POWER SUITE

Version 3.25 Addendum Manual

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OverView

TVD / SSL Module

We have created a new TVD/SSL module to add to the Power*Log application. - TVD and SSL views can be activated from the View menu and from a drop box on toolbar. If the well contains directional surveys, the TVD and SSL view of the log can be shown. A Master survey set is build from the default survey group or is user defined to include multiple survey sets. We have also changed the interface for calculating directional survey group, calculating the master survey group, updating the well path and correcting the other TVD fields in the reporting application.

The TVD/SSL views are now based on the Master Survey group. A definition of the Master Survey Group is a compilation of multiple survey groups to define the well from spud to total depth. Power*Suite has enabled the user to enter multiple set of surveys from different measuring devises. The user can then take points from all the sets to build a Master Set of survey points that best defines the well path. This group is then compiled and then used to represent Power*Log in the TVD/SSL depth views. This survey set is also used to calculate or interpolate TVD values for all measured depth fields. If the user only has one survey set and has kept the group name as 1 then the Master Survey group does not have to be assembled.

There is no ability for the user to edit any data on the striplog in TVD/SSL view modes. We have given the user the ability to transfer Sample descriptions to the striplog in the TVD/SSL views.

We have added a second depth to the mousebox fields to represent both the Measured Depth and the depth of the current view. Either TVD/SSL view.

License Selector Module

We have added another utility to replace the old batch file method to select which License you would like to use. The License selector application enables the user to switch from Crypkey (Software License) authorization and the Hasp (Hardware License) authorization. Also allows the user to set up a remote license where the software license is residing on another box on a network.

Automated Backup Module

We have added the Auto Backup module allows the user to have their database backuped while the database is connected to. This will prove useful when the database is being used and updated on a continual basis and the normal backup procedure when the database is being connected to is not being used on a continual basis.

Upgraded Crypkey Software

We have upgraded our Software protection utility to CrypKey5.5 which will allow us to use the new Windows ME and 2000 opertaing systems.

Print Log Window

We have added the Log width to the print log window to allow the user to better identify which size paper they should be printing the log to. We have also modified this window to be able to print the log in 3 different view modes. The title bar on the Print Log window now identifies to the user which view mode they are in (MD - Measured Depth, TVD - True Vertical Depth, SSL - Subsea Level). Depending on which view the user is in when they activate the print log window the corresponding depth in the print log window will be modified to the view they are presently in.

Slide Rotate Layer / Track

We have added the "S" symbol to the slides in the Slide/Rotate track.

LAS Import Module

We have further enhanced our LAS Import Module to be able to handle more types of LAS files and variations to the true LAS file headers.

Formation Tops Window

We have added a Formation Thickness calculation button to the Well Formation Report window. It will now find the next deeper formation and calculate the measured depth thickness between those two records.

Well Window

We have added a County and Permit # fields to the Well record in the Imperial Version of the program and also redesigned the window to make the flow of data input easier.

Connect Database Window

We have added a Backup database checkbox to the connect database window to automatically backup the database when the user connects to the database and makes a copy of the database file and puts it into the dbbackup directory in the Pgeology directory.

System Options Window

We have added some new functionality's to the System Options window. The user now has the ability to turn off or turn on the bedding contact lines and accessories in the interpretive lithology track/layer.

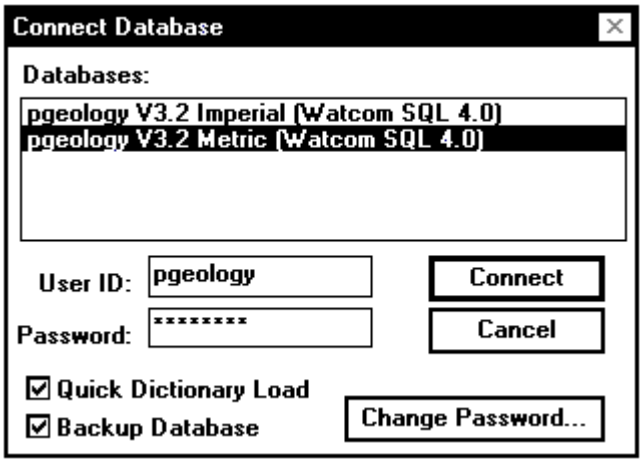
Table of Contents

File Menu Selection

Connect...

Connects Power*Log/Curve™ to a database.

To access the **Connect Database** window, click on **Connect**, under **File**, or click on the **Connect**  **button** on the **Toolbar**.



- **Connecting to a Database…**

1.) When this window is displayed, highlight the **PGEOLOGY V3.2 Metric [Watcom SQL 4.0]** database.
2.) Enter your **User ID** and **Password** in their respective fields (your default **User ID** and **Passwords** are both "**pgeology**").
3.) Click on the **Connect** button to complete the connection.

- **Quick Dictionary Load…**

The dictionaries must be loaded from the database the very first time. After the dictionaries have been loaded for the first time, they will be stored as a few files in **Power*Log's** root directory, in addition to being available in the database. Therefore, each successive time you connect to a database, you can activate the **Quick Dictionary Load** check box (☑), to refer to the quick load files instead of retrieving the dictionaries from the database. This is approximately four (4) times faster than retrieving from the database. Be aware that if you make any changes to a geological expansion dictionary, they will not be reflected upon connection unless you have retrieved the dictionary from the database at least once since the changes. Each time the dictionary is retrieved from the database, the quick load files will be updated.

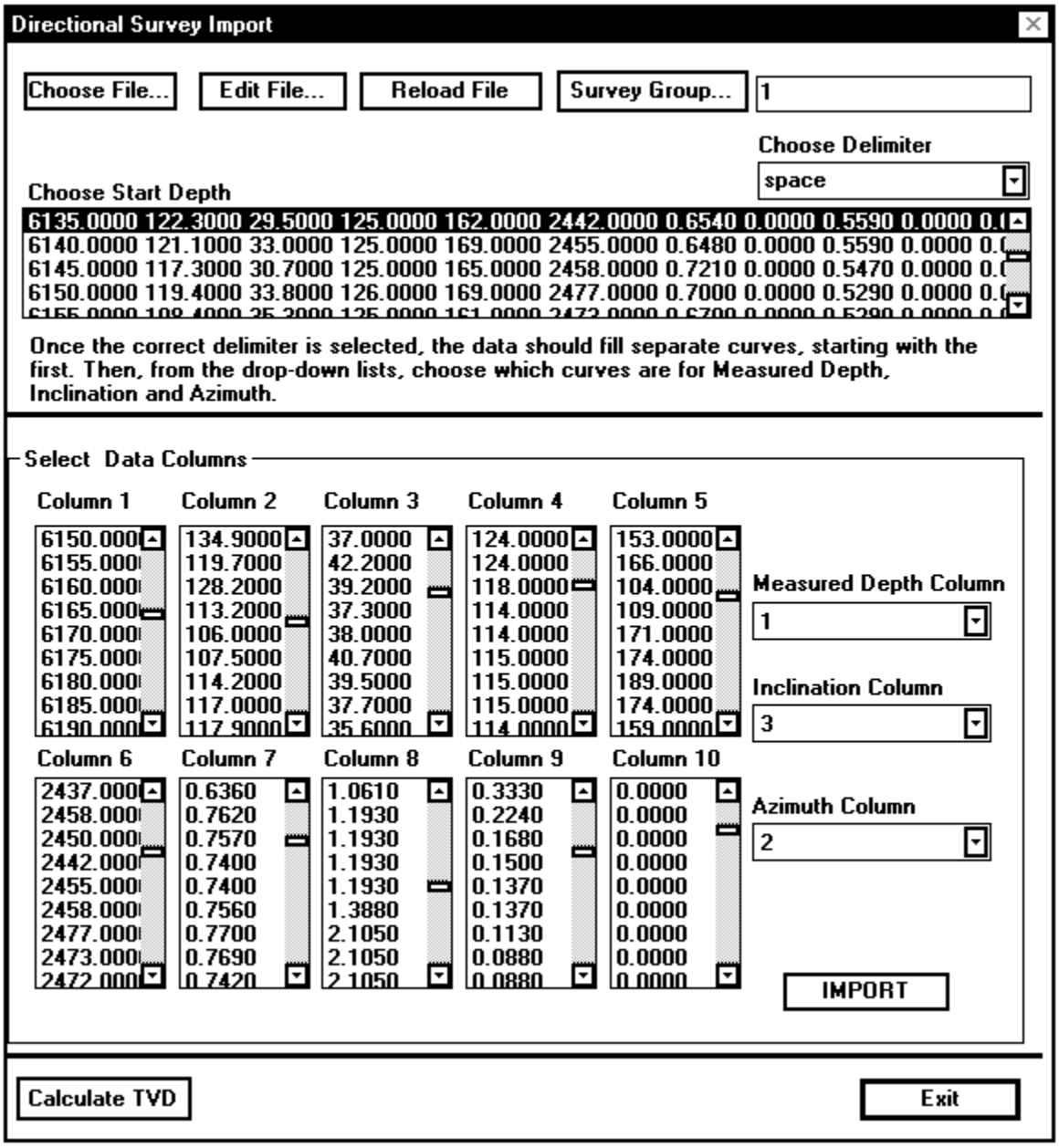
- **Backup Database…**

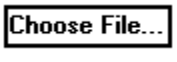
The backup database utility creates a copy of the database to the pgbackup directory in the pgeology directory when the database is being connected. Two copies of the database are saved in this directory and are subsequently overwritten every time you connect to the database. The file names are *pgeology.qm1* and *qm2* for quick metric 1 and 2. These files can be used if the database fails for any reason. Simply replace the pgeology.db files in the pgeology directory with these files which would have to be renamed before being copies to the pgeology directory.

Import Surveys

Importing Surveys

To access the **Directional Survey Import** window, click on **Import / Export** under **File** to activate the pop-out menu and then select Import Surveys or click on the **Import Survey button** on the **Toolbar**. This will activate the Directional Survey Import window.



1. The first thing you must do is click the ' 

', button, and select the data file provided by the directional drillers.

2. The next step is to select which Survey Group you want to Import the surveys into. The Default is Group 1. If you wish to Import the surveys into a different group click on the Survey Group button and then select the Survey Group form the List provided.

3. The next step is to select the correct **delimiter** for your file. Select one from the right hand drop down box. When you have selected the correct delimiter for your file, the curves should fill the individual columns.

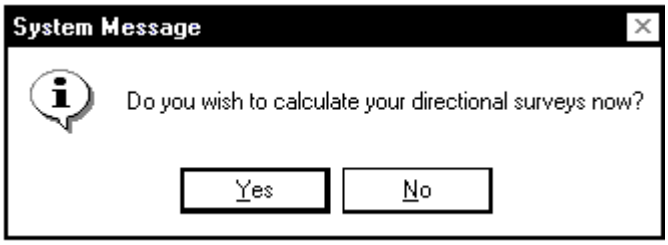
4. From the top window, choose a **start depth** by clicking the first line of data you wish to import.

5. Select the columns that represent the *measured depth, Inclination and azimuth* values from the drop down boxes on the right hand side of the columns.

6. Click on IMPORT Button

After a successful import, the directional surveys should contain the values of the measured depth, inclination and azimuth from the directional survey data file.

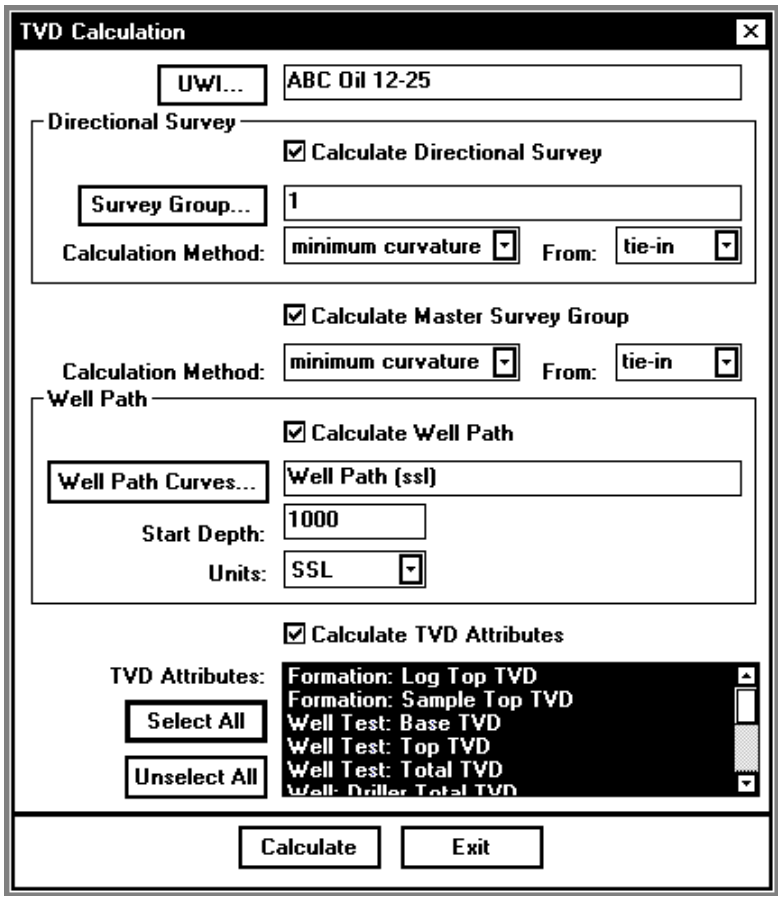
The next thing will be a System message asking the user



7. Click on the Yes Button only if you have the required fields filled in within the Directional Survey Report window. Otherwise you will not be able to calculate the surveys.

TVD Calculations

The TVD Calculations window will perform either Minimum Curvature calculations if the survey data has an azimuth or direction or can do Drift Angle calculations if the survey data only has a measured depth and an angle for both the Survey group imported into as well as the Master Survey group. This Master Survey group can consists of survey data from several groups of survey data that have been used throughout the drilling process. The Master Survey group must be chosen in the Directional Survey window. Also this window we can update a Well path curve from the survey points in either TVD or SSL values starting at a desired measured depth. Also if you would like to change or update any of the TVD fields scattered through the different report windows can also be done in this window.
If a Master Survey group is built this survey data is utilized to perform all the TVD and SSL views for a specific well. This would only be applicable if there are multiple survey groups for a well and they cover different portions of the wells profile.



Directional Survey Portion:

The User has the ability to have the program calculate the Directional Survey group, select which survey group they wish to calculate, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates.

Procedure…

1) If the user wishes to calculate a Survey Group activate the Check box (☑) in this portion of the window.
2) If the default survey group is not correct Click on the Survey Group button and select the survey group you wish to calculate from the List.
3) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)
4) Select the From Tie-In or Kick-Off co-ordinantes

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default if not filled in.Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Calculate Master Survey Portion:

The User has the ability to have the program calculate the Directional Surveys in the Master Survey group, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates. The Master Survey Group can be compiled from points from different Survey Groups. The Master Survey group is built in the Directional Survey window. If there is only one survey group this procedure is not required. **The Master Survey group if built, is then used to perform all TVD / SSL Calculations within the application.**

Procedure…

3.) If the user wishes to calculate the Master Survey Group activate the Check box (☑) in this portion of the window.

4.) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)

5.) Select the From Tie-In or Kick-Off co-ordinates.

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report' window from the survey group that has the shallowest survey point**, Kick Off is selected by default if not filled in. Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Well Path Portion

The Well Path for lack of better terms will update any curve on your log with either TVD or SSL data and will start at any depth required. It basically plots a curve with respect to measured depth and the survey data's TVD calculations which can also be converted to SSL if a KB elevation has been entered into the Well Record located under the Edit menu.

Procedure…

1) If the user wishes to calculate or update the Well path curve activate the Check box (☑) in this portion of the window.

