

MainLog Drilling Manual

MainLog in, “Drilling Mode”, consists of eight major menu items across the header portion of the program; *File, View, Options, Enter Data, Setup, Tops, Schemes, Import and Help*. Each menu consists of sub-menus and/or features to choose from. This manual is setup in the same manner as the index below shows.

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- **Connections:** To add a connection indicator to the log, without using a note, place your cursor within one block width to the right of the last ROP grid block. Hold down the control key, and press the left mouse button. This will place a “_c”, at that position. If you click in the upper half of the block, the “_” will be centered on the block. If you place your click in the lower half, the “_” will align with the lower grid block line. Pressing the right button will put in or remove a casing point symbol.
- **Casing points:** By holding the control button down and right clicking just outside the right side of the ROP column (Left side of Porosity column) casing symbols will be placed on either side of the lithology column. To delete them, just press & hold Control while right clicking in the same spot.
- **Slide and Rotate:** When logging a horizontal well it is useful to display when the rig is either sliding or rotating. By holding down the Control key and then click and drag down in the first block of the ROP column, Mainlog will draw and label a “Slide to Rotate” line in that space. By doing this MainLog will also automatically add it to the horizontal log as well.

In drilling mode, double clicking in the appropriate area of the log will bring up the entry dialog for that data set. Double Clicking in the gas grid will open the gas entry dialog with the appropriate start depth. If you haven't entered gas yet, you will be prompted for a start depth the first time. The same applies to all entry functions except rates and shows, which will always prompt for a start depth.

MainLog can be opened a number of ways. First by double clicking the icon on the desk top, or going through the start menu. When opened this way, the file that was open when MainLog last closed will reopen. You can also create a shortcut to a specific “.mlw” file and double clicking this short cut will always open that file. This is handy if you have an offset that you are correlating to. You can open as many different files as your computer memory and screen size will allow. Two files cannot be in drilling mode at

the same time.

FAQ's

Q: How do I rename my file without having to do it manually in explorer?

A: Click **OPTIONS**, and uncheck **DRILLING**. Click **FILE/SAVE AS**, and change the name in the file name edit box to what you want it to be. Click the **SAVE** button in the “Save as” dialog. A MainLog dialog will open showing the new file name and will ask if you want to open the new file. Click **OK** to open the new file. Click **OPTIONS...check DRILLING**. All auxiliary files (hdr, rpt, lag, etc.) will be copied to the new name except backup files.

Q: How do I know what my com ports are?

A: After plugging the adapters in, to find out what com port the adapters are on, go to “**Control Panel**” then “**System**”, then “**Device Manager**”. You will see the device, “**Ports**” with a “+” sign or “>” next to it. Click on either sign and you will see what com ports the adapter(s) are on.

Q: How do you import a gamma ray?

A: To import any e-log curve the data must be in a certified LAS file format. Click on **Import\Import E-log Data**. Choose the directory or drive the LAS file is in and click “**Open**”. From the dialog pop-up box you will see an “Import Source File” which shows the interval and KB of the data on the right side and the “Destination File” on the left side. MainLog defaults the destination name to the name of the mudlog file, but you may change it to a name that reflects where the e-log data is from. (i.e. it may be that it is a gamma from an offset well and you give it that name.)

From “Available Curves” highlight the curve you want and on the left side select from “Import as” the curve you chose. Do this for each curve and then click **Import**. **Note:** MainLog gives the imported curves a filename with a “**MLC**” file extension and by going to **Import/Select**; you can choose what “**MLC**” file you want superimposed on the mudlog.

Once the curves are imported, click on **Schemes/Edit**. Schemes allow you to turn on or off any data type contained in the log file, or the E-LOG curve

file. Checking the data type in the schemes dialog will turn it on if that data type is available. Once set, you can name the “data set” and these lines will be displayed when the named scheme is selected from the scheme menu. If the gamma ray was the only curve you imported, from **Schemes/Edit**, check the box “**Gamma**” under the “**Mudlog**” scheme and click “**Save**”. The gamma ray should now be on your mudlog.

Q: How do you get rid of an imported gamma ray?

A: If you just want to take it off the log just uncheck it in the Schemes\Edit dialogue. If you’ve imported the wrong log and need to get rid of it, close MainLog, then go into “**Windows Explorer**” and on “**C**” drive find the “**mainlog**” directory. Find the “**finalname.mlc**” and delete it.

MainLog in Drilling Mode

The **Field Program** is used for data acquisition and has additional features for entering data, tracking real time ROP, Gases and other features. The following instructions will vary according to which features are enabled in the program you are using. In order to be in drilling mode you must have a “hardware key” that’s license is up to date.

MainLog should run at any screen resolution currently available. If you have problems related to screen resolution, (or any other issue) please let us know and we will do our best to resolve the issue. Most programming is done at **1280 X 1024**, but the log should look good at any higher resolutions.

We can be contacted at 207-671-0154, or E-mail david@mainlog.com or john@mainlog.com.

Hardware Requirements

- Any Windows Laptop or Desktop PC
- Serial to USB adapters (recommended Keyspan adapters, for Wits & Gas Interfaces)

- Recommend a minimum external four port USB Hub with its own power supply
- MainLog will need USB ports for the following: Wits, Gas, Hardware Key, Depth
- (Additional ports will be needed for Keyboard, Mouse, Printer, Cellular Modem)
- Monitor capable of 1024 X 768 or higher resolution recommended
- Monitor capable of 1280 X 1024 or higher resolution recommended for horizontal logs
- Satellite internet connection recommended and needed for e-mail & real time viewing and monitoring
- ****Interface for depth, strokes, off bottom and chromatograph trigger provided by MainLog**
- ***** CLEAN dry closure contacts are required for the depth, strokes, off bottom and chromatograph**

Installation

MainLog's field program is installed on the computer's "C" drive, <c:/mainlog>. There are as many 12 sub directories including archives, backup, bitmaps, chart, gas, install, mudloglas, remote, sendfile and wits.

Navigation

There are many ways to navigate through the file.

- Left click anywhere on the log and then use the mouse wheel to scroll up or down.
- Using the scroll bars will move you up or down in the file 20 ft if clicking the arrows (2 ft if control key is held down), 100' when clicking above or below the arrows, (500 ft with the control key down).
- Dragging the thumb button on the scrollbar will display a depth in a small text box, the screen will be redrawn from the depth shown when you let the mouse button up.

- Page up, page down will move you up or down 100', .500' if the control key is held down.
- Left clicking above or below the grid (when possible) will move you up or down 100' in the file. Right clicking these areas will move you 500'.
- Using the "Zoom" feature shows the entire well on the right side of the screen. Click on any part of the well and it will take you there on the 5 inch log.

Starting the program:

MainLog can be opened a number of ways. First, by double clicking the icon on the desk top, or by going through the start menu and whatever file that was opened when MainLog last closed will reopen. You can open as many different MainLog files as your computer memory and screen size will allow, however, only one copy can be in drilling mode at a time and you will be prompted if more than one copy of MainLog is running.

"One or more copies of MainLog is running. Only the FIRST COPY OPENED will allow drilling to be enabled. Close all programs now running, then start MainLog again and drilling mode will be available"

You can also create a shortcut to any "mlw" file on the desktop. The target file will always open in office mode, and will not interfere with your drilling file. Do not open 2 copies of the "LIVE" drilling file

When the program opens in "drilling mode", you will get the following error message if no depth interface is found:

"Depth interface not found, ROP will not be tracked unless using wits or other inputs for depth. Chromatograph will not be monitored unless using

ML_CONTROL, IBALL BLOODHOUND, or UDP Gas Interface. You may want to reboot your computer if you do have a MainLog depth interface box attached.”

This is a reminder that depth will not be tracked if there is no depth interface.

There are eight menu items; **File, View, Options, Enter Data, Setup, Tops, Schemes, Import and Help.**

File Menu

- **New** **Starting a new file:**

If this is the first time MainLog has been opened in drilling mode on this computer, after installing MainLog, click **FILE/OPEN**, and open **first.mlw**. When **first.mlw** is opened, select **FILE/NEW**, and the new file dialog will open.

