpe@filtaflex.ca

Store the Installation CD in a safe place. You may make a copy for archival purposes.

(One more thing): ***- PLEASE READ THE MANUAL AT LEAST ONCE BEFORE STARTING...***

The HGMF INTERPRETER

Overview



Typical HGMF Interpreter screen just before filing data

The HGMF Interpreter was developed by Filtaflex Ltd. to count microbial colonies on ISO-GRID HGMF™ hydrophobic grid membrane filters. It comprises a stand-mounted camera connected to a computer via a USB port, and dedicated image analysis software operating under Microsoft Windows. The camera used in the current version of the HGMF Interpreter produces images of 640x480 pixels.

The HGMF Interpreter will operate in two modes. In "real time"mode it will recognize an HGMF placed under the camera and calculate ("register") the positions of its 1,600 grid cells. When you indicate (with the mouse) the desired type (color) of target colonies, the HGMF Interpreter will flag grid cells containing colors close to the chosen color and display the Most Probable Number of Growth Units (MPNGU). You can then indicate *dilution factors* and *inoculum volumes* and read the sample's *Count/gram*. You then have the option of:

- immediately counting another HGMF;
- adding the sample data to a database file;
- also filing a .jpg image of the HGMF for further examination at a later date.

In cases of "difficult" HGMFs (e.g., badly obscured grids) you can use the mouse to help the computer accurately "register" the HGMF. And whenever an HGMF is being counted you can control the range of colonies included in the count by using the Shift and Ctrl keys in combination with the left and right mouse buttons, to ensure that the count completely reflects the target distribution.

In "File" mode you can use the HGMF Interpreter to examine file images (produced either by its own camera, or from other sources such as a scanner). If images were originally obtained from the Interpreter's camera the various text boxes will also display the text data filed when the image was saved.

System Requirements
CPU speed 250 MHz or faster
USB 1.0 or 2.0 port
128 MB RAM minimum
Windows 98 or later
Internet connection
8 MB disc space for program files and database - extra will be required for image storage.
(Note: filed .jpg images of HGMFs occupy approximately 45-60 KB of disc storage space, depending on their complexity).
Display/Graphics/Monitor - although the HGMF Interpreter will operate at resolutions down to 800x600 pixels, best results will be obtained at settings of 1280x1024 pixels or higher, with "True color" (24 or 32-bit color). A 17" monitor or larger is preferable.

Copying this Software
Your HGMF Interpreter was purchased as a combined software and camera hardware unit. *The software was developed to work properly only with the camera unit that was purchased with it and may give unpredictable and unreliable results with other camera hardware.* When you purchased the HGMF Interpreter your organization was classified as a "Registered Organization" by the Vendor, and any "owners" of computers within a Registered Organization are classed as "Registered Owners". You are authorized to copy or install this software on as many computers as you wish within a Registered Organization and operate any one of these as an HGMF Interpreter by plugging the camera into one of its USB ports before starting up the software. *If you are not authorized to use or copy this software you are advised to read the Section* **Protection Against Piracy**

Protection against Piracy
A Registered Organization (see **Copying this Software**) may install the software on as many computers as it wishes within the Organization and operate any of these as an HGMF Interpreter by plugging the camera into its USB port. Be aware that, before it completes the software installation process on any computer, the installation program *will transmit (by Internet) details of ownership of the computer* to the Vendor. If you are not a Registered Owner or are not within a Registered Organization do not continue with the installation.

Light Levels
The HGMF Interpreter will operate satisfactorily in normal laboratory ambient light levels. Minor intensity variations across the HGMF will not affect performance. Avoid excessive light levels (e.g, direct sunlight) on the HGMF. If the light level is too low small horizontal lines may appear inside the HGMF grid cell image - these can cause grid cells to be counted by mistake - avoid this condition by increasing the illumination level. A "Moiré pattern" may appear on the image when the only illumination is from certain types of fluorescent lamps - if this occurs try to arrange a contribution from an incandescent lamp or daylight.