2) Select which curve you wish to populate with this data by clicking on the Well Path Curve Button and selecting the curve from the existing curve in the database.

3) Type in the Start depth for which the curve will first appear on the log.

4) Select which units you would like this curve to be plotted or updated with from the Units selection box. TVD is the direct calculations from the survey points. SSL are converted with respect to the wells Kelly Bushing Elevation.

TVD Attributes Portion

Procedure…

6.) If the user wishes to calculate or update the specified TVD fields within the various windows throughout the Reports activate the Check box (☑) in this portion of the window.

The program is only able to determine the TVD at any depth covered by the directional surveys. Power*Log and Power*Curve have several windows in which the measured depth and corresponding true vertical depth are asked for. If you have directional surveys over that

interval, the program will calculate the exact TVD for you. If it is outside the range of your surveys, it will be left as a manual entry.

7.) Select or click on which fields (highlight) you wish to calculate for or recalculate if you have changed the survey data. Remember you have the ability to select all or unselect all.

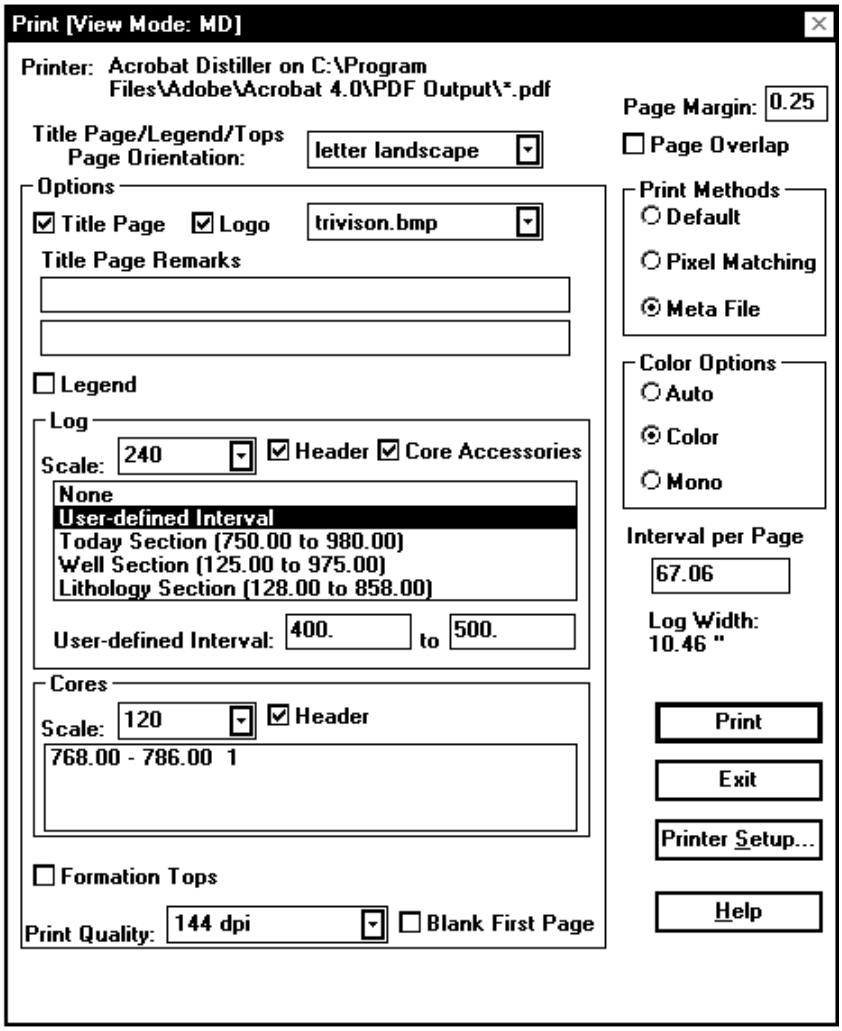
8.) Click on the Calculate Button

Print Log

Prints all or part of your log/well.

1.) Under the **File** menu, click on **Print Log** or click on the **Print**  **button** on the **Toolbar** to activate the **Print Log** window shown below:

Note: The Title bar and all depths associated with the Print Log window are defaulted to the Depth View that Power*Log or Power*Curve are in at the time of the activation of the Print Log window.



2.) Select the appropriate paper orientation from the **Page Orientation** drop box field and the **Title Page**, **Legend**, and **Formation Tops** will automatically conform to the selected orientation. There are four (4) types of paper orientation to choose from: **letter portrait or letter landscape** and **legal portrait or legal landscape** settings.

Note: The letter or legal landscape or portrait settings selected from within the **Print Log** window will NOT override the paper orientation settings selected in the printer's **Properties** window. Therefore, you must also modify the paper orientation settings in your printer's **Properties** window to letter or legal landscape.

Moreover, when printing in letter or legal landscape, you may wish to modify the **Transmission Retry** value, in the printer's **Properties** window, from the default of **45** seconds to **200** seconds.

3.) Activate the **Title Page** check box (☑), if you wish to printout a **Title Page**.
4.) Activate the **Logo** check box (☑), if you wish to printout a logo, and then select a logo from the **Logo** drop box field.

Note: Any bitmap image may be printed out as a logo. However, the bitmap image must be an equally sided square image, because **Power*Log** will shrink or expand the image to fit the logo space on the **Title Page**. This bitmap should be placed in the pgeology\logo directory.

5.) Type any pertinent comments into the **Title Page Remarks** field and they will be displayed accordingly on the **Title Page**.
6.) Activate the **Legend** check box (☑), if you wish to have a striplog legend printed out.

In the Log portion of the Print Log window

7.) Select or type in the **Scale** for the main log to be printed out at, in the **Scale** drop box field, and then activate the **Header** check box (☑) to have the track headers printed out with the main log.
8.) Activate the **Core Accessories** check box (☑) to have the core accessories printed out on the main log.
9.) Highlight the main log printing options in the selection box. The user can select either **None**, **User-defined Interval** (requires that you manually enter the desired print interval depths), **Today Section**, **Well Section**, or **Lithology Section**.

Note: Today Section interval is derived from the **From** and **To** Depth values entered into the **Today's Section** portion of the Power*Log Data Transfer: Export window.
The **Well Section** interval is derived from the **Top** and **Base Depth** values entered into the **Print Sections** window. (See **Print Sections**).
The **Lithology Section** interval is derived from what has been drawn into the interpretive lithology track of the well that is being printed.

10.) If user **defined interval** is chosen the user can select which depth type, either measured depth, true vertical depth or subsea level depth from the depth measurement drop box. The user must also type in the depth interval to be printed.

Note: The log itself must be displayed in whatever depth view you wish to print before you activate the print log window. To change the log to the desired format refer to depth view under the view pull down menu.

In the Cores portion of the Print Log Window.

11.) If you are printing out a **Core** log, select the **Cores** you wish to print by highlighting them.
12.) Select or type in the **Scale** for the core log to be printed out at, in the **Scale** drop box field, and then activate the **Header** check box (☑) to have the track headers printed out with the core log.

Note: A separate **Header Information Box** is automatically printed out with every **Core** and includes the **Core Scale**, **Core Date**, **Core Number**, **Cored Interval**, **Amount Cut**, **Amount Recovered**, and **Percentage**.

*****A value must be entered into the Core Scale field in order to printout anything.*****

13.) If you wish to printout **Formation Tops**, activate the **Formation Tops** check box (☑) and the **Formation Tops** will be included on a separate page at the end of the log printout.

- **Page Margin** The page margin field is available, primarily, when you are printing to Adobe Acrobat writer. When a numerical value in inches is typed into this field it will initiate a top and left margin for the templates (Title Page, Legend and Formation Tops) as well as a left margin for the main log.
- **Page Overlap** Activate the **Page Overlap** check box(☑) if you are printing on single sheets. This will force the printer to include an additional 1/4 inch of the log at the top and bottom of each page, so that you can cut-and-paste pages manually, if you so desire.

- **Print Methods…**
  - **Default** Activating the **Default** radio button (⊙) forces Power*Log/Curve to use a **raster or bitmap graphic printing method** which was used exclusively in Power*Log/Curve from V1.92 and earlier.
  - **Pixel Matching** Activate the **Pixel Matching** radio button (⊙) if you are using an **HP PaintJet Continuous** printer. The user must install the **HP PaintJet Continuous** printer driver(found on **Installation Disk 1**) on your diskettes.
  - **Meta File** Activating the **Meta File** radio button (⊙) forces Power*Log/Curve to use the **meta file technology printing method**. This printing method was developed for the newer models of printers on the market today as well as using the Adobe Acrobat Writer or pdf printing technology.

- **Color Options…**
  - **Auto** Activating the Auto radio button (⊙) forces **Power*Log/Curve** to use the settings from the printer driver to printout the log.
  - **Color** Activating the Color radio button (⊙) forces **Power*Log/Curve** to override the printer driver settings and consequently **Power*Log/Curve** assumes that you are using a color printer.
  - **Mono** Activating the Mono radio button (⊙) forces **Power*Log/Curve** to override the printer driver settings and consequently **Power*Log/Curve** assumes that you are using a monochrome (black and white) printer.

14.) Click on the **Setup** button to activate the **Print Setup** window and confirm that the correct printer settings are in effect.

Note: If you are printing out logs in color, you must activate the **Diffusion** or **Error Diffusion** option normally found under **Graphics** in the **Properties** window for most printers.

15.) **Interval per page** field indicates how many meters of log will fit on a page of selected paper size and orientation selected in the setup as well as what log scale you are printing at. This will help indicate to the user how many pages will be required by the print job.

16.) Activate the **Blank first page** with a check box (☑) if the user wishes to have a blank page before the logs starts. This could be useful if utilizing continuous paper when you want the title page oriented on the correct side of the prefolded paper.

17.) When you are ready to print your log, click on the **Print** button.

Note: When you exit from the **Print Log** window, you will be asked if you wish to save the print settings. If you click on **Yes,** the program will remember every setting that you made to the **Print Log** window and then will default to those settings the next time you enter the **Print Log** window.

Edit Menu Selection

Well

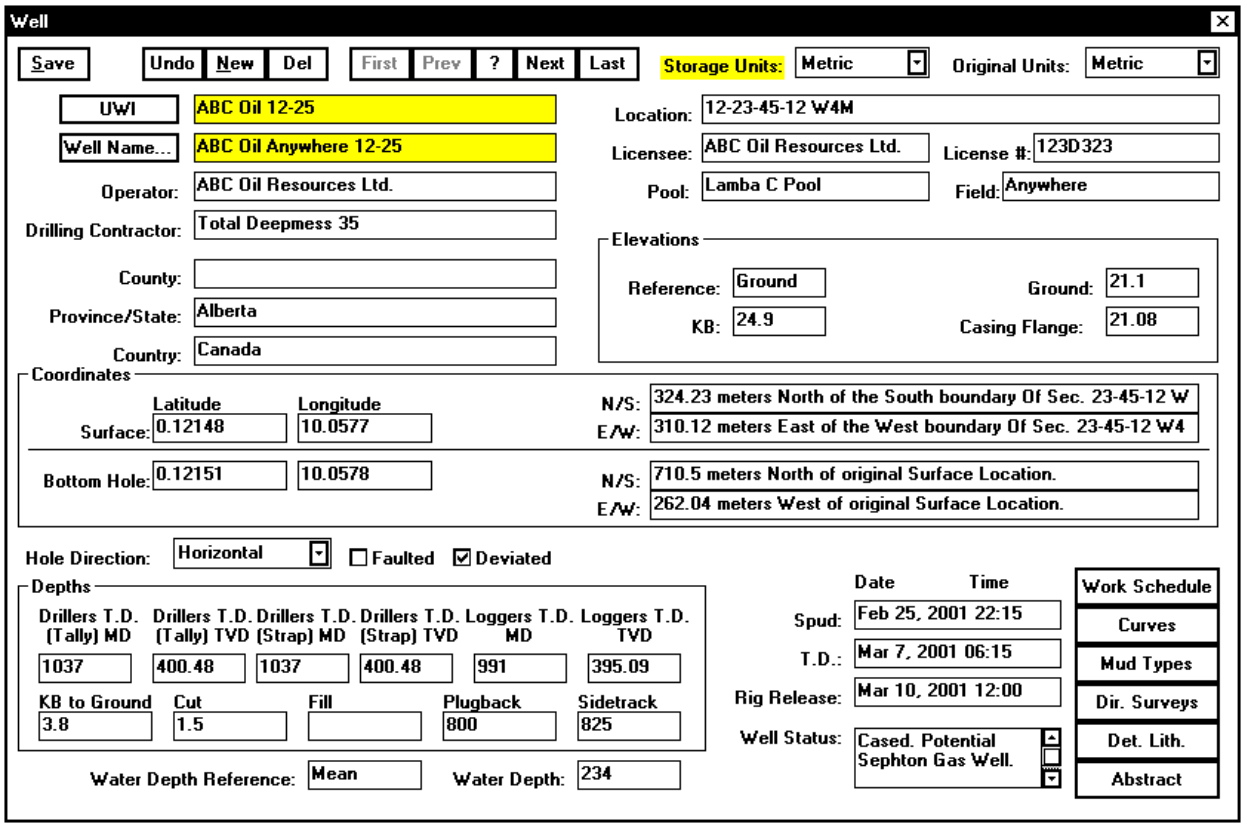
Lets you add new wells, edit existing wells, and delete a well. The majority of this information is usually filled in at the start of a well, but should be updated with new information at the completion of a well.

The information associated with each well is entered into the **Well** window, along with the well's **UWI** (**Unique Well Identifier**). Note that each well and the information that it contains must be associated with a **UWI** (**Unique Well Identifier**) in order to distinguish it from the other wells residing within the **Power*Log/Curve** database. However, the only way in which a well's information can then be displayed is by associating it with a log and then having that log open.

- **Starting a New Well without Starting a New Log…**

Note: Starting a new well without starting a new log is only useful, if you are utilizing the **Correlational Module** to display the data from multiple wells for offset information within the same log.

1.) Click on **Well**, under **Edit**, to activate the **Well** window shown below:



Note: This diagram has been filled in to give you an idea of how to complete the different fields.

2.) Click on the **New**  **button or press ALT-N** to prepare the window for the entry of a new record and a flashing cursor will be placed in the **Well Name** field.
3.) Type a well name into the **Well Name** field.
4.) Click on the **UWI** button to activate the **UWI Format** window.
5.) Select either **DLS**, **NTS** or **Name** from the **Use** drop box field and then enter the **UWI** information into the appropriate fields.
6.) Click on the **OK** button and the **UWI** field in the **Well** window will automatically be filled in with the new **UWI**.
7.) Insert any other necessary information into the remaining **Well** window fields.
8.) Click on the **Save**  **button or press ALT-S** and the new well will be saved to the database.

Note: The **Well Name** field should be highlighted after you have clicked on the **Save**  **button or press ALT-S**, as an indication of a properly saved record. Some of the fields in the **Edit Well** window have character restrictions or mandatory requirements. Consequently, if any of these restrictions have been violated or if any requirements have not been met, the offending field will be highlighted and the problem will be displayed on the **Status Bar**, at the lower left hand corner of your screen. Remember to save your work again, after the problem has been rectified.

9.) If the record has been successfully saved, select **Exit**, when prompted with the **Shortcut Options** system window.