If you have previously logged a well with MainLog on this computer, open the previous well file (if not already open) and Select **FILE/New**.

In the new file dialog, you will be prompted for a file name, and a start depth. Enter a depth shallower rather than deeper if not certain what depth you will start logging at. You can always make the file deeper, but there are some limits on making the file shallower after it has been created. There are some guidelines for naming the file, which you should read and follow. You can select scales if you want, but they can be changed any time, and at any depth later. Provide the information requested, and click Create.

MainLog archives the previous file in the Mainlog\archive\<<filename> folder. If you want to remove the previous well file from the Mainlog folder (it has been copied to archive folder) check **“Delete files”** from Mainlog folder after archiving. When you click create, the new file will be created starting 50 feet above the start depth you entered, and ending at the start depth you entered. The file is built as you drill from the current depth. If you

need to make a depth correction to match the rig depth, click **Options/Correct File Depth**, and enter the correct depth.

- **Plug Back for Horizontal or Sidtrack**

This button is used to create a horizontal or directional well from a pilot hole or to plug back and side track. By selecting this, a dialogue will pop-up where a kick-off point can be entered. MainLog automatically creates a new file name by adding a “-H” to the original file, however, it can be named to anything. You should make sure the name makes sense, by changing the “-h” to “-H2”, or “-H3” “-ST1”, or “-ST2”, etc. to reflect the actual circumstances.

Once the create button is clicked on all data below the KOP will be deleted and all information above remains including all reports. You are now working with a new file.

- **Open**

Displays a file open dialog with the default extension set to “mlw”. This is the default extension for a MainLog 32 bit windows data file. These files can only be read by the MainLog software. You can browse through the directory tree and open any MainLog files from any folder. However, only files in the home folder where the MainLog executable resides will be automatically updated when opened. To open any MainLog data file (.mlw) from any folder. Browse to the folder containing the file you want to open, select the file name from the list, and click open.

- **Backup**

BE SURE TO BACK UP TO EXTERNAL MEDIA (USB FLASH DRIVE OR CD) SO THAT IF YOUR COMPUTER DIES, YOU CAN COPY YOUR FILES TO ANOTHER COMPUTER FROM THE FLASH DRIVE ETC.

The first time you back up you need to select the Flash Drive your backing up to. Once it is selected and then backed-up MainLog will automatically back up only the log file (mlw) and Custom Track (mlx) file every 100 feet.

The logger still needs to back-up manually to back up the reports, header, charts, wits and other configuration files. These files will only be backed up when they are changed.

It is a good idea to back your work up regularly because the unexpected can happen at any time. To back up the file you are working in, look under *file* on the toolbar and select **backup**..... A dialog box will appear which will ask for which drive to save to. Make sure your disk is in the drive and select your drive (either d:\, e:\, or f:\ etc.) and click <**Backup**> to backup or click <**Cancel**> to abort. After clicking <**Backup**>, it will back up to the drive and give a success message (including file size-make sure these numbers are the same or the backing up process did not work) or an error message. Before backing up the file, MainLog will check the depth sequence for any errors and fix them if it finds any. After backing up the file, the backup file is checked for depth errors to make sure the disk can be read. When backing up, the mlw, rpt, hdr, sho, & dst files will be copied if they have changed since the last back up. Backing up to the C drive will not help you if your hard drive crashes. You must back up to an external drive. (recommend a USB flash drive)

IF YOU THINK THE DATA FILE IS CORRUPTED **DO NOT BACK UP**, AS THIS WILL CORRUPT THE BACK UP FILE AS WELL !!!!!!!!!!!!!!! CALL YOUR OFFICE OR MAINLOG BEFORE PROCEEDING.

We highly recommend using USB Flash drives rather than floppy disks. Floppy's are very unreliable and slow **BACK UP OFTEN, IT TAKES ONLY A FEW SECONDS!!!!!!!**

- **Restore**

Every time a logger makes a negative depth correction, or exits Normally, MainLog makes a backup of the mudlog file at the depth and time the correction or exit was made and puts it in the **c:\mainlog\backup directory**. This feature enables the logger to restore back to the depth the correction was made at if a depth correction was made in error. (i.e. < [filename@9900-812.mlw](#) >).

If you've been backing up to your external thumb drive you can also restore from there as well. If you're hard drive crashes you should be able to restore

from the thumb drive to the last point that the file was backed up to. If you are unsure what to do call your supervisor or us at MainLog.

- [Save Image as](#)

This feature creates image files of the mudlog. These include tif, bmp, jpg and png files. You will be prompted for the interval you want, (can be the entire well), after selecting the image type. Note to create a PDF file you will need to go to the “Print” function and from “Set-up Printer”, select “Adobe” to create the PDF file.

- [Archives](#)

This feature can be used when a well has TD'd. It will automatically zip all files associated with the well including chart, gas and wits files. It archives them into a zip file (<filename>.zip) in the c:\mainlog\archives directory. They will also be deleted from the directory where they are stored while drilling.

- [Sendfile](#)

To send files by email click **FILE/SENDFILE..**

If **“ALWAYS SEND ALL”** is checked under the **“SETUP LINES AND SCALES”**... Options, the file created will always contain the complete file and all support files, and you will not be prompted for a start depth.

If you do not see the **“ALWAYS SEND ALL”** check box under options, then it is on by default. The zip file that is created will be <filename.ml_> and will be located in the c:\mainlog\sendfile directory, which then can be attached to an e-mail. There are separate options to send tops files, and various configuration files. In general they are on by default, and the client opening the email will see the same configuration that you have. If that is a problem for the client, you can uncheck the various SEND cfg checks and his configuration will be controlled on his end.

If the **“ALWAYS SEND ALL”** checkbox is available, and NOT checked,

the following applies. (Applies to only a few clients using JFT to send files)

A dialog will open with a start depth, and a send mode option. (the program supports JFT file transfer but most loggers prefer email) After verifying the start depth and pressing the enter key, the create button will be enabled. Clicking the create button will cause the file to be created. If no file has been sent for this well, the whole file will be (and must be) sent. Once you have sent the file, it will automatically send from 100 ft above where you last sent the file in. (Usually it is best to accept this default start depth) You can override this and send as much of the file as needed (if you made corrections above the current send interval for example) Typing "all" in the depth edit box will cause the whole file to be sent. On the receiving end, each client must get the file from the beginning at least once. If you send an update to a client who has not been receiving the file previously, you must send the whole file the first time. After that updates will work, and are much faster.

The file created will be the same name as the data file, but with a "ML_" extension. (test.mlw will create test.ML_) This is a compressed file and contains the update file, the header file, and any reports that have been changed since the file was last sent. This file will be placed in the mainlog\sendfile folder. Once created the file can be attached to an email and sent to all the client recipients at the same time. The file will be refreshed each time you create a new file by clicking FILE...SENDFILE.

- **Page Setup:**

This displays a printer page setup dialog box to allow the setting of paper size, and or changing printers etc. It is also available directly from the print dialog box.

- **Print**

This displays a print dialog which allows you to select print interval, line styles, formats and scales to use for this print job. It also provides access to printer setup if needed.

From the print setup you can print a 1", 2" or 5" log in either 1 foot, 2 foot

or 10 foot drill time and in either point to point, or blocked formats. You can also select the depth interval to be printed. By checking “Print All”, the entire well including the header will be printed. The log can also be printed in FT/HR, as well as, a 2.5” log. One inch logs can be printed with or without descriptions by checking the appropriate box.

By checking the appropriate box from the print setup the log can be printed in color, with or without “Tops Lines”(page) and in a wide or narrow format depending on the width of the paper. By checking “**data as text**” the numerical data will be printed out in spreadsheet form including depth, lag depth, drill time and gas readings.