The camera has an automatic exposure control. After removing your hand from the Petri dish the camera may require a few seconds to accommodate to the changed light level - the image on the monitor may brighten or darken. It is not necessary to wait until a steady-state is reached - you may press Lock (or Spacebar, or Enter) whenever the image colors seem sufficiently saturated for the comfort of your own eyes.

Image Jerkiness
The frequency at which the image strobes or jerks is governed partly by the inherent frame refresh rate of the camera and by the CPU speed - it will be less noticeable at higher CPU speeds. Push the Petri dish against the HGMF Interpreter's stops and rotate the HGMF *slowly* until it is suitably aligned - by moving too quickly you may overstep the position.

Camera height
The HGMF Interpreter is shipped with the camera height set to provide optimum image size for HGMFs in Petri dishes approximately 2/3 full of agar. At this agar depth the HGMF image occupies approximately 90% of the vertical height of the picture box. For thinner agar layers the image will appear somewhat smaller because the HGMF is further from the camera. It is not essential for the HGMF image to be the optimum size; however, if desired it may be increased digitally using the slider labelled "Zoom %" on the screen. The Zoom control is set at zero when the program starts and can provide magnifications up to about 10%.

(Note that after adjusting Zoom:
- you will have to use the "Lock" button rather than Spacebar or Enter to lock and register the image for counting;
- you may have to adjust the position of the Petri dish using the Interpreter's stops, in order to center the HGMF image correctly;
- if the image is too large the Interpreter may not be able to register it automatically and you may have to use Manual Registration).

Non-flat, curved or damaged HGMFs
The HGMF Interpreter will be able to cope with HGMFs on sloping agar surfaces, and with minor deviations from flatness (planarity). However, results with HGMFs that are curled, corrugated or otherwise damaged will be unpredictable.

Yellow Corner-target Circle
In real time mode a yellow circle in the upper left area of the image box indicates the area in which the HGMF Interpreter will "look" for the HGMF's top left hand corner as soon as you press "Lock" (or Spacebar or Enter). As long as the top left hand corner is somewhere within this circle the Interpreter should be able to find the corner and complete the Registration.

Alignment Accuracy
In general, as long as all the HGMF grid cells are visible in the image box the HGMF Interpreter should be able to register and count it. If AutoRegistration fails you might find it easier to press "New Scan" and readjust the HGMF, rather than do a Manual Registration.

AutoRegistration
In real time mode, the HGMF Interpreter will default to AutoRegistration mode - that is, on pressing Lock (or Spacebar, or Enter) it will attempt to detect the top-left-hand grid cell, then "step around" the border intersections to register the HGMF automatically. The majority of HGMFs will register satisfactorily. Whenever the HGMF Interpreter is ready to AutoRegister an HGMF the text box below the HGMF image will display the message:

Place HGMF TopLeft grid-cell inside yellow circle, with all grid-cells visible.
Press Spacebar or click 'Lock' when HGMF is suitably aligned...

First position the HGMF so that its top-left-hand grid cell is within the yellow circle (or just below it), and ensure that all of the HGMF grid cells are visible in the image. Then press "Lock" (or Spacebar, or Enter) - in quick succession you will see a solid yellow bullet blink just outside the top-left-hand grid cell, then the Interpreter will beep, the four corner grid cells will be "flagged" by green circles, and the text box below the HGMF image will display the message:

Registered for counting ..... use mouse to indicate typical colony
- Left button+Shift adds gridcells, +Ctrl selects gridcells..Right button undoes
- press Spacebar or New Scan for new HGMF
- reduce/expand color tolerance by 'Include Color' slider if required.

If for some reason the AutoRegistration fails you will hear a warning tone and the information box will display the message:

can't AutoRegister ... press Count if corner flags seem acceptable
-press Spacebar to retry, or Manual Register to register manually ...

If the four corner flags (green circles) look very close to being in their correct positions the Interpreter is probably still capable of giving a good count, and you can try counting by pressing the "Count" button - in this case you will see the same message as above:

Registered for counting ..... use mouse to indicate typical colony.....
If the four corner flags are not close to their proper positions you have two options:- either try to AutoRegister again by pressing "New Scan" then "Lock" (or *twice* on Spacebar or Enter), or; press the "Manual Register" button.