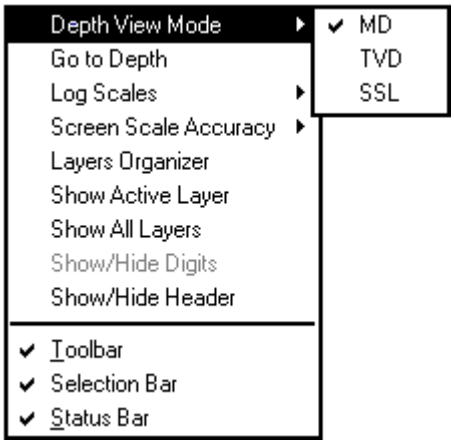
View Menu Selection

Depth View Mode

Changes the depth view of Power*Log according to your needs. The log can be viewed and printed in either Measured Depth, Subsea Level or True Vertical Depth. These views are dependant on whether you have survey data entered and if you have calculated or entered in the TVD fields in the Survey points window. There are two ways to change your depth views but these views are only applicable to Power*Log. They are both outlined below.

Procedure 1

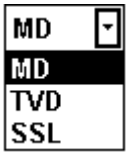
1.) Click on **Depth View**, located under the **View** pull down selection on the menu bar, to activate the **pop out menu** and then **click** on the **desired depth view** MD (Measured Depth), TVD (True Vertical Depth) or SSL (Sub Sea Level you want for the active Log. This will change the logs screen presentation. You will notice that the depth layer shows the depths with either an “m or ft” followed by “(ssl)” in subsea level view or “(tvd)” in true vertical depth view



Note: The SSL and TVD views are calculated from the directional surveys entered into the wells data. You must also have the KB elevation if you wish to view the log in the SSL view. The user has the ability to setup which survey groups / survey sets they wish to utilize for these views.

Procedure 2

Click on the down arrow on the Depth View mode selection on the Selection Bar and select the desired depth view for your Log.



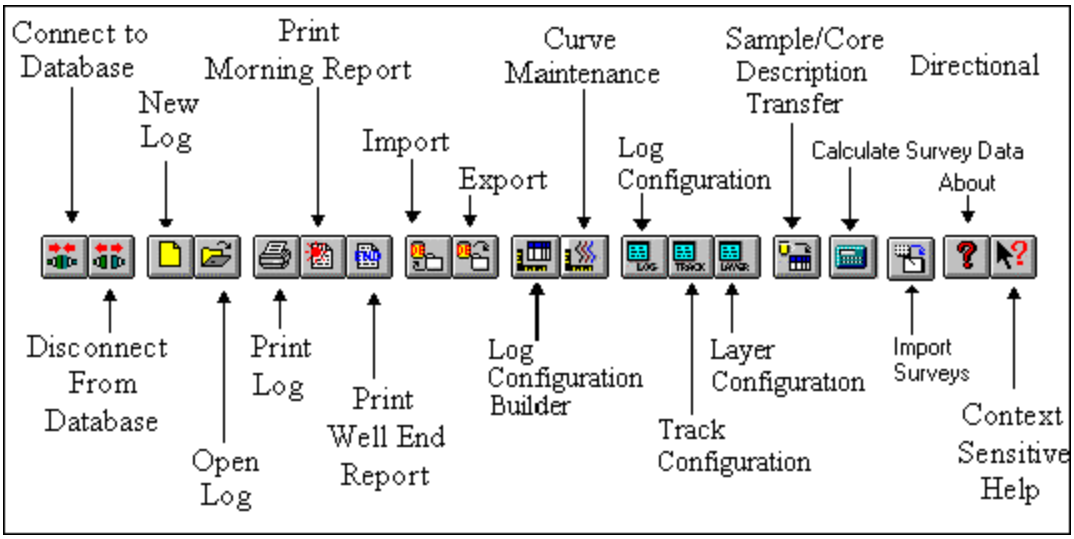
Note: Once SSL or TVD is activated the mouse pointer now indicates the view mdoe you are in as well as the measured depth that the mouse pointer is now pointing at.

View Menu

Toolbar

Turns the Toolbar on and off.

- **The New Power*Log/Curve™ Toolbar…**

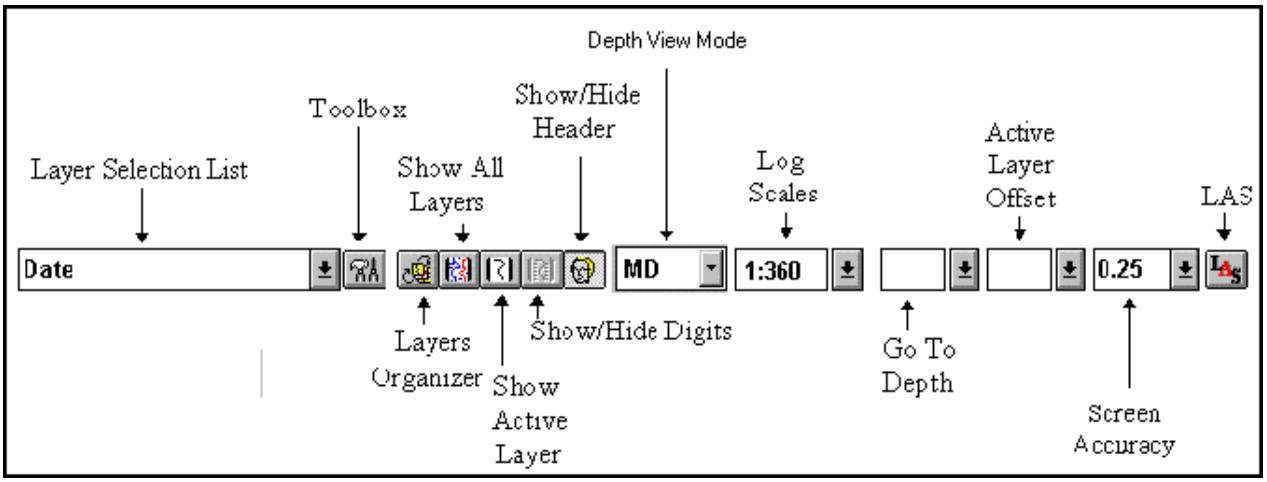


View

Selection Bar

Turns the Selection Bar on and off.

- **The New Power*Log/Curve™ Selection Bar…**



Note: Disabled buttons are a gray color, like the **Show/Hide Digits** button displayed on the previous page. Likewise, when buttons are in use they are indented, like the **Show/Hide Header** button displayed on the previous page.

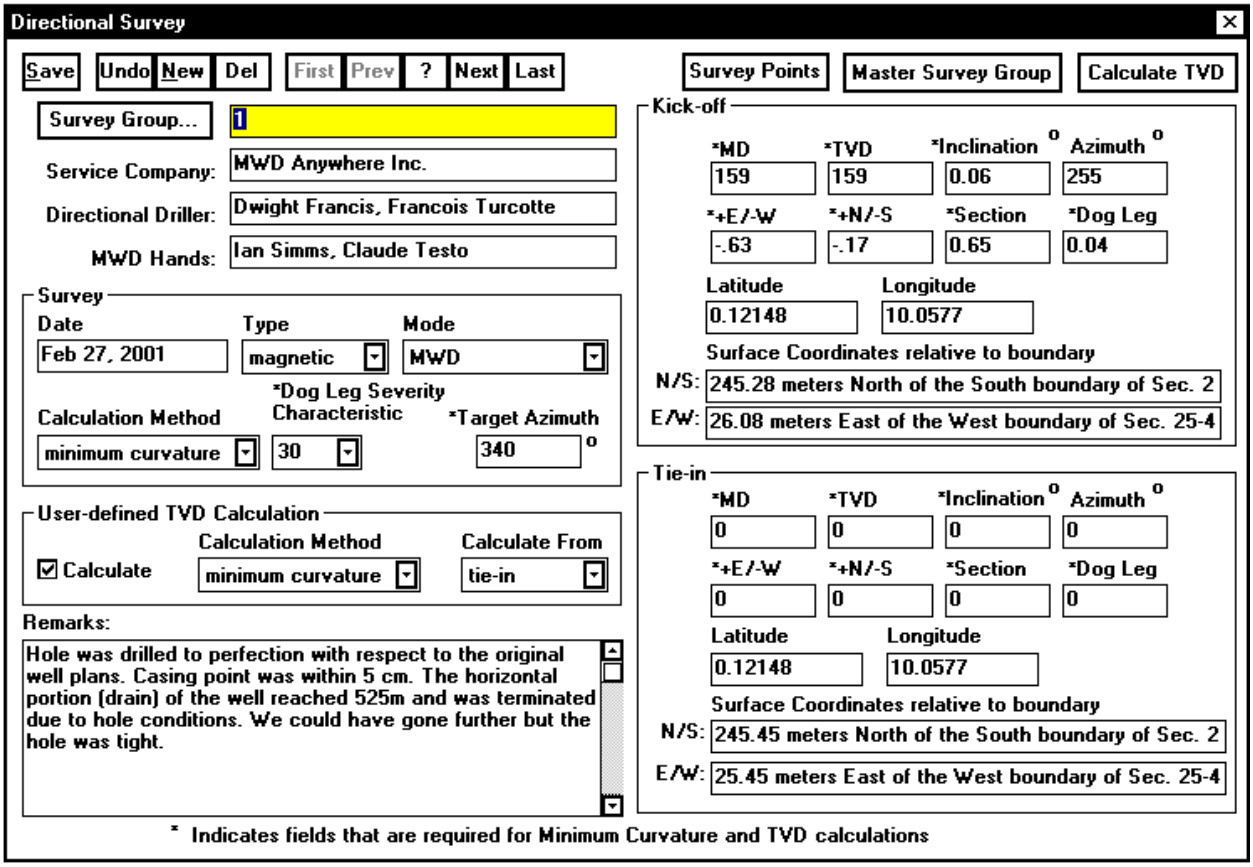
Report Menu Selection

Directional Survey

Information regarding Directional Surveys is entered into this window. This information can then be printed out in the Print Well End Report window. Also this information is utilized to build a True Vertical Depth and Subsea Level Depth view log presentations in Power*Log. The tie-in and kick-off information is critical to these calculations as well as the Target Azimuth and the Dog Leg Severity characteristics. Also the choosing of which survey group/groups you wish to use to do these calculations with in the Master Survey Group.

The information entered into this window can be used to produce three (4) separate reports as well as the TVD and SSL depth view Power*Log presentations. The "***Directional Surveys***" report uses both the Groups information and its survey points. The "***Directional Survey Points***" report and the "***Deviation Survey Points***" uses the survey points only with two pieces of information **(Survey Type & Mode)** out of the group data entry window. The User can also print out the Master Survey Groups Survey points.

There is two ways to activate the Directional Survey window. Select Directional Survey located under the Report pull down menu or click on the Directional Survey button located on the toolbar.



The Survey Points can be added through the [Survey Points] button or directly through the Directional Survey layer Toolbox.

Note: The **Survey Group** number is used to identify which group of survey points is associated with a specific **Directional Survey** layer on a log. Each **Directional Survey** layer can be associated with a specific group of survey points. This is done through the **Directional Survey Layer Configuration** window and selecting the group through its **Directional Survey** button.

The [Master Survey Group] button allows the user to build or compile the survey points from multiple or specific survey groups other than the default group 1.

The User Defined TVD Calculation portion of the window allows the user to define the default calculation method when the survey groups survey points are calculated.

The [Calculate TVD] button activates the TVD calculations window which can calculate the survey group, calculate the Master Survey group, update the well path, and calculate all the TVD fields in the various report window.

Adding a Directional Survey Group…

1.) Click once on the **New** [New] **button** or press **ALT-N** and then fill in the report window with your data.

2.) When you have finished adding your data, click on the **Save** [Save] **button or press ALT-S and then Exit** out of the ensuing **Shortcut Options** window.

- **Editing a Directional Survey Group…**

1.) Click on the [Survey Group...] **button** to view a list of **Directional Survey Groups** to date and then **double click** on the record, that you wish to edit. Once the selected record is displayed in the **Directional Survey** window, make any changes you feel are necessary.

2.) Or, click twice on the **Query** [?] **button** and then click on the **Next Record** [Next] **button** to view all of the records in the database. See the **Database Navigational Tools** section later in this **User Manual** for more information.

3.) Click on the **Save** [Save] **button or press ALT-S and then Exit** out of the ensuing **Shortcut Options** window.

- **Deleting a Directional Survey Group…**

1.) Click on the [Survey Group...] **button** to view a list of **Directional Survey Groups** to date and then **double click** on the record, that you wish to delete. Once the selected record is displayed in the **Directional Survey** window, click on the **Delete** [Del] **button**.

2.) Or, click twice on the **Query** [?] **button** and then click on the **Next Record** [Next] **button** to view all of the records in the database. Select the record you wish to delete and it will be

displayed in the **Abandonment Plug** window. Then, click on the **Delete** [Del] **button**. See the **Database Navigational Tools** section later in this **User Manual** for more information.

The **Undo** [Undo] **button** will restore the window to the settings of the last saved record.

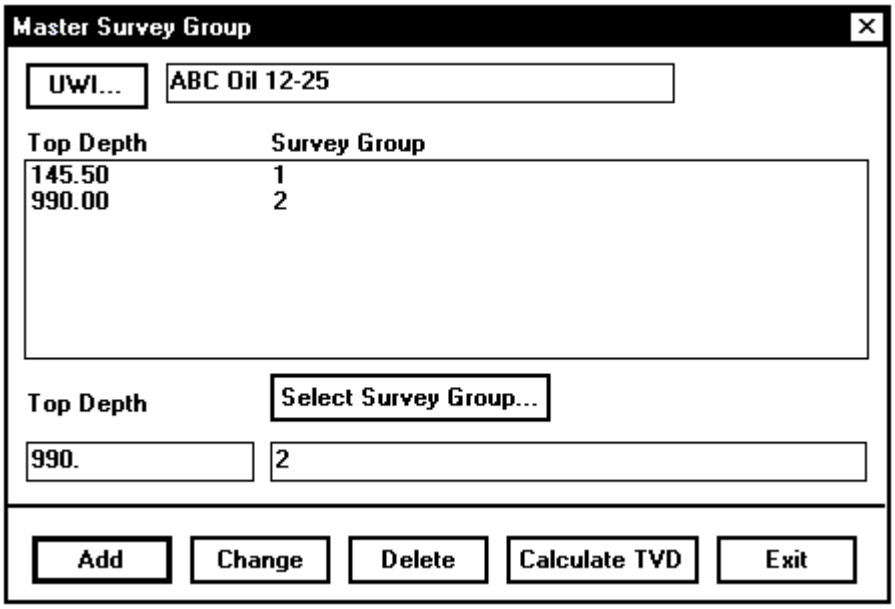
You can **Tab** between fields or press **Shift+Tab** to move backwards between fields.

Master Survey Group

Definition: The user can imagine the master survey group as a compilation of multiple survey groups to define the well from spud to total depth. Power*Suite has enabled the user to enter multiple set of surveys from different measuring devises. The user can then take points from all the sets to build a Master Set of survey points that best defines the well path. This group is then compiled and then used to represent Power*Log in the TVD/SSL depth views. This survey set is also used to calculate or interpolate TVD values for all measured depth fields. If the user only has one survey set and has kept the group name as 1 then the Master Survey group does not have to be assembled.

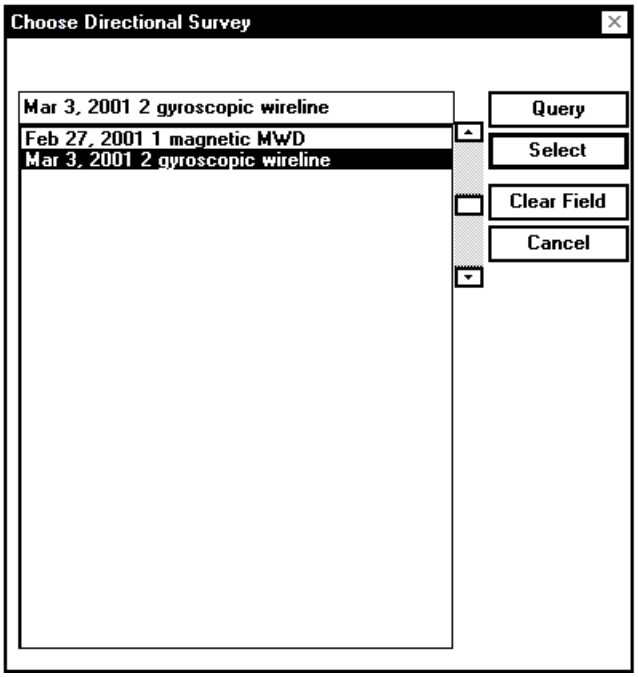
How to Compile the Master Survey Group.