In order to print a horizontal log it first has to be on screen, (“Horizontal will be grayed out in Print Setup if it is not on screen). Click on **View Horz** from Quick View, then click **File/Print**, and select “**Setup Printer**”. The printer must be on “**Landscape**” and “**Banner Mode**” (not all printers may have this ability). Click on properties to check the settings as shown on the next figure

Any DST reports can be printed at the end of the log by checking, “**Print DST’s**” at end of log”. Also any imported lithology jpegs can also be printed by checking, “**Print Lithology Pictures**”.

- [PDF Files](#)

To create a PDF file you will need to go to the “**Print**” function and from “**Setup Printer**” select the PDF driver to create the file. You must have a PDF program installed on your computer such as, Adobe, if you do not, you can get a “freeware” version by going to www.cutepdf.com.

After selecting the PDF program and mudlog parameters, click “**Print**”. The file will be created and default to the name, “Mainlog.pdf”. At this point you have the option of renaming the file and saving it to any directory or if you choose to save the file to the “mainlog” directory, the software will automatically rename the file to the well name, depth it was created at and type of log, 5”, 2” or 1”. (Example: Horiz_DemoH1@8654-5inch). The file will be saved to <c:\mainlog\sendfile> or <c:\program files\mainlog\sendfile directory.

There may be a 10 second delay before the file shows up in the sendfile folder. **IMPORTANT!!** Create the sendfile FIRST, and then the PDF, or MainLog will delete the pdf when it creates the ml_.

- **Exit:**

This exits or closes the MainLog Program.

View Menu

These options can be found under **View** on the toolbar: *Morning Report, Short Report, Header, Show Report, DST, Data as Text, Horizontal, Real Time Gas Chart, Wits, Wits Chart, and E-log data as text.*

Navigation throughout these options is relatively simple. Use <**enter**> or <**tab**> to move between fields.

<**Save**> This button (if available) will save any work done on the current report on screen, even when going back and correcting information. If this button is not pressed, no new work will be saved.

<**New**> This button (if available) will allow you to make an additional or new report or DST

<**Previous**> Allows you to scroll back through previous reports or DST's.

<**Next**> Allows you to scroll forward through reports or DST's.

<**Print**> Allows you to print reports or DST's.

<**Save as text**> Allows you to save data as an ASCII text for e mailing or faxing.

<**Close**> This exits either your report or DST. If you do not save before closing, no additional information will be saved.

<**Save Short Report**> In drilling mode only, will save a short report at the current morning report depth. See short reports below.

- [Morning Report](#)

By clicking on the Morning Report the last report created will come up. From here you can view and print previous reports, create a new report, save it as a text file or save it as a “**Short Report.**”

To create a new morning report, click on “**New**” from the report on screen and MainLog will automatically calculate how many feet were drilled from the last report, how many ft/hr, what the background gas is, maximum gas since the last report, any downtime gas and will also populate the date, company, report time, well name, lag time and fill in the mud data from the previous report which can then be edited. When a morning report is created and saved, the letter “**R**” in a yellow box will appear in the ROP column.

NOTE: It is important to label all connection, downtime, survey and trip gas by using a note within 2 ft of the peak and using the following abbreviations: **Carbide Lag Test - "CLT", Trip gas - "TG", Downtime Gas - "DTG", Survey Gas - "SVY" or "SG" and Connection Gas - "CG"**, MainLog will automatically populate these to the morning report when it is created. **It is important to add these abbreviations so that they are not used as “maximum formation gas” in the report by MainLog when the report is created.**

- [Short Report](#)

A short report is a quick and easy way to put mechanical and mud data onto the mudlog. It can be created manually or from a morning report. This information can be customized on how it is presented on the log, such as color of the text, boxed and where to put it on the log.

To create a short report click the "Save Short Report" button after creating a new morning report. You can also scroll to the morning report number that you want to save a short report from, and click the "Save Short Report" button to create a short report from that reports information.

Clicking on View... Short Reports will open the short report dialog. When the Short Report dialog opens you will have numerous options as to placement, text color, whether to draw a rectangle around the text etc. You may also create a new short report here by clicking the New Button, changing the depth to where you want this new report to display, changing any data that has changed and then clicking save. You can have more than one short report at the same depth, provided the locations allow them to be displayed without interfering with each other. The Short reports can be turned on and off in SETUP...LINES AND SCALES, by checking or unchecking Hide Short Reports

- [Header](#)

The **Header** is one of the first tasks a logger should fulfill when starting a new well, especially GL and KB. Many of the information here is used by the program when creating reports, calculating subsea for tops and for correlation when importing offset ROP or offset gamma.

- [Show Report](#)

By clicking on “**Show Report**” you will be prompted to select the show interval. Once entered MainLog will automatically calculate and populate what the drill time and gas readings were before during and after the show interval. The logger can fill in the description and show information.

Once a show report is created and saved, the letter “**S**” in a red box will appear in the ROP column.

- [DST](#)

DST reports can be filled out and once created and saved, the letter “**D**” in a green box will appear in the ROP column.

- [Data as Text](#)

This displays a dialog box with much of the raw data used to draw the

current screen displayed. The data is not editable. The dialog will update as you navigate through as the file. The data can also be printed out from the **Print** menu by checking the box **“Data as Text”**.

- **Horizontal**

The horizontal log is simply a different view of the data. The Quick view buttons will work on the horizontal view when it is open and can display the horizontal format in a 1”, 2” or 5 inch scale and with or without surveys. See **“Horizontal Data”** in the **Setup** menu for additional information about the horizontal log.

- **Real Time Gas Chart**

Displays the real time gas chart shows depth, hot wire gas and chromatograms if MainLog is reading directly from the instruments.

Scales can be changed from linear to logarithmic and the chart can be annotated. A new chart file is created every 24 hours beginning at 12:01am and is saved in the **c:\mainlog\chart \<filename@date.cht** directory. By clicking on the browse button you can view any previous charts stored in that directory.

- **Wits**

In order to turn on Wits you must first know what com port your feed is on and select it from the **Setup/Gas Monitor Setup menu**. Check the appropriate box in the Gas Monitor Setup on whether it is Pason or Other. If the com port is not correct you will get an error message when trying open **View\Wits**; stating: “Connection to com < # > failed.....” **Go to Control Panel\System\ Device Manger** and see what com ports are available and change it in the Gas Monitor setup.

- **Wits Chart**

Selecting Wits Chart will open a chart of incoming wits data. The logger can select what information he wants shown on the four charts available and up to two different curves per chart. Scaling and selecting the size of the grid is also available. Charts are saved on a daily basis so by browsing pervious charts can be selected and viewed.

- [E-Log Data as Text](#)

E-Log Data as Text will only be seen if any E-log LAS data was imported to MainLog. This displays a dialog box with the data that was imported from the LAS file. The data is not editable. The dialog will update as you navigate through as the file.

[Options Menu](#)

These options can be found under *Options* on the toolbar. *Correct File Depth, Offset ROP, Gas as Percent of Total, Create LAS File, Other Options, Drilling, Gas Monitor, and Wits Monitor.*

- [Correct File Depth](#)

Enter the correct file depth to match the driller's depth. If a negative depth correction is made, MainLog will automatically backup the file at the depth the correction was made.

- [Offset ROP](#)

Off set ROP from other MainLog log files can be imported and then be selected to be drawn in the ROP column with the current well. The offset ROP can be "clicked and dragged" on, up or down, to correlate with the current well. At the bottom of the ROP column MainLog will display how high or low the current well is to the offset well.

- [Gas as Percent of Total](#)

This displays an additional grid over the description area of the log, which displays C1 through C5 as a percent of the total chromatograph gases.

- **Save Reports as Text**

It saves each report type as an ASCII text file which can then be opened with any text editor.

- **Create LAS**

It prompts for an interval to create a LOG ASCII STANDARD file from the current log file. Will be saved in the home folder as filename.las where filename is the name of the file currently opened. LAS Ver 3 which includes descriptions can be selected.