Manual Registration
Manual Registration is normally only needed when the definition between an HGMF's corner grid lines and grid cells are badly obscured by dark colonies, causing AutoRegistration to repeatedly fail. The HGMF Interpreter indicates its need for the assistance of human eyesight by asking you to press the "Manual Registration" button - the text box displays the message:

can't AutoRegister ... press Count if corner flags seem acceptable
-press Spacebar to retry, or Manual Register to register manually ...

After pressing "Manual Registration" the text box displays the message:

Align HGMF properly, then press 'Lock'

Align the HGMF so that all grid cells are visible, then press the "Lock" button (or Spacebar, or Enter). The text box will now display the message:

Now click mouse pointer exactly in centres of corner grid-cells. Click in any order

Follow the instruction, positioning the cursor carefully *at the centre* of each corner grid cell and clicking once. The text box will then display the message:

Registered for counting ..... use mouse to indicate typical colony
- Left button+Shift adds gridcells, +Ctrl selects gridcells..Right button undoes
- press Spacebar or New Scan for new HGMF
- reduce/expand color tolerance by 'Include Color' slider if required

Using Spacebar and Enter keys
To make life easier, the HGMF Interpreter will often respond to pressing the keyboard's Spacebar or Enter key as if you had "pressed" the next appropriate button by using the mouse. For example, when you are inserting the next Petri dish you may find it easier to simply have one hand on the dish and the other hand touching the Spacebar to "lock" the image, rather than also having to control the mouse to press "Lock" - the HGMF Interpreter will respond to pressing Spacebar (or Enter) by locking the image. Similarly, unless you have started to file data, pressing Spacebar or Enter will have the same effect as pressing "New Scan" with the mouse. At times, however, the Interpreter will not be sure what next action you intended and these keys will have no effect - in these cases simply press the desired button by using the mouse.

"New Scan" button
Pressing this button (or Spacebar or Enter) puts the HGMF Interpreter into "real time" mode, allowing you to adjust or replace the Petri dish and HGMF.

"Lock" button
Pressing this button (or Spacebar or Enter) causes the HGMF Interpreter to "grab" the current image frame and remain locked on it. If you had not previously pressed "Manual Register" the Interpreter will attempt to "register" the HGMF automatically. If you had previously pressed "Manual Register" the Interpreter will instruct you to accurately indicate the HGMF corners (see above).

"Manual Registration" button
This button is disabled unless the HGMF Interpreter finds it cannot register the HGMF automatically.

Counting Positive Grid Cells
As soon as the HGMF is registered you can count grid cells containing growths of a particular color. To make the HGMF Interpreter count the the grid cells of interest, simply position the mouse pointer on a typical growth (color target) and click with the *left* mouse button.
Experiment by dabbing an HGMF with colored markers and clicking different colony colors. Each time you click the HGMF Interpreter will flag grid cells containing that color (plus or minus a certain color tolerance value) and display the count as MPNGU, both in the text box and in the Count/g box. For example, if you clicked on a yellow growth and the HGMF Interpreter counted 197 positive (similar) grid cells the text box will display the message:

Chosen color = yellow Count = 197 MPNGU = 210
Hold 'Shift' to add to count...use Spacebar or 'New Scan' for new HGMF.
- reduce/expand color tolerance by 'Include Color' slider as required.

and the Count/g box will display the value *2.10E+11* (i.e, 2.10 X 10^{11}). At the same time, the centre box of the three color boxes below the text box will fill with the color you chose, and the boxes to its left and right will fill slightly darker and slightly lighter, respectively, showing the limits of color tolerance to the count.
If the flagged grid cells appear to adequately represent the grid cells you would like to have counted you can proceed to correct the Dilution Factor and Volume (ml) and thus the Count/g by clicking the appropriate list item or typing in values - you will see the value of Count/g change accordingly.