The user must identify which Survey Groups they want used for the TVD / SSL depth views of Power*Log. The user must identify which group(s) of surveys and the starting survey point in that survey group. Once this is done the application then creates a Master Survey group that contains all the survey points from all the groups and there surveys points and then uses these to create the TVD and SSL presentations.
The Tie In or Kick of the shallowest survey points Survey group is used as a starting or reference point.



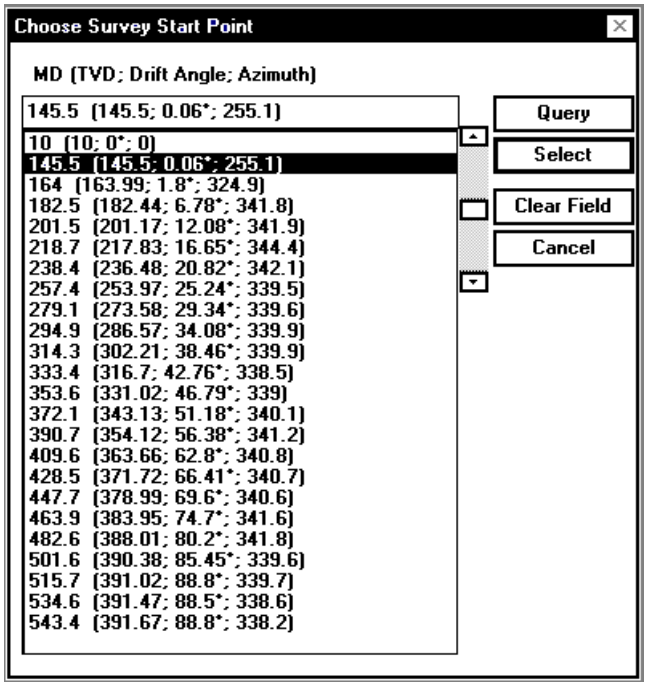
How to Add a Survey Group

1.) Click on the Master Survey Group button in the Directional Survey Window. This will activate the Master Survey Group Window.
2.) Click on the Select Survey Group button. This will activate the Choose Directional Survey Window.



3.) Click on the Directional Survey group you wish to Add and then click on the Select Button. This will activate the Choose Survey Point Window.

4.) Click on the Survey point you wish to start with and then click on the Select Button.



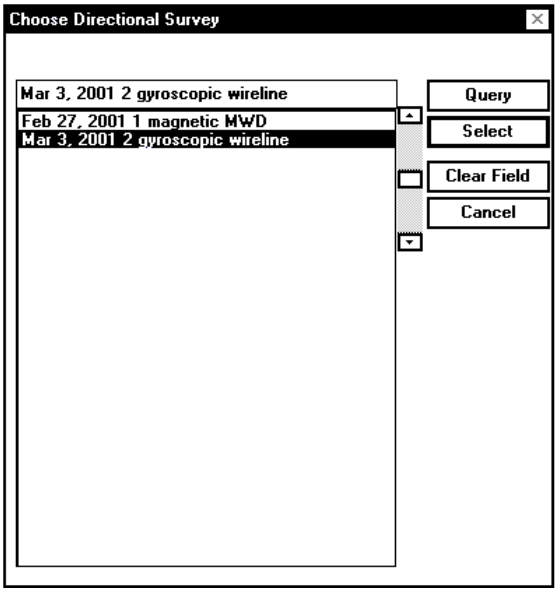
5.) This will place survey points depth in the top depth field the Survey Group ID selected into the Survey Group ID field.

6.) Click on the Add button and the Survey will be place in the list.

Note: This Survey and all subsequent surveys in this groups list will be added to the Master Survey Groups survey points until another Survey Group and its top depth has been added to the list.

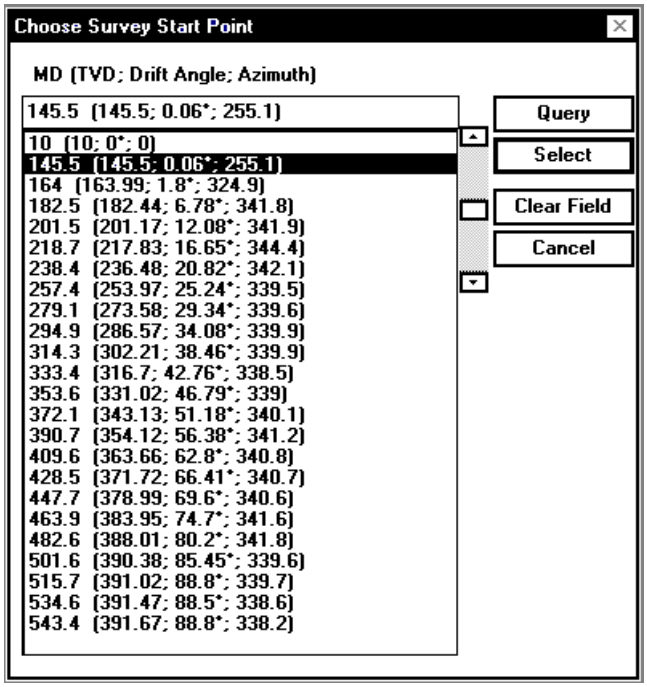
How to Change a Survey Group top Survey Point

1.) Click on the Master Survey Group button in the Directional Survey Window. This will activate the Master Survey Group Window.
2.) Highlight or click on the survey point you wish to change.
3.) Click on the Select Survey Group button. This will activate the Choose Directional Survey Window.



4.) Click on the Directional Survey group you wish to Add and then click on the Select Button. This will activate the Choose Survey Point Window.

5.) Click on the new Survey point you wish to start with and then click on the Select Button.



6.) This will place survey points depth in the top depth field the Survey Group ID selected into the Survey Group ID field.

7.) Click on the Change button and the new Survey point will be place in the list.

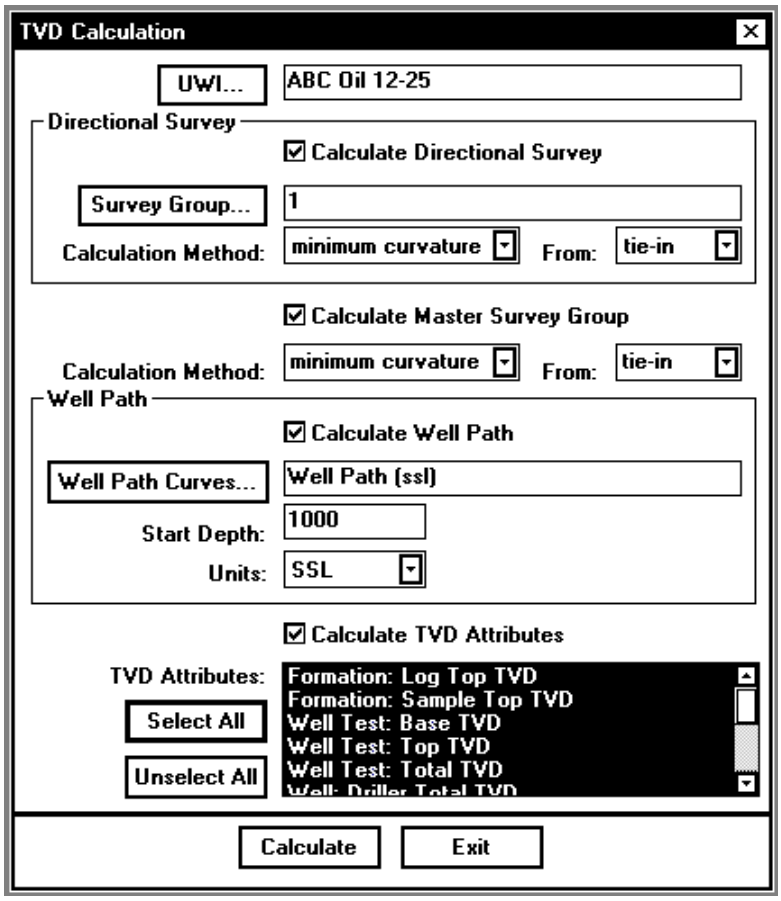
How to Delete a Survey Group

1.) Click on the Master Survey Group button in the Directional Survey Window. This will activate the Master Survey Group Window.
2.) Highlight or Click on the Survey points Start depth and Group ID you wish to Delete and then click on the Delete Button. This will delete the survey point and Groups ID from the list.

How to Calculate the Master Survey Group Survey Points

If the Master Survey group has been altered in any way and the user exits the window they will be prompted with a calculation window. The user will have to recalculate the master survey group for your changes to take affect.

1.) Click on the Master Survey Group button in the Directional Survey Window. This will activate the Master Survey Group Window.
2.) Click on the Calculate TVD Button. This will activate the TVD Calculations window.



Directional Survey Portion:

The User has the ability to have the program calculate any Directional Survey group, select which survey group they wish to calculate, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates.

Procedure…

3.) If the user wishes to calculate a Survey Group activate the Check box (☑) in this portion of the window.

4.) If the default survey group is not correct Click on the Survey Group button and select the survey group you wish to calculate from the List.

5.) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)

6.) Select the From Tie-In or Kick-Off co-ordinantes

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default if not filled in.Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Calculate Master Survey Portion:

The User has the ability to have the program calculate the Directional Surveys in the Master Survey group, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates. The Master Survey Group can be compiled from points from different Survey Groups. The Master Survey group is built in the Directional Survey window. If there is only one survey group this procedure is not required. **The Master Survey group if built, is then used to perform all TVD / SSL Calculations within the application.**

Procedure…

7.) If the user wishes to calculate the Master Survey Group activate the Check box (☑) in this portion of the window.

8.) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)

9.) Select the From Tie-In or Kick-Off co-ordinates.

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report' window from the survey group that has the shallowest survey point**, Kick Off is selected by default if not filled in. Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Well Path Portion

The Well Path for lack of better terms will update any curve on your log with either TVD or SSL data and will start at any depth required. It basically plots a curve with respect to measured depth and the survey data's TVD calculations which can also be converted to SSL if a KB elevation has been entered into the Well Record located under the Edit menu.

Procedure…

10.) If the user wishes to calculate or update the Well path curve activate the Check box (☑) in this portion of the window.

11.) Select which curve you wish to populate with this data by clicking on the Well Path Curve Button and selecting the curve from the existing curve in the database.

12.) Type in the Start depth for which the curve will first appear on the log.

13.) Select which units you would like this curve to be plotted or updated with from the Units selection box. TVD is the direct calculations from the survey points. SSL are converted with respect to the wells Kelly Bushing Elevation.

TVD Attributes Portion

Procedure…

14.) If the user wishes to calculate or update the specified TVD fields within the various windows throughout the Reports activate the Check box (☑) in this portion of the window.

The program is only able to determine the TVD at any depth covered by the directional surveys. Power*Log and Power*Curve have several windows in which the measured depth and corresponding true vertical depth are asked for. If you have directional surveys over that

interval, the program will calculate the exact TVD for you. If it is outside the range of your surveys, it will be left as a manual entry.

15.) Select or click on which fields (highlight) you wish to calculate for or recalculate if you have changed the survey data. Remember you have the ability to select all or unselect all.

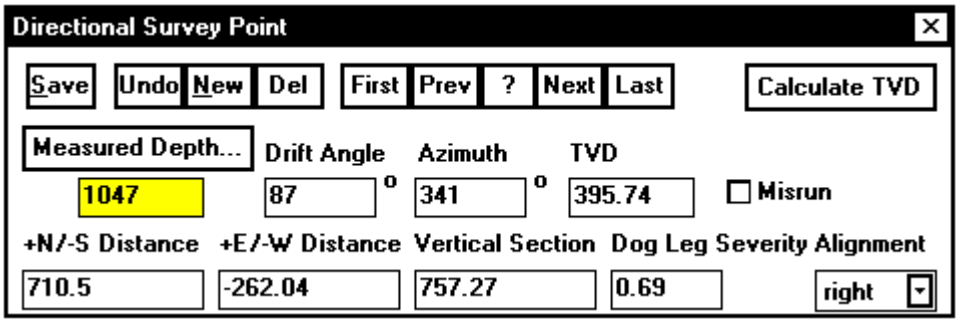
16.) Click on the [Calculate] Button

Field Restriction Table:

Survey Group	30	Character	Mandatory
Service Company	30	Character	Optional
Directional Driller	50	Character	Optional
MWD Hands	50	Character	Optional
Survey Type	20	Character	Optional
Survey Mode	20	Character	Optional
Survey Date	DATE FORMAT	Optional	Default=Current Date
Calculation Method	20	Character	Optional
Kick-off MD	10.5	Numeric	Required for calculations
Kick-off TVD	10.5	Numeric	Required for calculations
Kick-off Inclination	10.5	Numeric	Required for calculations
Kick-off Azimuth	10.5	Numeric	Required for calculations
Kick-off East meters	10.5	Numeric	Required for calculations
Kick-off North meters	10.5	Numeric	Required for calculations
Kick-off Section meters	10.5	Numeric	Required for calculations
Kick-off Dog Leg	10.5	Numeric	Required for calculations
Kick-off Latitude	5.7	Numeric	Optional
Kick-off Longitude	5.7	Numeric	Optional
Kick-off N/S	100	Character	Optional
Kick-off E/W	100	Character	Optional
Tie-in MD	10.5	Numeric	Required for calculations
Tie-in TVD	10.5	Numeric	Required for calculations
Tie-in Inclination	10.5	Numeric	Required for calculations
Tie-in Azimuth	10.5	Numeric	Required for calculations
Tie-in East meters	10.5	Numeric	Required for calculations
Tie-in North meters	10.5	Numeric	Required for calculations
Tie-in Section meters	10.5	Numeric	Required for calculations
Tie-in Dog Leg	10.5	Numeric	Required for calculations
Tie-in Latitude	5.7	Numeric	Optional
Tie-in Longitude	5.7	Numeric	Optional
Tie-in N/S	100	Character	Optional
Tie-in E/W	100	Character	Optional
Dog Leg Characteristic	4.0	Numeric	Required for calculations
Target Azimuth	5.2	Numeric	Required for calculations
Remarks	254	Character	Optional

Directional Survey Point:

This window is accessed through the **Directional Survey Report** window, the **Well** window, or through the **Directional Survey** layer **Toolbox**. These points can be viewed on the log through a **Directional Survey** layer or can be printed from the **Print Well End Report** window. Directional Surveys can be imported from ASCII files supplied by Directional Drillers.



Use the **Database Navigational Tools** to scroll through the existing records or click on the **Measured Depth** button to view a list of the survey points, that already exist within the database.

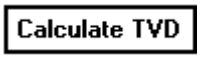
- **Adding a New Record…**

1.) Click on the **New**  **button** or press **ALT-N**.
2.) Enter any appropriate information into the empty fields.

> **Note:** If you have information for the ***Measured Depth***, ***Drift Angle*** and ***Azimuth*** fields, the rest of the fields can be calculated for you.
> **See Chapter Five - Options Menu : Directional Survey Import - Overview**

3.) Select an **Alignment**, if you want to view the **Directional Survey Point(s)** on the track that contains the survey layer. The default **Alignment** is always **right**. However, if you select a blank **Alignment** from the **Alignment** field drop box, your **Directional Survey Point(s)** will not be displayed on the survey layer, but they will still be printed out through the Print **Well End Report** window.