- **Other Options**

Append File Depth...Allows you to make the file deeper than actual logged depth. This is useful when importing offset e-logs curves to correlate further down the hole while drilling. Zero's out data through the new interval. This cannot be used to truncate file in office mode.

Adjust File Depth...Adjust the whole file by the number of feet you specify. For instance, to sync the file to e-log depth. Adjustments can be positive (deeper) or negative (shallower).

Insert Delete Records...Records can be inserted or deleted from the log. Before doing so consult with your office and make a backup copy of the log before doing so. You can also "Check File Depths" here. This is where MainLog will check to see if there are any depth errors in the file and make corrections if necessary.

- **Drilling**

This puts you into drilling mode. (data acquisition & plotting) If there is no hardware key plugged in, you will not have this option.

- **Gas Monitor**

Turns on the gas monitor. You must make sure you are on the correct Com Port and select this in **Setup\Gas Monitor Setup**.

- [Wits Monitor](#)

Turns on the wits monitor. You must make sure you are on the correct Com Port and select this in **Setup\Gas Monitor Setup**.

[Enter Data](#)

These options can be found under *Enter Data* on the toolbar. *Add Note, Lithology, Gas, Descriptions, Rate, Shows, Outline, TVD File Data, Survey and/or Horizontal Data, Flare Data, and Lagtime.*

- [Add Note](#)

To enter notes, click on *Add Note...* and a dialog box will open. Enter the depth (on an even foot) and then enter your text and the position of your note. The red number line determines where you would like your note to be on the log. You can have up to two notes per line. Notes only two (2) ft apart in the same location will overlap. Once you are finished, click the *<Save>* button. To exit, click the *<Done>* button. Using a”>” as the first character in the note will cause it to be displayed on a 1 inch and 2 inch format as well as the 5 inch.

You can also use the up down button to change depth. Once a depth is selected, the drop down list of stored notes will be enabled. You can select a note from this list to save typing. Optionally, after you type in a new note, you can check the store button for that note and it will add it to the list. The list is stored in a text file in the mainlog folder named “mlnotes.txt”. This file can be edited in Notepad.

- [Lithology](#)

To enter lithology, you can do it one of two ways. Under the *Enter Data* menu on the toolbar, you can select the menu item *Lithology....*, which will prompt you to enter a depth. Enter the depth and either press *<enter>* or you can click *<OK>* with the mouse. Another, easier way is to double click in the lithology column with your left mouse button and it will start you at the depth you last entered lithology. All abbreviations and accessories are under

the <**Help**> button. Once depressed, you can view exactly how to enter lithology. To scroll up and down to different depths (only within the a certain interval; i.e., if you entered a start depth of 1000', you can only scroll up to 1000') you can use the up and down arrow keys located on your keyboard. To go back to entering lithology, click the <**Help**> button once more. Once you are finished, click the <**Done**> button with your mouse. Some logging companies have a "sand shale only" feature. If you have this feature, simply enter the percentage of shale, and the balance of 100% will be entered as sand.

New Lithology Symbols: Granite – GR, Granite Wash – GW, Carb. Shale – CS

Fractures Accessory: Use the "~" symbol as the first character when you enter the lithology percentage. (i.e. 100~ls or 50~ls,20sh)

- **Gas**

To enter gas, look under the ***Enter Data*** menu on the toolbar and select ***Gas***....,it will prompt you to enter a depth. Enter the depth you want to start logging gas and press <**Enter**> or click <**OK**> to continue. You can also double click in the gas column and it will start you at the depth you last entered gas. If you will notice, there are options for ***Max entries***, ***ratios*** (*in some cases*), and ***attenuators*** for the *HW* and *chromatograph*, which should be set before entering gas.

Max Entries: Set this value to the number of gases you want to enter. For example, if you are logging HW, C1, C2, C3, IC4 and NC4, set it to read 6 max entries.

Attenuators: This feature is to help with entering gas. Basically you can enter your HW and Chromatograph readings and it will multiply them for you. For example, if your HW drawer is set to (x10) and your Chromatograph drawer is set to (x10), you can set them in the computer to read: (the attenuators in the entry function are **separate** from the attenuators in the gas monitor setup)

HW is x10

CHROM is x 10

Then you enter actual chart division and the multiplication will be done for you. **Be sure to check these settings when you start!!** Your previous settings will be saved when you exit you can change these numbers by

clicking on the up and down arrow next to the appropriate box. All entries will be multiplied by the appropriate attenuator setting.

Ratios (in some cases): If you choose to, you can log gas by ratios. It will take the last gas readings (**IF GREATER THAN ZERO**) and use them to calculate the ratios. To use ratios, check the box next to **Ratios**. Enter the HW reading for the appropriate depth and it will calculate the rest of your gas readings for you.

++ feature:

When you press the '+' key, the entry depth increases by two feet, but no readings are entered. If you press the key 5 times, the entry depth displayed will now be 10 feet deeper than your last entry. Now enter the values for that depth, and the change will be averaged over the 10 foot interval.

Labeling Gases: With the control key down, right click in the gas grid at the depth you want the labels to be. A dialog will come up, allowing you to check the gases that you want labeled. To remove labels, do the same thing and remove the checks.

- **Descriptions**

To enter descriptions, locate **Descriptions...** on the toolbar under **Enter Data** or by double clicking in the description column. It will either prompt you to enter a depth or place your cursor at the last spot you entered descriptions. Enter your description and then press the save button. To start a new line you must press enter. When the maximum number of characters has been entered on a line the cursor will not move and a Beep will sound. You can add one more character by pressing **Ctrl+Tab**. The arrow keys will move you left and right and up and down to make corrections To save the new descriptions, press the **SAVE** button, if you do **not** wish to save your work, press **cancel** and any new work done **not be saved**.

Descriptions can be entered on a 1 inch format as well in later versions of the program. This can be done directly by starting the enter description function while a 1 inch log is displayed on screen. This can also be done when entering descriptions on a 5 inch format by making the first character of the description a ">". This will cause the description to be copied to the 1 inch format, providing there is room in the file and there is not a description

already saved in the records involved. If there are 1 inch descriptions in the file they will also display on a 2 inch, but will be spread out to cover the same number of feet.

When printing, you can choose to print the 1 inch log with or without the descriptions.(assuming you have used one of the above methods to enter them).

- [Rates](#)

Use the rates option to enter or correct drill time. It is located under ***Enter Data*** on the toolbar as ***Rates....*** After selecting this option, it will ask you to enter a depth. Once you have done this, it will let you start entering one foot rates. Rates can only be entered as one foot rates. If you are in two foot or ten foot mode when you start this function, the screen will redraw in one foot mode. When you select the done button, the program will reset to the rate mode you were in when you started. To quickly change a long foot from a connection, double click 2 ft above the rate you want to change, then press enter twice. Then click done.

- [Shows](#)

To log shows, look under the ***Enter Data*** menu on the toolbar and select ***Shows....***,it will prompt you to enter a depth. Enter the depth you want to start logging shows and press ***<Enter>*** or click ***<OK>*** to continue. You can also double click on either the porosity, cut, or fluorescence column to do the same.

After you have entered a depth, you will come to a dialog box that will allow you to log ***porosity, fluorescence,*** and ***cut.*** To change between them, check the box that corresponds to what you want to log.

For ***porosity,*** you can log either trace (t), poor (p), fair (f), or good (g), with the appropriate letter.

For ***fluorescence,*** enter the percentage followed by trace (t), poor (p), fair (f), or good (g). If you enter only a percentage, it will default to good.

For *cut*, you can log either trace (t), poor (p), fair (f), or good (g), with the appropriate letter.

Once you are done, click the *<done>* button with the mouse.

- [Outlines](#)

You can use the outline feature to label LAT intervals, DST's, etc.... It is located under **Enter Data** on the toolbar as **Outlines**.... A dialog box will appear and ask you for an interval and text. After entering your text, you can choose between narrow and wide position. When you are finished, click *<save>* and then *<done>* to exit. If you make a mistake and want to erase, enter the same interval and click *<delete>*. It should then immediately erase the outline.