If the grid cell count is *less than* the number of grid cells you would prefer to see you have several options:-

- left click on another colony of slightly different shade to the first
- hold down Shift and left click an uncounted grid cell - a new set of grid cells (based on the extra color indication) will be added to the count
- hold down Ctrl and left click uncounted grid cells to add them individually to the count
- move the Include Color slider left or right to decrease or increase the color range included in the count, then again click a colony. The Include Color default value of 30 will usually encompass a suitable range - by reducing it to 10 you may have to Shift/Click many times to count - by increasing it above 50 you may include too many "false-positives" in the count.

(Note that the HGMF Interpreter calculates colony colors as a function of their RGB (red, green, blue) contents - black has a value of (0,0,0), white is (255,255,255) - for any clicked colony color and Include Color value of 'C' the counted colors will be all those in the range (red ± C, green ± C, blue ± C).

If the grid cell count is *greater than* the number of grid cells you would prefer to see you have several options:-

- left click on another colony of slightly different shade to the first
- *if you already used Shift* to add grid cells you can hold down Shift and *right* click a *counted* grid cell - the added set of grid cells (based on the extra color indication) will be *subtracted from* the count
- hold down Ctrl and *right* click *counted* grid cells to *subtract* them individually from the count
- move the Include Color slider left or right to decrease or increase the color range included in the count, then again click a colony, as described above.

You can recount the HGMF as many times as you like before you press the "File Data" or "New Scan" buttons.

(Note that "Dilution Factor" defaults to -9, i.e., a dilution factor of 10^{-9}. This ensures that the HGMF Interpreter returns a "worst case scenario" in case you forget to correct it before using the data. "Volume (ml)" defaults to 1.0 ml).

MPNGU and HGMF Statistics
The Most Probable Number of Growth Units (MPNGU) is derived from a statistical treatment of the HGMF by treating it as though it were a set of 1,600 most probable number tubes all inoculated at the same dilution factor. Unlike the conventional 3x3 or 3x5 tube-MPN method, which has a very low precision, the large number of "tubes" in the HGMF allows it to yield a precision as high as or much higher than a conventional Petri plate count, depending on the number of positive grid cells. At low inoculum levels the MPNGU equals the number of positive grid cells (N). The value of N does not increase as fast as the MPNGU. The relation:

$$MPNGU = 2.303\log_e(1{,}600/(1{,}600 - N))$$

applies, as long as the HGMF was inoculated uniformly across its surface. This mathematical relation allows the HGMF to yield a linear recovery (MPNGU) against inoculum CFU, until N = 1,599, for which the MPNGU = $1.2x10^4$(1.2E04). In practice, counts will have low precision when N is less than 100 or greater than 1,500 and further dilutions should be examined. Precision will be highest when 50% of the grid cells are positive (800 grid cells).

Counting Without Filing Data
If you do not want to make a permanent file record of the count you just made, simply press "New Scan" - the HGMF Interpreter will return to AutoRegister mode to allow you to insert a new HGMF sample.

Filing the Text Data
All alphanumeric information about an HGMF is filed in the file "HGMFData.txt", in the folder \...\HGMF Interpreter\Data\.. As soon as you click the mouse on a typical colony (after the HGMF Interpreter indicates that the HGMF is registered and ready to count), the following happens on your computer screen:-

- the box "HGMF No." displays the next record number in the file
- text in the boxes on the right of the screen changes from grey to black, indicating that they are now accessible for entering sample identification details.

Note that if you file HGMF data you may leave some of the boxes blank, but you must enter data in certain other combo boxes - these are: User, Sample Type, Preparation Method, and Test. For each of these you may:

- enter an existing item from the drop-down list by clicking on that item;
- add a new entry if the item you want does not appear in the drop-down list (for details of how to do this see the sections **Adding New Users, Sample Types, Origins, and Test**

Filing an HGMF Image
Each time you press the button "File Data" to store count data in the file “HGMFData.txt” a message box will ask you if you also wish to file a complete image of the HGMF. If you click “OK” the Interpreter will save an image that you can examine again at a later date. The filename of the image will be of the form “HGMFNumber.jpg” – for example, if the record currently being stored in “HGMFData.txt” is 413, the image filename will be “000413.jpg”.
Thus, you will be able to access the image by its entry data in “HGMFData.txt”. *The image will be of the HGMF only and will not show the actual flagged grid cells at the time the data were filed.*