> **Note:** The information that is shown on the **Directional Survey** layer is a line that is always placed on the right side of the track at the **Measured Depth**, **Drift Angle**, **Azimuth**, and **TVD**. The rest of the information goes to the **Print Well End Report**.

4.) Click on the **Save**  **button or press ALT-S** and then respond to the ensuing **Shortcut Options** window.
5.) After the record has been saved the user can then select the  button to perform either Drift Angle or Minimum Curvature calculations from either the tie-in or kick-off points.

> **Note:** The drift angle calculations uses minimum curvature but we assume an azimuth for all the survey points so we can do some TVD calculation's to produce interpolated TVD's as well as produce a TVD / SSL log.

- **Editing a Directional Survey Point…**

1.) Click on the **Measured Depth** [Measured Depth...] **button** to view a list of **Directional Survey Points** to date and then **double click** on the record, that you wish to edit. Once the selected record is displayed in the **Directional Survey Point** window, make any changes you feel are necessary.

2.) Or, click twice on the **Query** [?] **button** and then click on the **Next Record** [Next] **button** to view all of the records in the database. See the **Database Navigational Tools** section later in this **User Manual** for more information.

3.) Click on the **Save** [Save] **button or press ALT-S and then Exit** out of the ensuing **Shortcut Options** window.

- **Deleting a Directional Survey Point…**

1.) Click on the **Measured Depth** [Measured Depth...] **button** to view a list of **Directional Survey Points** to date and then **double click** on the record, that you wish to delete. Once the selected record is displayed in the **Directional Survey Point** window, click on the **Delete** [Del] **button**.

2.) Or, click twice on the **Query** [?] **button** and then click on the **Next Record** [Next] **button** to view all of the records in the database. Select the record you wish to delete and it will be displayed in the **Directional Survey Point** window. Then, click on the **Delete** [Del] **button**. See the **Database Navigational Tools** section later in this **User Manual** for more information.

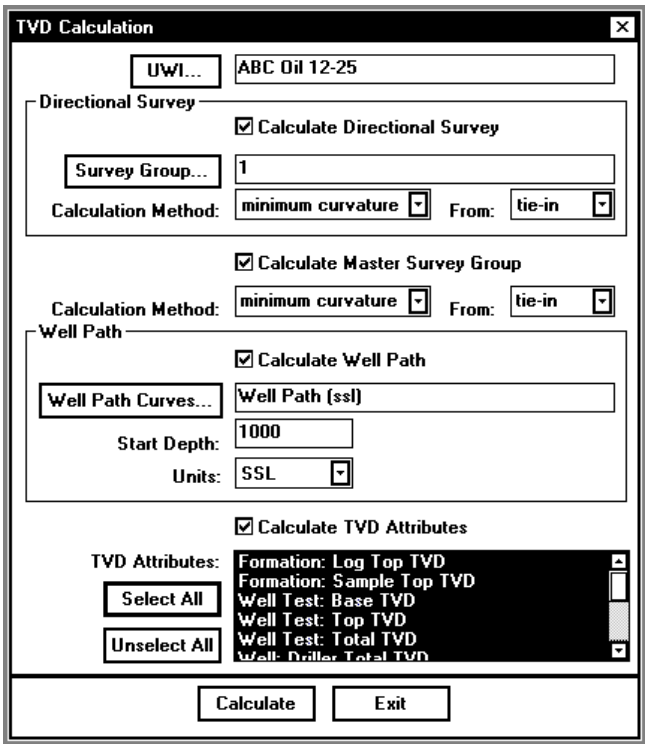
The **Undo** [Undo] **button** will restore the window to the settings of the last saved record.
You can **Tab** between fields or press **Shift+Tab** to move backwards between fields.

- **Indicating a Misrun…**

To indicate a Misrun, enter in the measured depth (MD) of the survey and simply check the **MISRUN** check box to flag this survey as a misrun. Misruns will be excluded from any calculations performed on the surveys, and will be labeled in the appropriate **End of Well** reports.

Calculating Directional Survey Points…

To perform the minimum curvature calculations on your directional surveys, click on the Calculate TVD [Calculate TVD] button in the Directional Survey Points window. This will activate the TVD Calculations window.



Directional Survey Portion:

The User has the ability to have the program calculate any Directional Survey group, select which survey group they wish to calculate, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates.

Procedure…

1.) If the user wishes to calculate a Survey Group activate the Check box (☑) in this portion of the window.
2.) If the default survey group is not correct Click on the Survey Group button and select the survey group you wish to calculate from the List.
3.) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)
4.) Select the From Tie-In or Kick-Off co-ordinantes

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default if not filled in.Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Calculate Master Survey Portion:

The User has the ability to have the program calculate the Directional Surveys in the Master Survey group, which calculation method either minimum curvature or drift angle calculations and from either tie-in or kick off co-ordinates. The Master Survey Group can be compiled from points from different Survey Groups. The Master Survey group is built in the Directional Survey window. If there is only one survey group this procedure is not required. **The Master Survey group if built, is then used to perform all TVD / SSL Calculations within the application.**

Procedure…

5.) If the user wishes to calculate the Master Survey Group activate the Check box (☑) in this portion of the window.

6.) Select the Calculation method from the drop box. (Minimum curvature must have an azimuth and will fill in all the fields in the Survey Points Window, otherwise use drift angle to get only the TVD field completed in the Survey Points Window.)

7.) Select the From Tie-In or Kick-Off co-ordinates.

The defaults are picked up from the User defined TVD Calculation portion of the '**Directional Surveys Report' window from the survey group that has the shallowest survey point**, Kick Off is selected by default if not filled in. Remember that the data required for the **Kick Off** or **Tie In** reference is entered in the '**Directional Surveys Report'**, found under the menu item "**Reports**". Kick Off is selected by default.

Well Path Portion

The Well Path for lack of better terms will update any curve on your log with either TVD or SSL data and will start at any depth required. It basically plots a curve with respect to measured depth and the survey data's TVD calculations which can also be converted to SSL if a KB elevation has been entered into the Well Record located under the Edit menu.

Procedure…

8.) If the user wishes to calculate or update the Well path curve activate the Check box (☑) in this portion of the window.

9.) Select which curve you wish to populate with this data by clicking on the Well Path Curve Button and selecting the curve from the existing curve in the database.

10.) Type in the Start depth for which the curve will first appear on the log.

11.) Select which units you would like this curve to be plotted or updated with from the Units selection box. TVD is the direct calculations from the survey points. SSL are converted with respect to the wells Kelly Bushing Elevation.

TVD Attributes Portion

Procedure…

12.) If the user wishes to calculate or update the specified TVD fields within the various windows throughout the Reports activate the Check box (☑) in this portion of the window.

The program is only able to determine the TVD at any depth covered by the directional surveys. Power*Log and Power*Curve have several windows in which the measured depth and corresponding true vertical depth are asked for. If you have directional surveys over that

interval, the program will calculate the exact TVD for you. If it is outside the range of your surveys, it will be left as a manual entry.

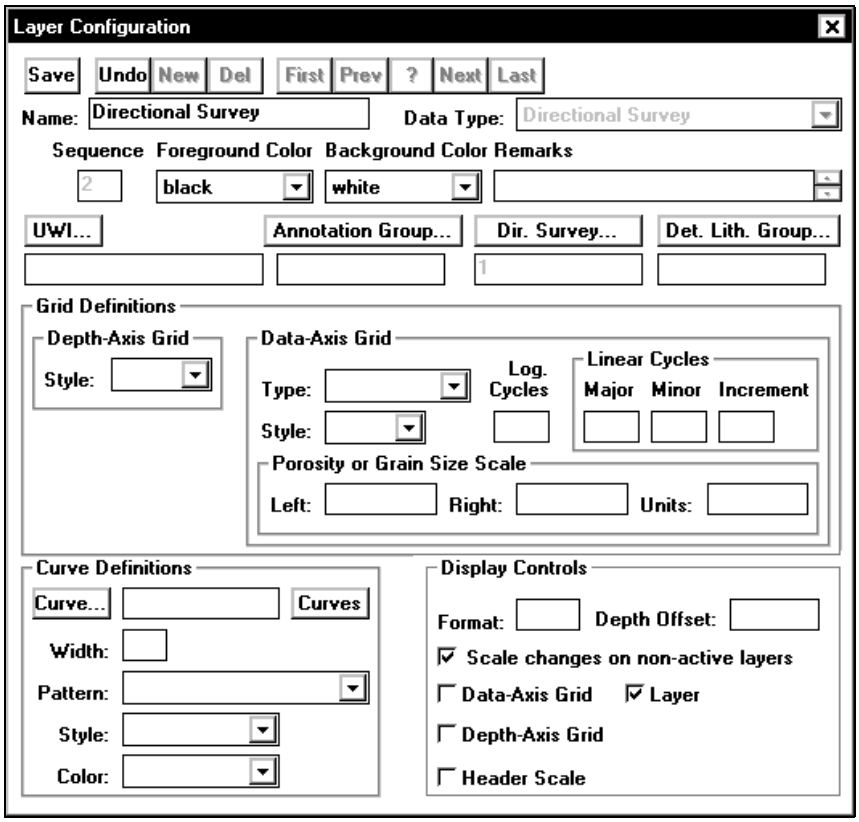
13.) Select or click on which fields (highlight) you wish to calculate for or recalculate if you have changed the survey data. Remember you have the ability to select all or unselect all.

14.) Click on the [Calculate] Button

Directional Survey Points Window Field Restriction Table:

Measured Depth	5.2	Numeric	Mandatory
Drift Angle	4.6	Numeric	Optional
Azimuth	4.6	Numeric	Optional
TVD Depth	5.2	Numeric	Optional
N/S Distance	13.2	Numeric	Optional
E/W Distance	13.2	Numeric	Optional
Vertical Section	13.2	Numeric	Optional
Dog Leg Severity	4.2	Numeric	Optional

Note: When you add any layer to a log, it is always associated with a **Data Type**. Every **Data Type** in **Power*Log/Curve** has a default setting. The default settings for a **Directional Survey** layer are shown below. To access this window, click on the **Layer Configuration** button on the **Toolbar**, when the layer is active. Notice that this **Directional Survey** is directed at **Reference ID 1** and its associated **Survey Points**.



Reports

Formation

Enter the details of any Formation into this window.

The information entered into this window can be used to produce three (3) separate reports: the well end **Formation Evaluation** report, the well end **Formation Tops** report and the Morning Report **Formation** report. These reports can be printed using the **Print Well End Report** and the Print Morning Report windows.

Note: In order to have the **Formation Evaluation** report printed, there are two fields that must be filled in: **Boundary Type** and **Period.** If these fields are left blank, the **Formation Evaluation Report** for that **Formation** will not be printed.

The **Formation Tops** information can also be viewed on the log, using the formation layer in either **Format 1** or **2**(depending on your application).

Note: Format 1 displays **Period** (in short form), **Formation** (in short form), a **Bedding Line**, and a **Sample Top**, while **Format 2** gives **Formation** in long form **TVD and Sub Sea Value**.

Formation Tops are automatically generated in the **Morning Report** from the **Formation Tops** that are entered into the **Well Formation** window. The depths entered into the **Morning Report** window are used to generate the **Morning Formation Top** report list. However, before a list can be generated, two (2) reports must be filled in to initiate a range. If your **Sample Tops** are located between these two (2) depths, the **Formation Tops** will then come out in the **Morning Report**.

- **Adding a Formation Top…**

1.) Click once on the **New** 

button or press ALT-N and then fill in the report window with your data.

2.) When you have finished adding your data, click on the **Save** 

button or press ALT-S and then Exit out of the ensuing **Shortcut Options** window.

- **Editing a Formation Top…**

1.) Click on the **Formation** 

button to view a list of **Formations** to date and then **double click** on the record, that you wish to edit. Once the selected record is displayed in the **Formation** window, make any changes you feel are necessary.

2.) Or, click twice on the **Query** 

button and then click on the **Next Record** 

button to view all of the records in the database. See the **Database Navigational Tools** section later in this **User Manual** for more information.

3.) Click on the **Save** 

button or press ALT-S and then Exit out of the ensuing **Shortcut Options** window.

- **Deleting a Formation Top…**

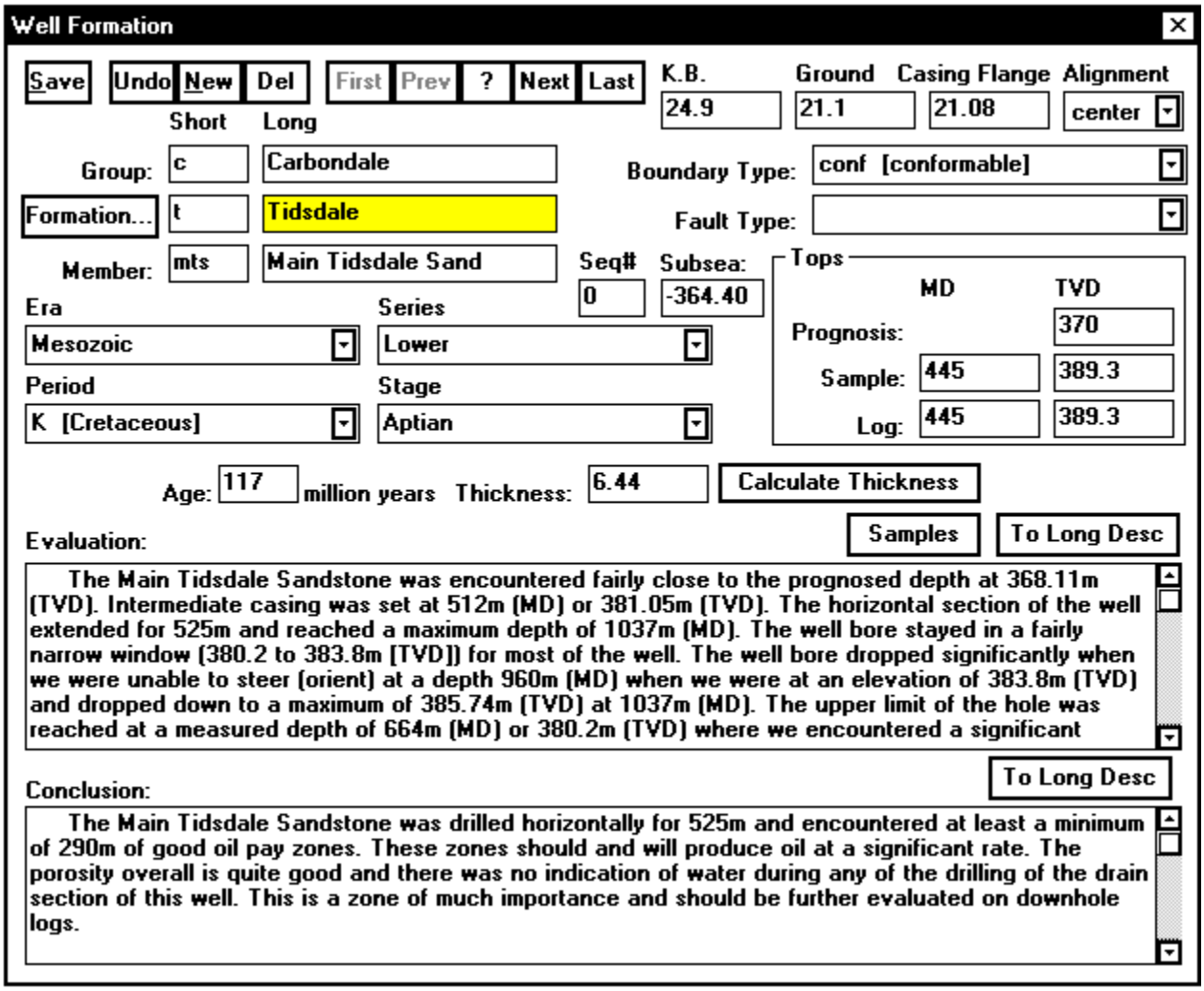
1.) Click on the **Formation** [Formation...] **button** to view a list of **Formations** to date and then **double click** on the record, that you wish to delete. Once the selected record is displayed in the **Formation** window, click on the **Delete** [Del] **button**.