- [TVD Data File](#)

The TVD Data File is where the MWD surveys are entered in for Directional Wells only. By entering in the surveys a new file will be built by deleting records from the measured depth log as appropriate. (the measured depth file is not changed) This file will have the same name as the measured depth file except the first character of the file name will be replaced with a tilde character '~'. All data except descriptions will be copied over to the TVD file. Notes may be lost if a record is skipped that contains a note. Once the kick off data has been entered, you will be prompted for the MD and TVD for subsequent surveys. The file will be appended with the new information. You can build the file as you get each survey, or do it all at once when you reach TD. Once created, the TVD file can be edited the same as any other file EXCEPT; you cannot go to drilling mode, and you cannot enter tvd information. If you are sending files by e-mail or JFT software the tvd file will also be sent. To open the tvd file, select Open from the file menu, and select the file that has the same name as your MD file, except has a '~' as the first character. You can make changes as necessary, the same as in the MD file. You should back this file up from time to time, as with the MD file.

To enter in surveys for a Horizontal wells go to **Survey and/or Horizontal Data**.

- [Survey and/or Horizontal Data](#)

This is where the survey information is entered when doing a horizontal well. When at least three surveys are entered and there is a significant change in inclination, MainLog will create the horizontal 5, 2 and 1 inch log. It is recommended that you view the horizontal log after making an entry to insure that the curve “looks” proper and a survey number was not entered in incorrectly. MainLog will also add the horizontal and surveys to the quick view menu.

- [Flare Data](#)

Flare lengths can be displayed on the mudlog by entering in the depth and the length of the flare. Flare color can also be changed by going to **Setup/Log Colors**.

- [Lagtime](#)

To enter a new lag time, look under *Enter Data* on the toolbar as *Lag Time....* A dialog box will appear and prompt you to enter a new lag time. Enter in your lag and click <OK>. The program also automatically adjusts your lag for you by taking your depth and dividing it by your current lag time. It then adds to your lag as you drill. Remember not to trust the computer completely and to run carbides accordingly. If using strokes, see more about lag using strokes below.

[Lag Using Strokes:](#)

MainLog can track lag using strokes 2 different ways. Physical pump stroke counters can be hooked up to the gray (or black) depth box at the appropriately labeled positions.

Optionally, if you have a wits feed to MainLog, a Virtual stroke counter can be used, using the SPM information in the wits feed. To turn strokes on, open the **Lag Calculator** under **Setup**, and check “Lag Using Strokes” after

filling out all the required information. Then, to enable the Virtual Wits Strokes, click on Use Wits Strokes. The wits feed must be enabled and receiving data for the option to be available.

You MUST fill out the information in the lag calculator for the Lag by strokes to work. It uses volume to determine the bottoms up value, (Annular Volume), and combines SPM (strokes per minute) and BPS (barrels per stroke) and pump efficiency for each pump on the hole to track the samples and gas coming out of the hole. Once the information is filled out, you can enable the stroke counters and MainLog will accurately track lag, and update Bottoms up Volumes every foot. If you are not sure the information you enter is correct, you should use time lag until you can verify it. If the measured lag is greater than the calculated lag (not unlikely), you can and should enter a washout percent. MainLog will increase the open hole size by the percent you enter, in the calculations to determine annular volume, and thus lag barrels, strokes, and time.

MainLog will track strokes with accuracy within ABOUT 1 percent on a "typical" computer. This may vary a little depending on the speed of the computer, and more so, by how many other programs are running, how many pumps are being tracked, (on the hole) and how fast they are pumping. It is the loggers responsibility to verify the lag is being tracked correctly. It is possible under some circumstances that it will not work well, and Time lag should be used. When MainLog first starts up, the lag depth will be displayed in red. This is because the lag depth is calculated based on estimates and assumptions that may not be valid, and the lag depth may be wrong. It is the logger's responsibility to be aware of what the lag depth should be, and recognize any large errors on startup.

ANY TIME YOU START MAINLOG WHEN THE RIG IS CIRCULATING AND NOT DRILLING, THE LAG DEPTH WILL BE WRONG

Setup Menu

These options can be found under *Setup* on the toolbar. *Lines and Scales, Log Colors, Gas Monitor Setup, Alarms, Lag Calculator, Test Gas Values,*

SW, Wits Alarms, and Horizontal Data.

- Lines and Scales

Allows you to change the default line styles and scales used by the loggers in the field, scale changes can be made permanent by checking the save as default check box and entering the appropriate interval when prompted. Also allows setting a ROP (rate of penetration) value below which the rates will be highlighted.

Allows turning on or off the tops lines if any. (all or none).

To edit any lines or scales, select **Setup** on the toolbar and choose **Lines and Scales**. A menu will then appear, showing you different rates, rate styles, scales, and other options you can use.

Rates: You can use this to modify the screen rates. You can choose between one, two, ten, and five foot rates. This is handy for correlation to different size logs. To select a rate, click next to one of the rates in the check box.

Rate & Gas Line Style: This option allows you to view your rates and gas in either blocked or point to point format. Choose one by clicking in the check box next to your desired choice.

Changing Rate or Gas Scales: To change either rate or gas scales, click on the pull down menu under rates scales or gas scales. This will give you a number of different scales to choose from. Select a scale by clicking on the option of your choice. Next, (and this is important) click on the box next to **Save scale as default** or **Save gas scale as default**. This will then bring up another dialog box asking for a depth to change the scale. Enter the depth and click <**OK**>.

Delay: This allows you to set your delay for your drill rate. For example, if you have it set for 6 seconds, the computer will not respond to a foot drilled unless it is more than 6 seconds. The delay acts as an **anti-bounce** feature.

Auto Drill: If the wits feed is down or the geolograph line is broke and the rig continues to drill you can check the “Auto Drill” box and estimate a drill rate. You will need to keep up with the pipe tally and make depth corrects on Kelly down, but you will at least be able to track gas and collect samples

while the wits feed or geograph is being repaired. **Note: Auto Drill mode will be turned off if MainLog is closed.**

Other Options:

Highlighting rates: This option allows you to set an ROP, and the computer will highlight any rates faster than that ROP. This allows you to see drilling breaks with ease. Select any ROP by clicking on the arrows or by clicking inside the box and entering a number with your keyboard.

Draw tops: (read the **Tops** menu before going on) If you have any tops labeled, this will allow you to turn this feature on and off simply by clicking on the box. (Tops on if box is checked)

There are numerous additional options, some available only for certain clients, some only when in drilling mode. Some options are only available when another option or feature is enabled. Most are self-explanatory, but if not sure, give me a call or drop me a quick email. (Help..About from MainLog program)

Enable Custom Tracks:

Under SETUP LINES and SCALES there may be check to enable custom tracks. This is not available for all clients. When you check this, MainLog will add a default custom grid to the right of the gas grid, and compress the width of the log to allow room for the additional grid. Right clicking on the custom grid will bring up a dialog that allows you to customize both the grid itself, by changing the number of blocks, or the block width, or adding a second grid. You can select up to 4 different data sets on each grid, set the scaling, pen color and other options. Many of the data sets will only be available if you have a wits feed that provides the data, such as WOB, RPM, SPM etc. The gases, ROP, flare can all be tracked if available on the log. Additional options will become available over time; your input is always appreciated. Much of the data can be imported from an LAS file provided by Pason, Totco or whomever is doing the rig monitoring on the well.

- **Log Colors**

Select the line and then click on “**Choose Color**” to pick your color you. Custom colors can also be made. Next select what **Style** and **Line Width** you want.

- **Gas Monitor Setup**

(Not available for all logging companies.)

When enabled, **OPTIONS...Gas Monitor**, and properly setup **SETUP...Gas Monitor**. MainLog will monitor gases in one of two possible modes.