(Note that: an HGMF image file occupies approximately 45-60KB, depending on the complexity of the image – for some routine purposes you may not wish to store HGMF images. However, if you have any expectation that re-inspection of the sample may be required at a later date you should save the image - ***you may find this one of the HGMF Interpreter's most valuable advantages...****).*

Re-examining filed .jpg images or scanned HGMF images
You can call filed images (of type .jpg or .bmp) into the HGMF Interpreter by using the menu item: "File - Open". For example, you might wish to re-examine HGMFs that were counted at an earlier date. The file dialogue box defaults to the stored .jpg images. If the image file exists it will be brought into the image box. In File mode you will have to use "Manual Register" in order to recount the HGMF. *(Note that: stored images saved by the HGMF Interpreter will appear exactly as they were under the camera, but images from other sources may be distorted as the Interpreter stretches them to fill the image box - this will not affect the Interpreter's ability to count them because you must use Manual Registration to register file images.)*

The command buttons "Previous Record" and "Next Record" in the lower-right of the screen allow you to navigate through the HGMFData.txt file to find a particular image. For example, you may know the date of a particular sample, but not its actual sample number. If the image file for a particular HGMF Number exists it will appear in the image box - if it does not exist the box will display the message *"No image file for this record"*.

Every time you call up an image that was stored by the HGMF Interpreter, the various boxes will show the original information filed with that image (this happens even if there is no image file). You cannot modify the data in the boxes - but you *can* recount the HGMF image and store the new count under a new HGMF Number.

Toolbar Operations
Ten Toolbar buttons are variously enabled at various stages of counting an HGMF. These enable you to open file images instead of real-time ones, carry out various manual saves or printouts of images and data, refresh an onscreen image,turn the camera ON or OFF, or exit the program.

Open Image
Press this button to bring a stored file image onto the screen. If you are working in real-time mode there will be several seconds delay while the Interpreter closes down the camera. Use the standard directory dialogue to bring up the required file.

Note that - to count a file image you will have to work in "Manual Registration" mode.
Also, if you recount an image of an HGMF already recorded by the Interpreter, the Interpreter will refuse to overwrite the original record - you must file your new data under the (last file record) record number offered you by the Interpreter.

Save Record
When you press the Save Record button on the Toolbar you will see a list of the text data. Use the FileSave menu option to save this set of data under a discrete filename. This may be useful if you wish to transmit the data elsewhere.

Save Raw Image
When you press the Save Raw Image button on the Toolbar you will see a "Save As" box You can save the current image (in ".bmp" form only) under a discrete filename. This may be useful if you wish to transmit the data elsewhere.

Manual Filing and Printing
When you press the "File Data" button the Interpreter automatically saves the screen textual data as a numbered record in the file "HGMFData.txt". However, you can also store the screen data manually in a separately named, discrete file - this may be useful if you intend to transmit the data elsewhere. Press the "Print Record" Toolbar button to print out the data list.

Print Record
If you wish you can print (make a hardcopy of) the screen data before proceeding to count another HGMF. Press the "Print Record" Toolbar button to see a Print Preview of the screen data, including the image. From the menu buttons you can print simply the text data or the image also.

Copy Raw Image
You can copy the raw image (i.e., the image minus the green circles showing counted grid-cells) to a separately named, discrete file - this may be useful if you intend to transmit the data elsewhere. Press the "Copy Raw Image" Toolbar button. You will see the message:

"The image has been copied to the Clipboard. Press OK to open PAINT.EXE then use Paste or Ctrl+V to paste the captured image".

Once the image has been transferred to the Paint.exe screen you can manipulate in any way you wish and file it using "Save As".

Copy Counted Image
You can copy the counted image (i.e., the image plus the green circles showing counted grid-cells) to a separately named, discrete file - this may be useful if you intend to transmit the data elsewhere. Press the "Copy Raw Image" Toolbar button. You will see the message:

"The image has been copied to the Clipboard. Press OK to open PAINT.EXE then use Paste or Ctrl+V to paste the captured image".

Once the image has been transferred to the Paint.exe screen you can manipulate in any way you wish and file it using "Save As".