2.) Or, click twice on the **Query** [?] **button** and then click on the **Next Record** [Next] **button** to view all of the records in the database. Select the record you wish to delete and it will be displayed in the **Formation** window. Then, click on the **Delete** [Del] **button**. See the **Database Navigational Tools** section later in this **User Manual** for more information.

The **Undo** [Undo] **button** will restore the window to the settings of the last saved record.

You can **Tab** between fields or press **Shift+Tab** to move backwards between fields.

<u>This is the Well Formation window</u>:



K.B., Ground, and Casing - This information is displayed based on the **Well** information that you entered in the **Well** window. The Well window can be located under the Edit Menu Selection.

Formation List Button - Click on this button to display the list of **Formations** and **Sample Tops**, that have been entered to date. **Double click** on the **Formation** or highlight the **Formation** and click on the **Select** button to edit or view the **Formation**.

When editing or adding a new **Formation**, remember to click on the **Save** [Save] **button or press ALT-S**, when you are finished.

Clicking on the [New] **button or pressing ALT-N** will clear the window, allowing you to enter a new information.

Note: A **Well Formation** can't be saved until you have entered a name in the **Long Formation** field, next to the **Formation** button.

Group, Formation, and Member (short and long) - Type in the short and long name for the **Group**, **Formation**, and **Member** names. Only the **Formation** long name is a mandatory field. The short name will be added to the formation layer display on the log coupled with the short period name and the measured depth.

Formation Layer Long Name format. Short Name format.

Lambert Evaporite
(TVD: 295.4)
(SSL: -270.50)

Sequence Number - The **Seq#** field can be used to override the order that the formations are printed out in the well end and morning reports.

Era, Series, Period, and Stage - Use the drop box methods to access the various **Eras** on the lists. Note that the **Period** chosen will affect the list in the **Stage** drop box.

Age – You may enter the estimated geological age of this formation in this field.

Thickness – You may enter the thickness of this formation into this field (or) the user can **Click** on the [Calculate Thickness] **button** if you wish the program to calculate the Measured Depth thickness between this formation and the next formation in the list.

Note: When the Thickness field is filled in with the measured depth thickness of the formation you will be able to generate a **sample description report with formation tops** that will contain all your sample descriptions.

Tops Depth section - You may enter the **Measured Depths** and **True Vertical Depths** in these fields. If you have entered survey point data and have filled in or calculated the TVD fields and you have a survey point above and below the depth of this formation the True Vertical depths will be calculated for the user.

Note: Formations are normally ordered by their depths starting with Log Tops TVD, then MD followed by Sample Top TVD, then MD and lastly by Prognosed Tops TVD in all the well end and morning reports where the tops are generated.

Subsea - This is calculated from the depths entered in the **Tops** section and the **K.B.** elevation, that you entered in the **Well** window.

Subsea is calculated successively using the following data respectively: **Prognosis** depth, **Sample Top** (**MD**), **Sample Top** (**TVD**), **Log Top** (**MD**), and finally **Log Top** (**TVD**).

Alignment - This is used to align the **Formation Top** in a **Formation** layer, using **Format 2** in the **Layer Configuration** window. The following choices are available from this drop box: **Left**, **Middle**, **Right**, and **Blank**. Leave this box **blank**, if you don't want the **Formation Top** to be shown on the layer, but still want the **Formation Top** to be printed out via the **Well End Report** window. If you are using the **Formation** layer in more than one track, you should beware of layer overlapping. You will discover which is the best alignment for all layers. You have one selection for all layers using this format.

Samples Button - Click on this button to activate the **Sample/Core Description Transfer** window from which you may copy **Sample/Core Descriptions** into either the **Evaluation** and/or **Conclusion** fields. See "***Copying a Sample/Core Description***" in the **Table of Contents** for more information.

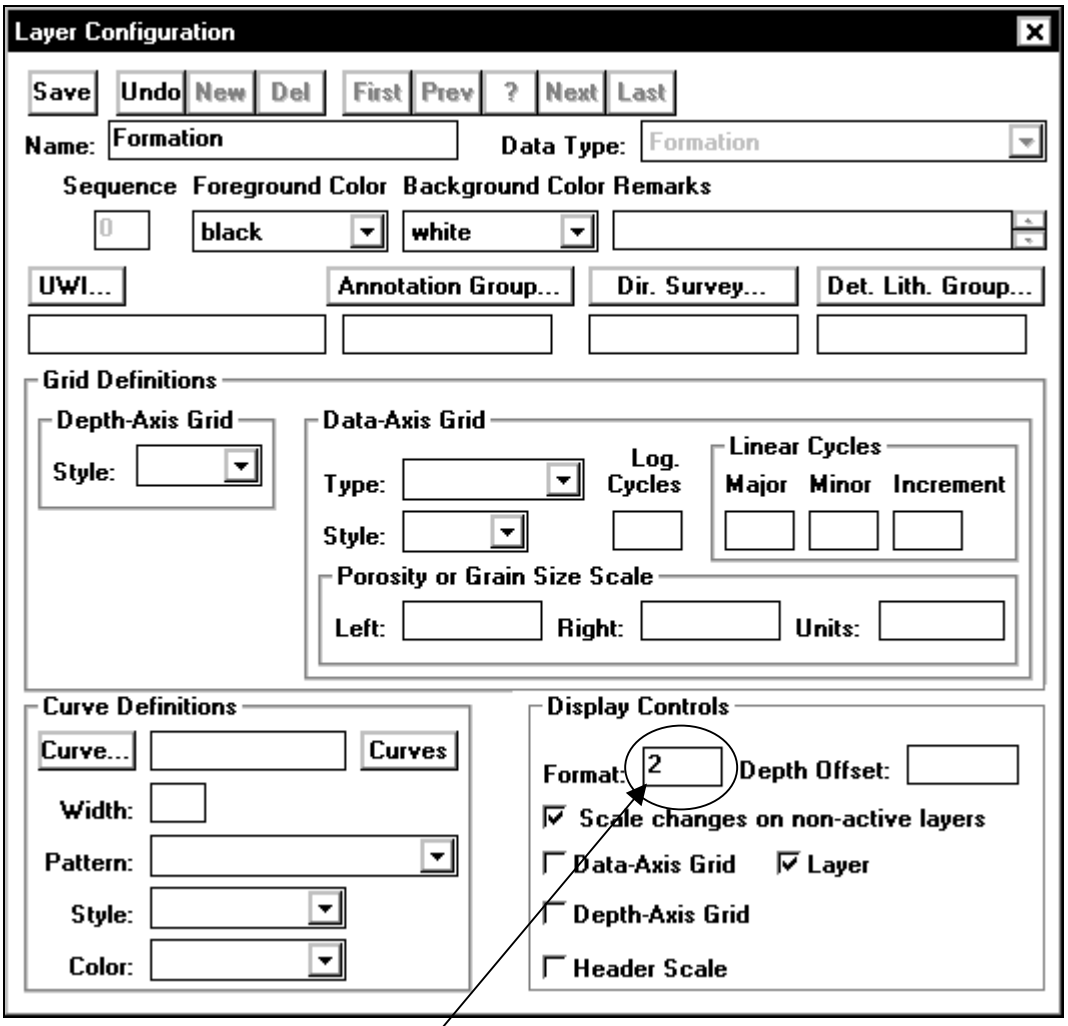
Evaluation - Type in the **Formation Evaluation** pertaining to the lithology, etc…. You may use the short forms and then click on the **Expand** button to lengthen the descriptions.

Conclusion - Type in the **Formation Conclusion** pertaining to hydrocarbon potential. You may use the short forms and then click on the **Expand** button to lengthen the descriptions.

Field Restriction Table:

Group (short)	5	Character	Optional
Group	30	Character	Optional
Formation (short)	5	Character	Optional
Formation	30	Character	Mandatory
Member (short)	5	Character	Optional
Era	30	Character	Optional
Series	30	Character	Optional
Period	30	Character	Optional
Stage	30	Character	Optional
Age	7.3	Numeric	Optional
Boundary Type	30	Character	Optional
Fault Type	30	Character	Optional
MD Sample	5.2	Numeric	Optional
MD Log	5.2	Numeric	Optional
TVD Prognosis	5.2	Numeric	Optional
TVD Sample	5.2	Numeric	Optional
TVD Log	5.2	Numeric	Optional
Evaluation	2000	Character	Optional
Conclusion	2000	Character	Optional
Thickness	10.5	Numeric	Optional

Note: When you add any layer to a log, it is always associated with a **Data Type**. Every **Data Type** in **Power*Log/Curve™** has a default setting. The default settings for a **Formation** layer are shown below. To access this window, click on the **Layer Configuration** **button** on the **Toolbar**, when the **Formation** layer is active.

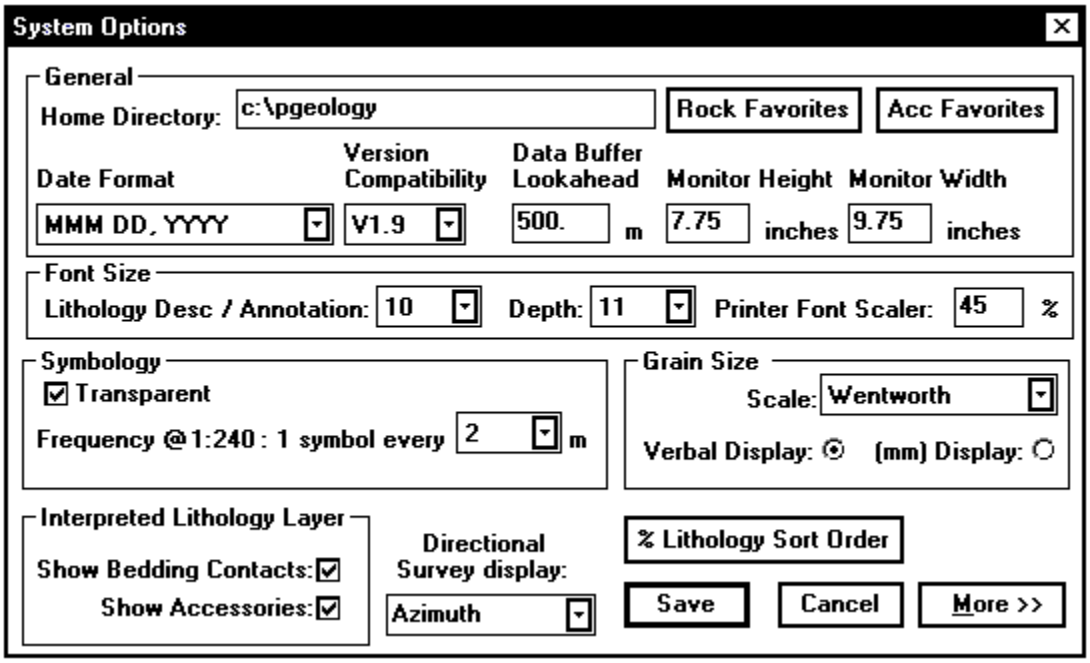


Format 1: Long Names
Format 2: Short Names

Options Menu Selection

System Options

The user can manage the Power*Log/Curve system settings with this window.



- **System Options…**

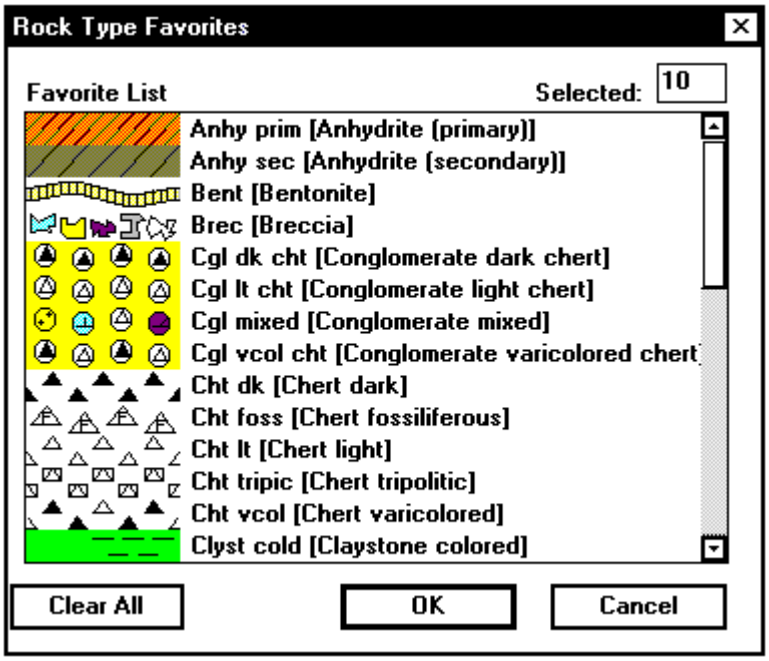
Home Directory - This is the directory on your hard drive where **Power*Log/Curve** is being executed.

Rock Favorites - Allows the user to determine their ten (**10**) favorite **Rock Types** and then displays them in a pop-up menu or Toolbox generated by the activation of the **Rock Type Builder** window in the **Interpreted** and **Detailed Lithology** tracks.

The Rock Favorites button when clicked allows the user to determine their ten (10) favorite Rock Types and then displays them in a pop-up menu or Tool Box generated by the activation of the Rock Type Builder window in the Interpreted and Detailed Lithology tracks.

How to Change the Rock Favorites Selection

1.) Click once on the Rock Favorites button in the System Options window to activate the Rock Type Favorites window shown on the next page:



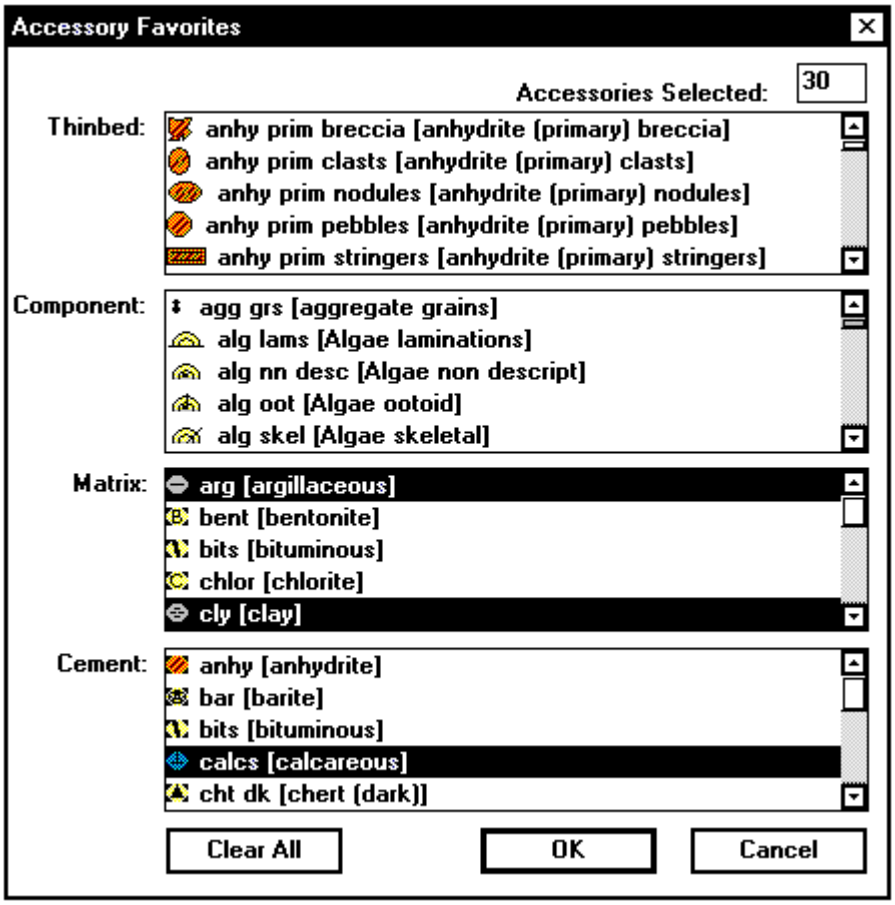
2.) Then, click once on the Clear All button in the Rock Type Favorites list window to prepare it for the selection of your Rock Favorites.
3.) Now, select some of your more commonly used Rock Types from the Rock Type Favorites list window.
4.) Click once on the OK button to return to the System Options window.
5.) Click on the Save button in the System Options window, when you are finished.