Mode 1: No Ratio's, will use actual chromatograph and hotwire readings, and log zero's if there is no reading available for the lagged interval. How well this works depends on the cycle time of the chromatograph, and the ROP. If drilling 30 seconds a foot, and you have a 4 min cycle time, you will not have readings for every 2 ft lagged interval. When these conditions occur, you should log using.

Mode 2, Calculated Ratio's ...

When in this mode; the ratio of each gas (C1-C5) is calculated as a percent of the hotwire. The ratios are updated each time you have a new chromatograph cycle. The ratios are then used on the highest hotwire reading for the lagged interval to give you the most accurate values for C1-C5 possible.

Elution Times

Enter the elution time for each gas **peak** . Readings will start being taken 3 sec. before the time entered until 3 sec. after. The highest reading in the 6 sec. interval will be used for each gas. If the elution times are off by more than a few sec. The readings will not be accurate.

Hotwire readings are taken every second; the highest reading within a 2 foot lagged interval will be used.

Gases are logged to a two foot interval and updated on screen on even feet only.

There will be some differences in setup and function from one instrument type to another. Series 2000, Analytical, DAQ, Midland Instruments, IBall, Blue Ray, etc.. The instruments must be operating correctly and have a reasonable zero baseline for the Gas Monitor system to work well. On some instruments MainLog is just getting a wits feed and them plotting the gases.

The software will “read” a chromatograph zero point at the elution time entered for **chromatograph zero**. This value will be subtracted from all readings to help compensate for **MINOR** drift from cycle to cycle. Where in the cycle you set this will depend on the characteristics of the chromatograph you are using. If set incorrectly, the chromatograph readings will be too low or too high. Some experimentation with this setting will be required.

Drift

Filament drift of more than one or two chart divisions will seriously detract from the accuracy of the readings. To help compensate additionally for drift, a drift value for each gas, C1-C5 can be entered. This value should reflect chart divisions of drift multiplied by the current attenuator. I.E. 1 div of drift, with the attenuator at x5= a drift value of 5, not 1.

Hotwire Delay

This value represents the time it takes for the gas sample to move from the hotwire to the chromatograph. (Or in some cases from the chromatograph to the hotwire) This value is critical for the ratio's to calculate on the correct hotwire reading. Again, some trial and error will be involved in determining this best place for this setting. A **SAMPLE HOT WIRE READING (SHW)** will be taken the number of hotwire delay seconds after the chromatograph samples.

If the hotwire and chromatograph sample at the same time this value should be at or near zero. If the sample flow is from the hotwire then to the chromatograph, the number entered will be subtracted from the total cycle time in order to read the sample hotwire before the chromatograph samples.

An Example....

Assume a total cycle time of 4 min, or 240 sec. If the HW Delay is set to 230, the SHW will be read 10 seconds before the chromatograph shifts. If

the HW Delay is set to 200, the SHW will be read 40 seconds before the chromatograph shifts. Etc.

Ratio's will be calculated on the Sample Hot Wire(SHW). IE

Actual readings..

SHW=100

C1= 80

C2=50

C3=25

C1 ratio=C1/SHW= .80

C2 ratio=C2/SHW= .50

C3ratio=C3/SHW= .25

Assuming a MAX HW reading of 200, the chromatograph gases will be calculated as follows:

C1= Max HW X C1 ratio=200 X .80=160

C2= Max HW X C2 ratio=200 X .50=100

C3= Max HW X C3 ratio=200 X .25=50

Span

The Span is used in the gas calibration of certain instruments. It acts like a sensitivity pot to get the correct reading with test gas.

Attenuator

The attenuator may be used when diluting a gas sample with air.

Max Gas Readings

This represents the number of gases that will be read and plotted on the mudlog. If you are drilling in an area where there is only Methane and Ethane there is no reason to read all the gases, so this could be set to 2. This will allow for shorter cycle times and hence more readings on the chromatograph.

Com Ports (for reading instruments & Wits feeds)

In order for MainLog to acquire data from instruments and/or a Wits feed,

Com Ports must be available on the computer. Today, most computers no longer are made with 9 pin serial ports, only USB ports. Because of this a [USB to Serial adapter](#) must be used. (MainLog recommends a “USB to Serial Adapter” made by *Keyspan*) If using this brand, the drivers must be installed before plugging the adapter into the computer.

After plugging the adapters in, to find out what com port the adapters are on, go to “**Control Panel**” then “**Systems**”, then “**Device Manager**”. You will see the device, “**Ports**” with a “+” sign next to it. Click on the + sign and you will see what com ports the adapter(s) are on.

Go to **Set-up/Gas Monitor Setup** and enter in the com port numbers for you **Gas Monitor** and **Wits feeds**.

- **Alarm**

This will allow you to set a drilling break alarm, a time, depth, or even long foot. After you have selected alarms from the menu, a dialog box will appear with several different options. Alarms can also be set for high and low gas if using the gas monitor system

Drilling break alarm: First, set the ROP under *Drilling break*, by either setting the cursor inside the text box or by clicking inside it, then erasing the number, or setting a new ROP. Then select how many feet in the same manner.

Depth: To set you alarm for a depth, enter the depth inside the text box under depth.

Time: To set your alarm for a time, enter the depth inside the dialog box under Time. Enter in a standard time (not military time), and if it is PM, check the box next to PM. If this box is not checked, the computer will assume that it is AM. **Important: this alarm works off the computers clock-be sure the time is correct on your computer!**

Long foot: To set the alarm for a long foot, enter the ROP inside the text box.

You may want to test the alarm by clicking the <**Test**> button. You must have speakers and a wave file in order for the alarm feature to be useful to you. Once you have set your options, press <**OK**>.

Wits Alarms are also available from this menu, but there are additional Wits Alarms shown in more detail in the **Setup/Wits Alarm** menu.

- **Lag Calculator**

A theoretical lag can be calculated by entering the specific drilling parameters. With a wits feed from the EDR, lag can be calculated using strokes as long as all the proper information is entered in correctly. Even down hole motors can be figured in.

- **Test Gas Values**

This menu is used if gas readings are going to be plotted in percent. Enter in the test gas values for 1% for each gas and these will be used to calculate the gases as percent.

- **SW**

This dialog allows editing of the values used to calculate water saturation after e-logs are imported. Different values can be saved through different intervals of the log, allowing accurate SW and BVW curves to be plotted.

- **Wits Alarms**

In this menu an alarm can be set for many different rig parameters that are being wits in.

- **Horizontal**

General:

The horizontal log is simply a different view of the data. From a logging point of view, you do all your data entry on the vertical log, except notes can be entered directly on the horizontal screen.

The Quick view buttons will work on the horizontal view when it is open.

Horizontal Descriptions:

Using a “~” (tilde) as the first character of a description on the vertical log will cause that description to be displayed on the horizontal at the same measured depth. To remove the description, simply edit the description on the vertical log, and remove the tilde. The tilde will show up in drilling mode, but not in office mode or when printing.

Horizontal Notes:

To add a note, simply double click the position on the log where you want the note to be. An edit rectangle will open for adding the note. Press enter to go to the next before reaching the text box limit, Control enter to save and close, escape to abort. To move the note, hold control key down, press mouse button with cursor in the note rectangle and drag note to where you want it, then let go. To edit, double click the note rectangle. Notes entered on a five inch will only display on a five inch view, same for one inch and two inch view.

Horizontal Options:

There are many options available to customize or accent different aspects of the horizontal display. Most will be left on, but it can be useful to turn off one data set in order to emphasize another. Some that make a very different impact are “Fill Behind Gas”, “Lithology Overlay”, and “Draw Lithology” On Well Track. Experimenting with these options should allow you to create a custom view that is useful to your specific situation.

Anchor Gamma:

Typically a gamma file imported into MainLog from the original bore hole, assuming a plug back situation, or possibly from a close by VERTICAL well bore. This will be display vertically on the left margin of the horizontal view.

Target Gamma:

Possibly the same mlc (gamma) file as the anchor gamma, but displays vertically every 500 ft. across the measured depth portion of the log.