Refresh Last Image
At times, you may find the residue of a menu or message box has "left a hole" in the image. To restore the complete image press the Refresh Last Image button on the Toolbar.

Turn Camera ON/OFF
You should normally only need to turn the camera ON - for example, to return to real-time scanning mode after examining a file image. For most operations requiring the camera to be OFF (e.g., after using the File-Open menu or Open Image button, the Interpreter will turn the camera off automatically.

Exit Application
To end program operation use the Exit Application button on the Toolbar, the File-Exit menu, or press Alt+F4. Allow several seconds for the Interpreter to disconnect itself from the camera before invoking other applications, or the computer may "hang up".

Importing the Data File HGMFData.txt into Spreadsheet or Database Programs
The main data file ***HGMFData.txt*** is divided into records of length 512 bytes. Each record is divided into the following fields:

Field lengths in records in the file HGMFData.txt

Date + Time ("dd mmm,yyyy hh:mm:ss")	20 bytes
HGMF Number	10
Sample Number	8
Subsample	4
Pool of	4
SampleType	30
Origin	30
Location	30
Preparation Method	20
Test Method	50
Volume	6
Dilution Factor	6
HighColor (as "R,G,B")	12
LowColor (as "R,G,B")	12
MPNGU	8
Count Per Gram (eg 2.13E06)	10
Comments	144
User	20
BlankField	69

Fields within records are separated from one another by Tab characters (ASCII character 9) and the record is terminated by the Ret + LF characters (ASCII 13 + ASCII 10). Data in each field are as simple text (ASCII) characters.

To inspect, print or manipulate the HGMFData.txt file you may import it into a spreadsheet program such as Excel or Lotus 1,2,3. For example, to import it into Excel:

- Use the Excel menu FILE_OPEN and navigate to the folder \...\HGMF Interpreter\Data\;
- Set the dialogue box "Files of type" to "All Files (*.*)" - all of the *.txt files should now be visible;
- Select "HGMFData.txt" and click "Open" - the dialogue box will present you with the message "*The Text Wizard has determined that your data is Delimited*";
- Make sure that the "Delimited" checkbox is checked, then click "Finish" (or, click "Next" twice, then "Finish" if you want to inspect the parameters). The data from HGMFData.txt will appear in the spreadsheet, the various records will be on successive rows with the fields spread along the columns.

If you wish to import the data into a database program such as Access, Oracle, dBase, etc, follow the instructions for that program.

Adding New Users, Sample Types, Origins, Test Types, and Preparation Methods
When you file HGMF data you must enter data in the combo boxes labelled: User, Sample Type, Preparation Method, and Test. For each of these, if the entry you require does not appear in the drop-down list you may add a new entry.
Temporary additions
If you want to use an entry that is not in the list but do not wish to make a permanent addition to the list, simply click on the existing text to highlight it, then type the entry you wish to use. The entry can be filed with the HGMF data and will stay in the box for succeeding HGMF data entries until you make a further change, but it will not appear the next time you use the HGMF Interpreter.

Permanent additions
You can make permanent additions to the listings in these combo boxes whilst the HGMF Interpreter is running in "real time" mode. Depending on which combo box you wish to update, select (click on) the appropriate list item:

ADD USER
ADD ORIGIN
ADD PREPARATION METHOD
ADD SAMPLE TYPE
ADD TEST

A new box will appear requesting that you type the new entry you wish to add to the combo box. When you click "OK" the item will be added permanently to the box's drop-down list.

You can also edit these files from outside of the HGMF Interpreter program. They are located in the folder "Data\" within the directory in which your HGMF Interpreter program is located. The five files are named:

Users.txt
Origin.txt
PreparationMethods.txt
SampleTypes.txt
Tests.txt

Editing Users.txt and other files
You can add to or edit, any of these files with a wordprocessor program such as Notepad. Terminate each list with a single Enter (carriage return). If you use Word, WordPerfect or other formattable wordprocessor *be sure to save the file again as ".txt".* ***Do not delete the various items: "*ADD USER*", "*ADD PREPARATION METHOD*", etc, or you will not be able to access the real-time updating facility...***

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