Acc Favorites - Allows the user to determine their thirty (**30**) favorite **Accessories** and then displays them in a pop-up menu or Toolbox generated by the activation of the **Accessory Builder** window in the **Interpreted** and **Detailed Lithology** tracks.

The Acc Favorites Button when clicked allows the user to determine their thirty (30) favorite Accessories and then displays them in a pop-up menu or Tool Box generated by the activation of the Accessory Builder window in the Interpreted and Detailed Lithology tracks.

How to Change the Accessory Favorites Selection

1.) Click once on the Acc Favorites button in the System Options window to activate the Accessory Favorites window shown on the net page:



2.) Then, click once on the Clear All button in the Accessory Favorites list window to prepare it for the selection of your Accessory Favorites.
3.) Now, select some of your more commonly used Accessories from the Accessory Favorites list window.
4.) Click once on the OK button to return to the System Options window.
5.) Click on the Save button in the System Options window, when you are finished.

Date Format - From this drop down box, you can select the date format. This selection determines how every date in **Power*Log/Curve** will be entered and displayed. If you import a log with different date formats, **Power*Log/Curve** will change the dates to comply with the format you've chosen here.

Version Compatibility - Enables the user to achieve compatibility between **Annotations** in the **Version 1.81 Lithology Text** layer and **Annotations** in the **Version 1.90 and later Versions' Lithology Text** layer.

Data Buffer Lookahead - The number placed in this field determines how far ahead and behind the current top depth will be stored in the computers buffer. The larger the lookahead number, the longer it takes for **Power*Log/Curve** to refresh the screen when you exceed the lookahead value. However, until you meet or exceed the lookahead value, scrolling will be much faster, because the database is not yet being accessed.

Monitor Height - This option allows you to scale your monitor for Power*Log so you may correlate on-screen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the vertical viewing area of your monitor in inches and then insert that value in the **Monitor Height** field. Be aware, however, that if you adjust the screen height knob on your monitor, this will affect the monitor height setting.

Monitor Width - This option allows you to scale your monitor for Power*Curve so you may correlate on-screen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the horizontal viewing area of your monitor in inches and then insert that value in the **Monitor Width** field. Be aware, however, that if you adjust the screen width knob on your monitor, this will affect the monitor width setting.

Note: You must restart **Power*Log/Curve** for the **Monitor Width / Height** changes to take effect.

Font Size (Lithology Desc / Annotation) - Allows you to pre-determine the font size on your log, when you use the **Sample Description Transfer** window. It is also the default font size when you enter any **Annotation Layer Toolbox**. If you change this option, it will only be reflected upon the **Annotation** that you transfer or add to the system from that point on. Any previous transfers are not affected.

Font Size (Depth) - This allows you to select the font size of the depth markers in the **Measured Depth** track of the log.

Printer Font Scaler - Used to scale the default printer's font size up or down, so that the font size on printouts matches the font size displayed on the screen. Ie. If the font size on the printout is bigger than the font you see on the screen the user must reduce this number and vice versa, if the font size on the printout is smaller than the font you see on the screen the user must increase the value of this number.

Transparent - When activated, this function makes the background of the accessory symbols transparent, so that the bed in the background shows through. If deactivated, a white background surrounds the accessory symbols in order to separate them more from the beds.

Frequency @ 1:240 - Determines how often symbols are shown on a **Lithology Layer**, while at the scale of 1:240. For example: 1 symbol every 1 meter at 1:240, 2 symbols every 1 meter at 1:120, 1 symbol every 2 meters at 1:480, and so on. These frequencies are only in effect if you utilize the entire interval in **Oil Shows**, **Rounding**, **Sorting**, **Framework**, and **Diagenesis**.

Grain Size Scale List box- You may choose your system default **Grain Size Scale** from either the **Wentworth, Canstrat** or **Amstrat** scales, when using the **Grain Size Builder**.

Grain Size Verbal Scale Radio Button- This radio button will display the **Grain Size Track header** with the equivalent verbal grain sizes such as such as C SLT, VF, F, M, C.

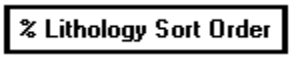
Grain Size mm Scale Radio Button- This radio button will display the **Grain Size Track header** with the equivalent numeric grain sizes (in mm) such as .0625, .125, .25, .5, 1, 2 etc.

Interpretive Lithology Layer - Show Bedding Contacts- This check box (☑) when activated will turn on the bedding contacts (lines) between the drawn lithology types in the Interpretive

Lithology Layer. When the check box is deactivated (unchecked) it will turn off the bedding contacts (lines) between the drawn lithology types in the Interpretive Lithology Layer.

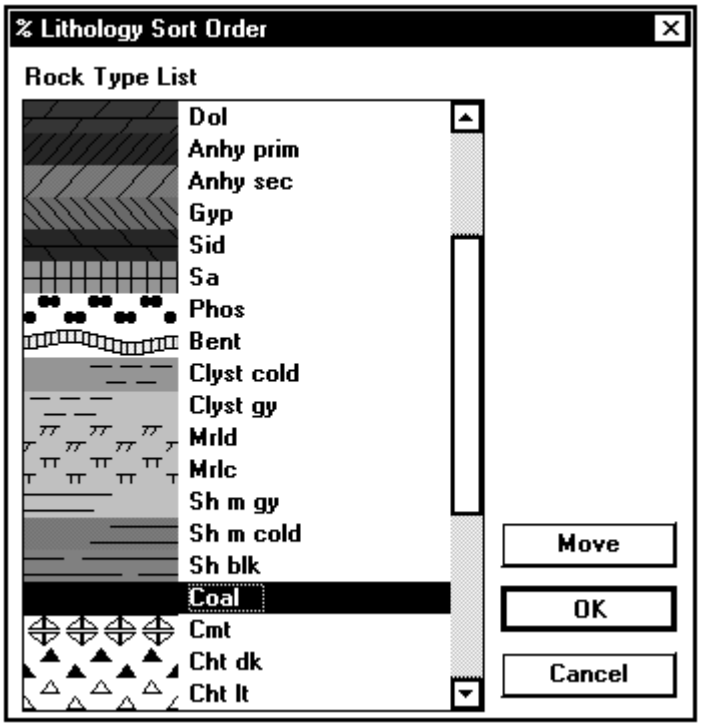
Interpretive Lithology Layer - Show Accessories- This check box (☑) when activated will turn on the accessories in the Interpretive Lithology Layer. When the check box is deactivated (unchecked) it will turn off the accessories in the Interpretive Lithology Layer.

Directional Survey Display – This option will display your directional surveys on your log in either Quadrant format (N 62 º W) or Azimuth format (AZ 298 º)

Lithology Sort Order Button- 

This button activates a window that does the ordering of the % Lithology layer. The rock types listed in this window is the sort order from left to right in Power*Log and top to bottom in Power*Curve when the %Lithology Track / Layer is utilized. The sort order can be changed by the user at any time but will only take effect after the application has been reactivated. The % Lithology Sort Order Window is shown below:

How to Change the % Lithology Sort Order



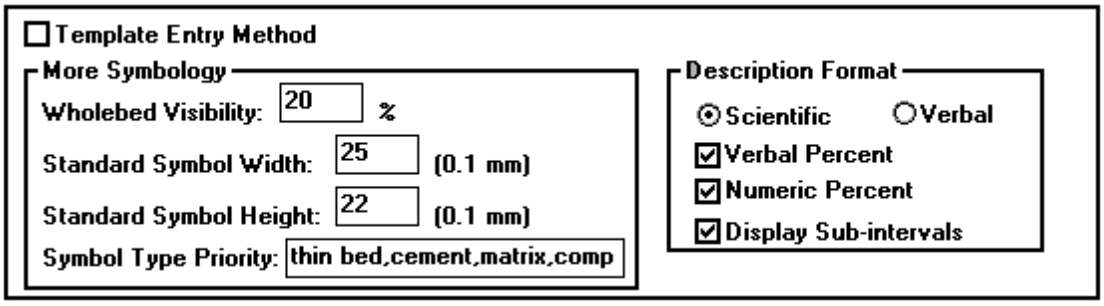
1.) **Click** on the **Options** Selection on the Application menu bar and **select Systems Options**. This will activate the System Options window.
2.) **Click** on the **% Lithology Sort Order button**. This will activate the % Lithology Sort Order Window shown above.
3.) **Select the Rock Type** the user wishes to move by clicking on the rock type once. This will highlight the rock type.
4.) **Click** on the **Move button**. The Move button will then transform into a Move Start button.

5.) Then Select the Rock Type you wish to move the previously selected type above by **clicking** on the **new rock type**. The previously selected rock type will now be placed above or to the left of the rock type you just clicked on.
6.) If you wish to change the order of more rock types proceed with steps 3-5.
7.) If you are pleased with the newly rearranged % Lithology Rock order **click** on the **Save Button**. This will close the % Lithology Sort Order Window and put the user back into the Systems Options window.

More 

Button

When the **More Button** is activated the user will look at the lesser used functions of the Systems Options which are only relevant to the Template Entry method of inputting sample descriptions.



Template Entry Method - This option allows you to utilize the template features of **Power*Log/Curve** to enter **Lithology Descriptions**, instead of the default method of data entry.

Wholebed Visibility - Determines how much of a bed to display when a **Lithology** track is populated with symbols.

Symbol Size- Does not change the actual size of the symbols. Instead, the figures in these fields determine how much space surrounds the symbols. When the spaces around the symbols are larger, fewer symbols can be placed on a track.

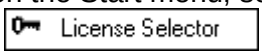
License Selector Program

The License Selector program can be accessed through the Power*Geology folder and facilitates the selection between the two different licensing methods available for the Power*Suite applications. The two types of authorizations that can be implemented to run our applications are:

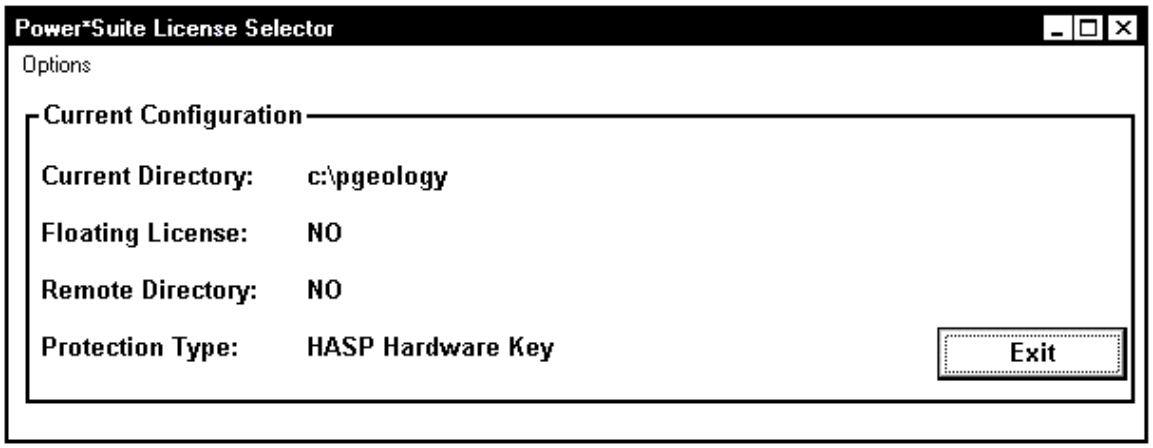
- Hasp Key (hardware license) that sits on either the parallel port or USB port of your computer. Otherwise known as a dongle or hardware key.
- Crypkey (software license) that can either reside locally on your computers hard drive or can reside on a network drive.

Hasp (Hardware Key) License Activation

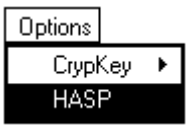
To activate a Hasp (hardware) key the user must first place the Hasp (parallel port) key on the parallel port before the printer cable. If you have a USB Hasp key this must be placed on the USB port. If you have not installed the Hasp key driver on your computer you must insert the Power*Suite CD-ROM and run the executable (HDD16.exe or HDD32.exe) to enable the program to see the Hasp key. Refer to page ?? in your manual.

1.) To activate the License Selector click on the Start menu, select programs, select the Power*Geology folder and click on the 

selection. This will activate the Power*Suite License Selector program shown below.



2.) Click on the Options selection to view the pull down menu.

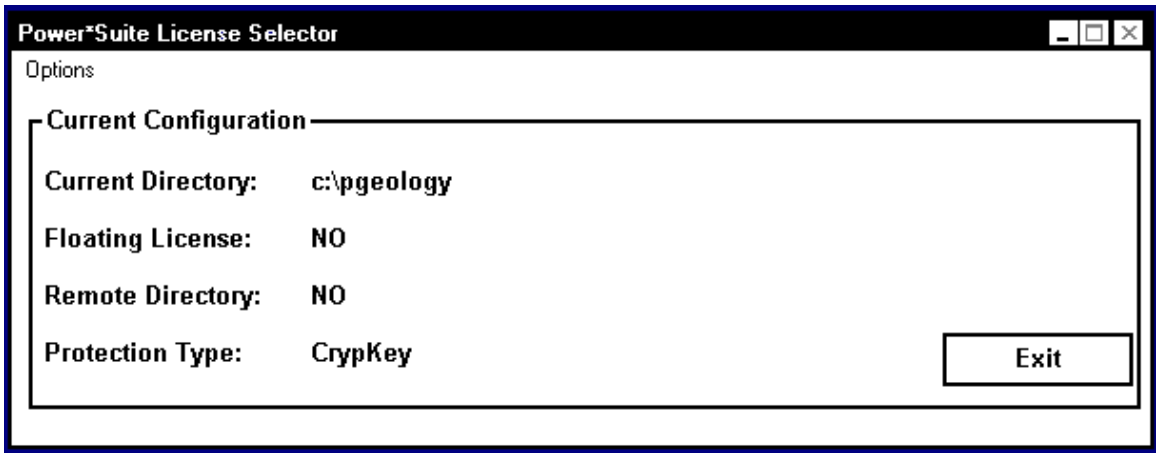


3.) Select HASP. The Protection type should read HASP Hardware Key as viewed in the Power*Suite License Selector window shown above.

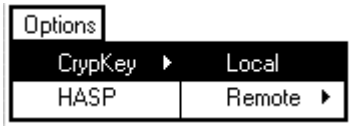
Crypkey (Software) License Activation [Local]

The Crypkey Authorization (Local) is the default License Activation when the program is first installed. The program authorization must be done by TriVision Geosystems Ltd.. To activate a trial or permanent Local Crypkey license please call our office @ (403) 777-9454. The user should refer to the License Configuration section in the manual to generate a site code.

1.) To activate the License Selector click on the Start menu, select programs, select the Power*Geology folder and click on the License Selector selection. This will activate the Power*Suite License Selector program shown below.