Anchor or target offset:

Value can be entered if gamma file is from a different well bore to adjust for different elevations.

Kickoff Depth: (Draw From)

This can be changed to alter the total number of vertical feet drawn in the TVD or vertical portion of the display. The number can be entered directly in the edit box, or can be set by left clicking on the desired vertical depth just to the left of the grid on the horizontal display with control key held down. Clicking as above to the left of lithology will move the kickoff depth up 100 Ft. Clicking near the top of the display will set it back to zero. The default is zero, and MainLog will limit the vertical interval to about 500 feet.

Regional Dip:

A value in Ft/mile or degrees can be entered for regional dip and MainLog will adjust top lines and Tops lithology to follow the dip. Negative for up, positive for down.

Scales:

Scales can be selected for rates, gas and gamma. The same scale will be used for the whole horizontal log.

Number of Gases:

Enter the number of gasses you want to plot, 1 = HW only, 2 will be HW + 1, etc.

Scaling:

Draw a 1 in/100 ft, 2 in/100 ft or 5 in/100 ft.
It can also be selected from the Quick View Bar.

Setup Colors:

Click to set colors and line weight for most of the data displayed on the

horizontal log. This works independently of the vertical settings. Experimenting with different colors can make a surprisingly different visual impact on the finished log.

Horizontal Save as Image File:

Select the image type you want, bmp, tif, jpg etc. Whenever you open the horizontal view, an image of the type selected will be saved in the MainLog folder, or where ever MainLog is installed. Once you have the image you want, select none, as it slows down the display of the horizontal view when creating the image file.

Enter Data:

Available in drilling mode only, click to enter survey information. It can also be imported from an LAS file. To edit or delete survey data, go to enter data mode, select from the list the survey you want to edit or delete. LEAVE THE “MD” UNCHANGED, set TVD to 0 to delete the survey, or edit values as appropriate. Click Save, then Done.

Assign Tops Lithology:

Select a top from the drop down tops list. Only tops designated to show on horizontal in the tops dialog will be in the list. Select the lithology to associate with the top, and possibly an accessory. Click Save, and do another if desired, or click Done if not. When draw lithology overlay is selected, the designated lithology will be drawn from the top line, down to the next top line.

Adding accessories to horizontal:

Click on view header to open the header. Then click the lith symbol for the accessory you want to add. Hold down the control key and click on the log where you want the accessory displayed. When done, let go of the control key, and close header. You can add accessories to the lith overlay, and/or the lith when following the well track. They will display at the right place for the view you are using. To remove, simply double click the one you want to delete.

Projection:

Place the mouse cursor on the last small circle on the well track line. With the mouse button down, drag to the right. As you do, MainLog will show the MD and TVD at the mouse point, and the INCL required to achieve that TVD at that MD. When you let go of the mouse button, the last values will stay on screen. To clear them, simply scroll the log to cause a redraw.

Right clicking anywhere on the grid will bring up a data box showing basic info for that depth. Right or left click again to hide.

Additional new features will be coming out over the next few months. Your input will be greatly appreciated

Horizontal Printing:

To print the horizontal, open the horizontal view, then go to FILE...Print. Enter the start and end depth, set the printer to landscape and banner. If the header is open on the horizontal, it will print, otherwise it will not. Clicking 2 ½ inch will print the log at ½ current scale. IE if 5 in/100ft is the current scaling, it will print a 2 ½ inch log, if 1 in/100 ft. is current scaling, it will print a ½ in/100 ft. log etc.

Tops Menu

- **Tops**

Edit existing or add a new top. Enter the depth for the top. If you want the top added to the tops menu, enter a name for the top in the appropriate text box (i.e. Morrow). Enter any text you want displayed with the top line (max 40 char including subsea depth). If you check the Append subsea check and there is a KB entered in the header, the subsea depth will be appended to the text. Enter a location for the text if desired, and the default location is the left border of the rate grid. A red line will be drawn at the depth selected across the whole log excepting the description section. You can drag this line up and down to make corrections; the subsea depth (if any) will automatically be updated.

The Tops line can be tuned off in the **Setup/Lines & Scales** dialog. This turns off printing of the tops as well, otherwise the tops lines and text will be printed on all log formats, in red if color is selected in the print setup. The Tops line can also be turned on or off in the Print menu.

If you added the top to the menu, by entering a menu name, selecting that top from the menu will scroll the log to start ten ft above the top depth (if the top is not already on screen). You can create as many tops as you like, with or without text. A maximum of 40 can be added to the tops menu for fast access to those points in the file.

If you have two or more wells close by, you can import an existing tops file by clicking the import button. This will bring up a file open dialog. Select the tops file you want to import, and the tops from that file will be saved to “filename”.tops, where filename is the first part of the file name now open. Once imported, you can simply drag the tops line up or down to correct for this well file. **If there is a top file (.top) already associated with this file, it will be over written.** If you check the show on horizontal check, MainLog will calculate the TVD for the MD entered for the top. This is where the top will be drawn on the horizontal. You can also define the width of the “target Zone and MainLog will draw a line on the bottom of the zone.

Schemes Menu

This option can be found under *Schemes* on the toolbar. *Edit Schemes.*

- **Edit Schemes**

Schemes allow you to turn on or off any data type contained in the log file, or the E-LOG curve file. Checking the data type in the schemes dialog will turn it on if that data type is available. Once set, you can name the “data set” and these lines will be displayed when the named scheme is selected from the scheme menu. This feature is only useful if there is E-LOG data available to display. The same “scheme” will print as displayed on screen.

Additionally you can check the 'plot density on rate grid' checkbox, which will cause the density porosity curve to draw on the rate grid instead of the normal porosity grid (gas grid). This can be useful for correlating. You can elect to draw total gas only by checking the Total gas only check. Wrap applies only to the e-log curves, and can be turned on or off for each scheme. Once created and saved, the name you selected will be added to the menu, (max 6 schemes), and will apply to any file that contains the appropriate data.

When displaying resistivity curves, a logarithmic grid is used. The various scales for each curve displayed, are drawn at the bottom of the grid. Line colors can be changed by going to SETUP...Log Colors. By right clicking in the gas column at any particular depth the water saturation will be displayed based on the values entered into the Archie equation.

Import Menu

By clicking on **“Import”** the following selections are available: *Import ELog Data and Select.*

- **Import Elog Data**

The import function allows you to import e-log data from any certified LAS (log ASCII standard) file generally provided by most, if not all wire line companies. If the LAS file is in **“wrap”** mode this function **will not** work (an “unwrapped” file should be available from the wire line company). You will first be prompted for the file name of the source file. This file must have an “LAS” extension.

Once the file name is selected, assuming it is a certified LAS file, a dialog box will be displayed showing the file names and depths, and on the right side of the dialog a list box which contains the names of the various “curves” found in the LAS file. (“Curves” will always refer to e-log data in this manual). MainLog will allow you to import the following “curves”: Gamma, Density Porosity, Neutron Porosity, Crossplot Porosity, Sonic, SP, PE, up to six Resistivity Curves and Caliper.

If no cross plot is available, AND you are importing both a neutron and a

density curve, the cross plot will be calculated as an average of the neutron and density.

From the dialog box you will see the “**Import Source File**” and its location on the upper right and the “**Import Destination File**” to the upper left. The Destination File Name will default to whatever the Mudlog File Name is, however, you can rename the destination file. For example, if you are importing a gamma curve from an offset well you may want to give it the name of the offset. The files you import will have a “**.mlc**” file extension and later you can select what “mlc” curve file you want transposed onto the mudlog. It is in binary format and cannot be edited.

Select from the “curves” list box the curve you want to import, and then match it to the curve “type” from the list box on the left., Click on the **ADD** button and that curve and type will be displayed in the selected list box. Repeat this for each appropriate curve, and when all curves are selected, click **Import**. Before importing, be sure the KB displayed is correct, if not; correct it in the edit box.