2.) Click on the Options selection to view the pull down menu.



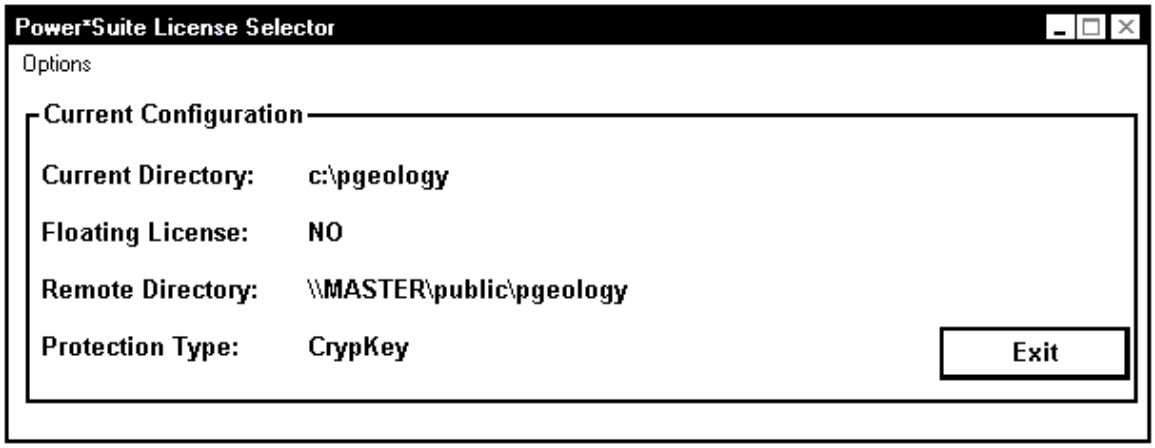
3.) Select Crypkey to activate a pop-out menu.

4.) Select Local from the pop-out menu. The Protection type should read Crypkey as viewed in the Power*Suite License Selector window shown above

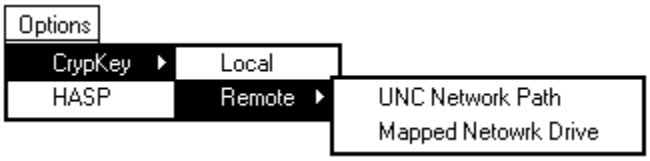
Crypkey (Software) License Activation [Remote]

The Crypkey Authorization (Remote) licensing has to be done by TriVision Geosystems Ltd. on a Network Server. To activate a trial or permanent Remote Crypkey license please call our office @ (403) 777-9454. The user should refer to the License Configuration section in the manual to generate a site code.

1.) To activate the License Selector click on the Start menu, select programs, select the Power*Geology folder and click on the License Selector selection. This will activate the Power*Suite License Selector program shown below.



2.) Click on the Options selection to view the pull down menu.

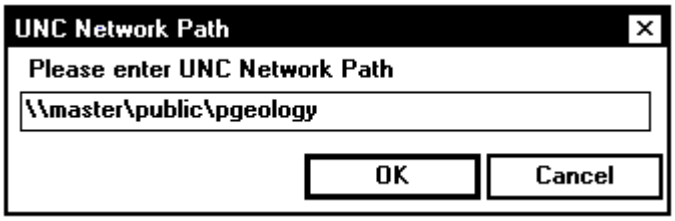


3.) Select Crypkey to activate a pop-out menu.

4.) Select Remote to activate another pop-out menu.

5.) Select either the UNC Network Path or the Mapped Network Drive selection to direct the Power*Suite applications to the location of the licensing files. The Protection type should read Crypkey as viewed in the Power*Suite License Selector window as well as the path to the remote directory where the license files are located as shown above.

a.) UNC Network Path will activate a window in which the user should type in the path to the Crypkey License files as shown below and then click on the OK button.



b.) Mapped Network Drive will open a window in which the user will select the drive and directory in which the Crypkey License files reside and then Click on the OK button.

Automated Backup Module

Overview

The Auto Backup module allows the user to have their database backuped while the database is connected to. This will prove useful when the database is being used and updated on a continual basis and the normal backup procedure when the database is being connected to is not being used on a continual basis.

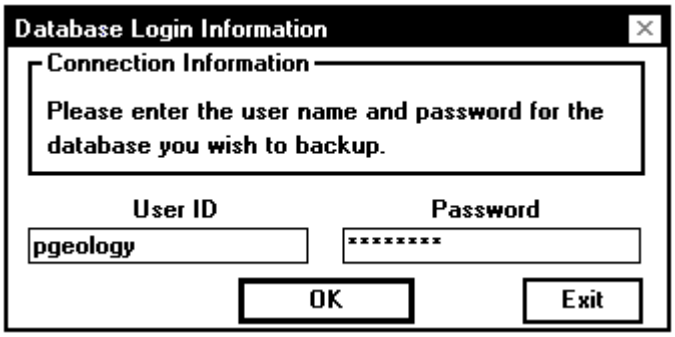
How to Start the Auto Backup Module

1. Click on the Start button and then select programs, Power*Geology V3.25 and then select the Auto Backup 

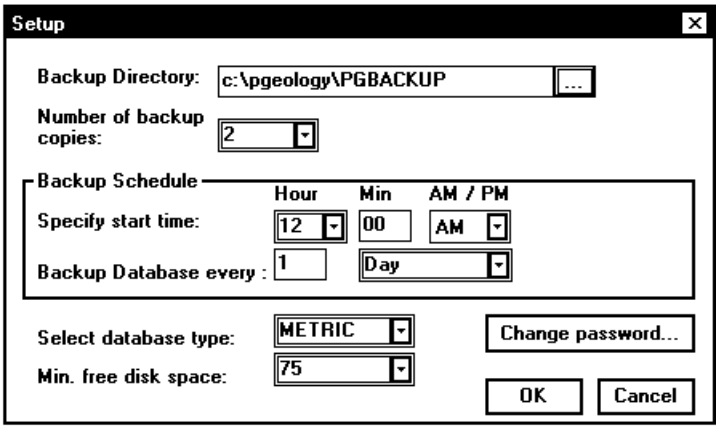
selection

The User can also go into the Pgeology Folder and then double click on the Auto Backup Icon as shown below:

2. This will activate the Database Login Window. Type in the User ID and Password for the database you wish to back up and then click on the OK Button.



3. This will then activate the Power*Suite Auto Backup Window and Log. Click on the Setup Icon  activate the Setup window shown on the next page.



The **Backup Directory** defaults to the Pgbackup directory of the Pgeology directory on the drive that the Power*Suite programs were loaded. The user can click on the further button and direct the backup files to any directory they desire.

The **Number of backup copies** indicates how many copies of the pgeology.db (metric database file), or the pgeology.dbi (imperial database file) the user would like to save before these files get overwritten with newer files.

Backup Schedule portion of this window indicates when the first backup is performed and how often after that the backup occurs. In the example above the first backup occurs at 12:00 Midnight and happens once a day.

Select database type to backup allows the user to select either the Metric or the Imperial database.

Min. free disk space allows the user to specify what the minimum hard disk space requirements are to perform a backup. In this case the hard drive has to have 75 megabytes of free disk space in order for a backup to be performed.

4. Once the user has selected their specifications click on the **OK button** and those requirements will be followed.
5. Click on the Start Button on the toolbar or Click on Start selection under the Backup pull down menu. This will activate a confirmation window indicating what was specified in the Setup window.

File Menu

Shrink Log History

This selection allows the user to view a portion of the last page of the Autoimp.log file so that any new action can be seen.
To activate this select Shrink Log History located under the File selection on the main Auto Import Window.
This will then truncate the file so that the last action is always in the middle of the log window.

Print

This selection allows the user to print the Auto Import log history to the default printer.
To activate this select Print located under the File selection on the main Auto Import Window.
This will then print the Auto Import Log.

Print Preview

This selection allows the user to print to a preview window the Auto Import log history. The user can then select print, View Next page, View Previous page, View One page, View Two pages, Zoom Out, Zoom In and Close from the toolbar on the top of this window.

To activate this select Print Preview located under the File selection on the main Auto Import Window.
This will then print to preview the Auto Import Log.

Print Setup

This selection allows the user to print to activate the Printer Setup window to select the desired printer and define the page setup etc.
To activate this select Print Setup located under the File selection on the main Auto Import Window.
This will then activate the Print Setup window which handles the Printer and the page / paper orientation etc.

Exit

This selection allows the user to close down or exit the Auto Import Module.

To activate this select Exit located under the File selection on the main Auto Import Window.
This will then close down the Auto Import Module.

Edit Menu

Undo

This selection allows the user to undo anything that has been cut or pasted within the Auto Import Log history.

1. To undo anything that has been cut out or pasted by the user they must select Undo located under the Edit selection on the main Auto Import Window. This will undo the last cut or paste that was done in the log history.

Cut

This selection allows the user cut out a portion of the Auto Import Log history.

1. The user must first highlight by clicking and dragging with the mouse a portion or all of the history. The highlighted portion of the log history will be cut if step two (2) is done.
2. To cut out or erase the highlighted portion of the log history the user must select Cut located under the Edit selection on the main Auto Import Window. The highlighted portion of the log will be cut and saved to the clipboard.

Copy

This selection allows the user copy a portion or all of the Auto Import Log history.

1. The user must first highlight by clicking and dragging with the mouse a portion or all of the history. The highlighted portion of the log history will be copied if step two (2) is done.
2. To copy the highlighted portion of the log history the user must select Copy located under the Edit selection on the main Auto Import Window. The highlighted portion of the log will be copied and saved to the clipboard.

Paste

This selection allows the user to paste a previously cut or copied portion of the Auto Import Log history into the existing history log.

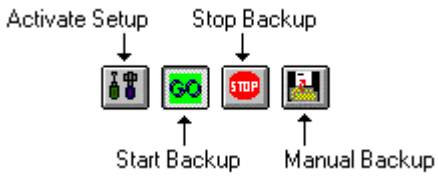
1. The user must place the mouse where they wish to paste the copied or cut log history. The previously copied or cut log history will be pasted if step two (2) is done.
2. The user must select Paste located under the Edit selection on the main Auto Import Window. The previously cut or copied portion of the Auto Import log history that was saved to the clipboard will be pasted into the log.

View Menu

Tool Bar

This selection allows the user to turn on or off the Tool bar on the Auto Import Window.

1. The user must select Toolbar located under the View selection on the main window. This will either turn off or on the Toolbar depending on its status at the time of activation.



Status Bar

This selection allows the user to turn on or off the Status bar on the Auto Import Window.

1. The user must select Status located under the View selection on the main window. This will either turn off or on the Status bar depending on its status at the time of activation.

Backup Menu

Start

This selection allows the user to activate or start the Backup Database Module and follows the directions last saved in the Setup window.

1. The user must select Start located under the Backup selection on the main window or they can click on the Start Icon  on the toolbar. This will activate or start the Backup procedure according to the rules provided in the Setup window. This will also print a date and time stamp and the comment Start in the Log History.

```
BACKUP: 2001-01-17 14:16:57 [ Performed ]  Last File Saved C:\PGEOLOGY\PGBACKUP\PGBACKUP\pgeology.01
```

Stop

This selection allows the user to deactivate or stop the Backup Database Module from backing up the pgeology database into the designated backup directory.

1. The user must select Stop located under the Backup selection on the main window or they can click on the Stop Icon  on the toolbar. This will deactivate or stop the Import Module from detecting any new files in the Import files directory. The user will also notice a date and time stamp and the comment Stop in the Log History.

```
BACKUP: 2001-01-17 14:20:05 Stop
```

Manual

This selection allows the user to activate a Manual Backup of the Database file at the present time.

2. The user must select Manual located under the Backup selection on the main window or they can click on the Manual Icon  on the toolbar. This will activate or start a manual backup of the database. The user will also notice a date and time stamp and the comment Manual Backup in the Log History.

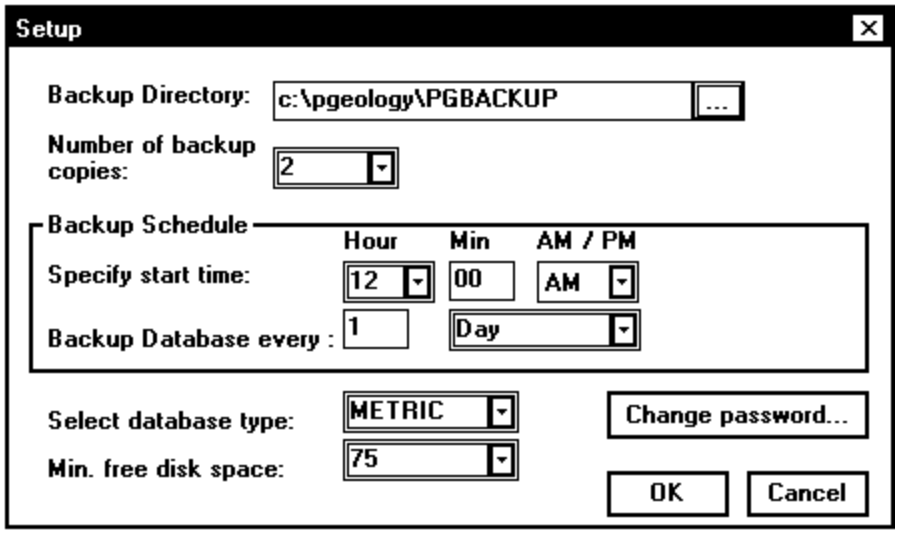
```
BACKUP: 2001-01-17 13:36:54 Manual Backup
BACKUP: 2001-01-17 13:36:58 [ Performed ]  Last File Saved C:\PGEOLOGY\PGBACKUP\pgeology.002
```

Options Menu

Setup

The setup window for the DBBackup module is where the user has control over where the database files are saved, the frequency or how often the backup are performed, at what time the backup occurs, and even how much hard disk space is left in order to perform a backup.

There are two ways to activate the setup window. One is to select setup from under the Options pull down menu or the user can click on the Setup  Icon on the toolbar. This will activate the Setup window shown below.



The **Backup Directory** defaults to the Pgbackup directory of the Pgeology directory on the drive that the Power*Suite programs were loaded. The user can click on the further button and direct the backup files to any directory they desire.

The **Number of backup copies** indicates how many copies of the pgeology.db (metric database file), or the pgeology.dbi (imperial database file) the user would like to save before these files get overwritten with newer files.

Backup Schedule portion of this window indicates when the first backup is performed and how often after that the backup occurs. In the example above the first backup occurs at 12:00 Midnight and happens once a day.

Select database type to backup allows the user to select either the Metric or the Imperial database.

Min. free disk space allows the user to specify what the minimum hard disk space requirements are to perform a backup. In this case the hard drive has to have 75 megabytes of free disk space in order for a backup to be performed.

Once the user has selected their specifications click on the **OK button** and those requirements will be followed.

Note: The backup file names for the database backups are pgeology.001, pgeology.002 etc.

Window Menu

New Window

Use this command to start a new Auto Backup Log.

The user must select New Window located under the Windows selection on the main window to arrange multiple log history windows in a cascading manner.

Cascade

Use this command to arrange multiple opened windows in a non-overlapping, top to bottom fashion.

The user must select Cascade located under the Windows selection on the main window to arrange multiple log history windows in a cascading manner.

Tile

Use this command to arrange multiple opened windows in a non-overlapping, side-by-side fashion.

The user must select Tile located under the Windows selection on the main window to arrange multiple log history windows in a tiled manner.

Arrange Icons

Use this command to arrange icons.

The user must select Arrange Icons located under the Windows selection on the main window to arrange your icons.

Help

About Auto Backup

The user must select About Auto Backup located under the Help selection on the main window to view the About window.