You can import additional curves into the same file provided the total depth of the file is equal to or greater than the LAS file you are importing. Additionally, if the required information is available in the file, the water saturation and bulk volume water will be calculated and added to the “curve file”. Once imported, the “**Scheme**” (See page) feature can be used to display any or all the curves. Also note that regardless of what the logging depths on the mudlog are, the entire e-log file will be imported, both above and below what the file depths are for the mudlog.

It is not unusual to have more than one source file for the same well. If this is the case, import the deepest file first, and then any other files can be added.

- **Select**

From **Import/Select** you can choose either an **Elog** MLC file you imported or a Mainlog mudlog **ROP** curve. If you choose **Elog**, select the mlc file from the dialog box that you want transposed onto the mudlog. Go to **Schemes/Edit** to setup your formats. See Schemes page

If you select **ROP**, from the dialogue box click on the mudlog “MLW” file

you want transposed onto the log. When you select the mudlog the box will automatically close. Go to the “**Options**” menu and click “**Offset ROP**”. The offset ROP will be displayed in red and you can click and drag on the curve, up or down, in order to correlate. Below the ROP column is the display of how high or low you are to the offset well.

After importing a gamma curve you can also click and drag on the curve, up or down, in order to correlate with the mudlog, as the display below shows. When sliding the gamma curve, all the other imported curves will move as well.

- [GAMMA SCALE](#)

The various scales are hard coded, except for the gamma scale. The gamma scale can be changed by double clicking in the space between the bottom of the ROP grid, and the line for the gamma scale text below the ROP grid. Clicking to the left of the word gamma, will select the next scale lower. Clicking to the right will select the next scale higher.

Down time and Circulating time

The best down time control is an off bottom switch that can be wired to the depth box provided by MainLog if the gas monitor system is enabled. To stop the counter and enter downtime, hold down the **Ctrl** key on your keyboard and press **D**. A message at the top of your screen will say: **Down time 00:00:01**. The counter will then run until **Ctrl-D** is depressed again, or a foot drills, which will take you out of down time.

While in down time, you can also press **Ctrl-C**, which will put you in circulating time. This will allow your lag depth to run while stopping the drill rate counter. After pressing **Ctrl-C**, another counter under the down time counter that will say: Circulating time 00:00:01. To stop the counter, depress **Ctrl-C** once again and the counter will disappear. Once in down time or circulating time, a foot being drilled will exit down time and drilling mode will resume. One exception to this is your delay time in lines and scales. If you engage downtime with less time than your delay is set at, it will not drill out of downtime. Downtime will then have to be disengaged manually. If using Strokes to track lag, circulating is tracked automatically.

NEW OR RECENT PROGRAM FEATURES

1. **Real Time Gamma:** MWD gamma can be plotted real-time via a wits feed. This is dependent on the ability of the directional company to send a wits feed to the EDR and then wits the data to MainLog. If this is available go to **Schemes/Edit** and check the box “**Real Time Gamma**” and click save. When this is done a RTG box will be seen on the Wits Menu box. It is recommended that you get an LAS file of the gamma periodically and import it as MWD companies will make corrections to the curves after the fact.
2. **New Lithology Symbols:** Granite – GR, Granite Wash – GW, Carb. Shale – CS
3. **Fractures Accessory:** Use the “~” symbol as the first character when you enter the lithology percentage. (i.e. 100~ls or 50~ls,20sh)
4. **F5 toggle:** Pressing the F5 key will toggle you between a 1” & 5” log on screen.
5. **Rotate/Slide Feature:** Place your cursor (mouse pointer) in the first grid block in the ROP column at the depth where they rig started a slide. Hold down the CTRL key, then left click & hold down the button and drag the cursor down the column to the depth the rig began to rotate and release the button. A blue line will be drawn in this interval with the letters S & R to show the depth where the slide and rotating began. To delete or edit the blue line, just click and drag over the same interval.
6. **Multiline Notes:** Can be put in at any location. Not just in the far left column.
7. **Adding Descriptions to a 1” log:** While entering in descriptions for a 100’ interval, choose one description that best describes that section. Add the ‘>’ symbol in the first line of the description and that

description will automatically be put in the 1 inch log. Make sure both loggers are doing this so the 1” log doesn’t have gaps in the description column. (i.e. >LS:WHT VFXLN, ETC.)

8. Sending Logs: There are three new check boxes that appear in the dialogue box when you send the log in. (Does not apply if ALWAYS SEND ALL is checked in SETUP..LINES AND SCALES)

a. Send Report file – The program automatically sends in the first 20 reports every time. After that only each day’s report will be sent in and then appended to the previous reports in the office. By checking the box it will send in all reports.

b. Send Top File - If you created any Tops lines, they can only be sent in if this box is checked. If the geologist has his own tops lines and you send in yours it will overwrite his. **Therefore, do not send in any tops line unless the geologist tells you!**

c. Send MWD File - If you are importing a gamma ray file to your mud log from MWD check here to send gamma ray file in as well.

If you have a satellite, or other high speed connection, Go to “SETUP/Lines And Scales ” and check Always Send All. This will send the complete mlw file and all related files except tops, and the cfg file. To send those as well, check the appropriate check in Setup Lines and Scales dialog.

9. Adding Connections: To add a connection indicator to the log, without using a note, place your cursor within one block width to the right of the last rate grid block. Hold down the control key, and press the left mouse button. This will place a “_c”, at that position. If you click in the upper half of the block, the “_” will be centered on the block. If you place your click in the lower half, the “_” will align with the lower grid block line. Pressing the right button will put in or remove a casing point symbol.

10. Labeling Gases: With the control key down, right click in the gas grid at the depth you want the labels to be. A dialog will come up, allowing you to check the gases that you want labeled. To remove labels, do the same thing and remove the checks.

11. **AUTO DRILL:** In setup lines and scales, there is an option for auto drill. Check the auto drill check, and put in an average ROP in Min/ft. MainLog will plot ROP at that rate until you get your depth input fixed. If you close MainLog and reopen it, Auto Drill will not be on, you must go back and engage it again.

12. **Unmanned Option (new 5/09 Not available for all clients):** If using a wits feed for depth, MainLog by default simply adds one foot when the wits depth changes. Checking Unmanned Unit in Setup...Lines and Scales (if available), causes MainLog to actually set the MainLog depth to match the wits depth. This is likely a better option when logging un-manned wells. It will only do this when “ON BOTTOM”, meaning the Bit Depth and Hole Depth are the same.

Keep in mind, the depth will change, even if the wits depth sent is wrong. There is no way to know if the wits depth is correct or not. It will back up the file before making a negative depth correction. The file will also be backed up every 1000 Ft. (To \\MainLog\\backup)

FILE TYPES USED BY MAINLOG:

.mlw	32 bit data file (Windows only)
.mlx	32 bit extended data file (Windows only)
.hdr	contains header information, one for each data file
.rpt	contains all the daily mud log reports, if any
.qpt	contains all the daily short reports, if any
.sho	file containing all the show reports, if any
.dst	contains all dst information if any
.top	contains information about any <u>Tops</u> associated with this file
.cfg	contains setup information and closing info so display will be restored to the same state it was in when MainLog last closed, one for each data file
.ini	contains file name of last open file, and in some cases other information
.sch	contains settings for schemes if any

.mlc f advanced features are enable, contains imported E-LOG data

.gas contains actual readings from hotwire and chromatograph if **Gas Monitor** is enabled

.cht contains time based log data, can be displayed in drilling mode in real time gas chart

.wit contains wits data if logger has a wits feed in the field

.wfg configuration file for wits data charting

.lfg configuration file for custom shale colors

.grd configuration file for custom tracks, not available to all clients

.hor configuration file for horizontal view, also contains horizontal notes if any

.ml_ file created for emailing. compressed, contains all necessary auxiliary files

.td_ file created at TD when archiving or creating a new well file. compressed, contains all necessary auxiliary files

.lag stores lag calculator file