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1 Introduction

1.1 Purpose of Document

This document is to provide some guidance to PETRA® and PetraSeis™ system administrators working with large numbers of people in multiuser environments. It is assumed the reader has attended product overview training or has equivalent knowledge of the software already, and is looking for tips and techniques to better organize and manage typical project data, and general suggestions to minimize bottlenecks in the workflow. To improve readability of this document, we will shorten the references to PETRA and PetraSeis to just a reference to PETRA. Topics specific to PetraSeis will be so designated.

PETRA is designed for fast, efficient access to a well database. It can handle large numbers (hundreds of thousands) of wells in a single project and provide simultaneous access to multiple user's per project. The project database is designed to allow many people to share the well data, but to have a separate area to store their own "look and feel" templates and parameters.

One of the advantages of using PETRA is that it is extremely easy to create new projects and load data into the projects. However, in large, multiuser environments, that flexibility can make it more difficult to manage the projects when the number and physical size of the projects gets large. There have been a number of tools, techniques, and optional features added to PETRA over the years to address this environment, and they are described in this document.

1.2 Project Data Organization and Concepts

PETRA PROJECTS

PETRA stores all the data relevant to a particular area as a project. The Project Name is used to create the necessary directory structure on a local drive or Windows network server. For the purposes of this document, it is assumed the data is not on a local c: drive, but on a file server on the LAN. Well data is shared by all members of the team and stored in a common, "public" area on a network server. Individual "look and feel" information, such as log curve color choices and map templates are stored in a "private parameter" area that is unique for each team member. This topic is discussed in the PETRA overview class, so it will not be covered in detail here. If you are unsure of this structure, please refer to your overview training material. The main thing to remember is that shared projects will have one set of database tables that all team members have access to, and a unique set of database tables for each user connected to (or sharing) the project. To determine where the data files for a particular project reside, just open the project in PETRA and click on the "Project" tab in the main module. It will display the path to the public data and the path to your private data.
Example of a PETRA Project Database Organization in a Multi-User Environment

WELL SEQUENCE NUMBER (WSN)

Each well that is stored in the PETRA database must have a different "Unique Well Identifier" (UWI). The UWI is a 1 to 20 character identifier and is typically the API number of the well. The database assigns a unique "Well Sequence Number" (WSN) which is used for data retrieval.

ZONES and USER-DEFINED DATA

PETRA allows an unlimited number of user-defined data fields to be stored for a well. These data are organized into groups called "zones". A zone is like a table containing one or more columns containing numeric, date, or text data. Each row in the table is represented by a well.

Zones are defined by a name and description and depth interval reference. Typically, the depth interval will reference formation tops stored in the FmTops table.

Zones allow efficient organization and management of geological well data. Items such as isopach, net pay and average porosity can be grouped together for different formation zones.

CARTOGRAPHIC DATA

Geologic interpretations (such as contour lines and fault lines), georeferenced images (topo maps or geoorthophoto quads), map titles, text boxes, and legends are stored in the map overlay file and can be segregated into up to 256 layers. Cartographic information that does not change often (such as section lines, rivers, highways, etc.) can be in read-only associated layers that only get loaded if the layer is made visible in the map. General
information about loading these data into the overlay is available in the PETRA overview class.

1.3 System Data Organization

PETRA DATABASE ENGINE

The PETRA database engine is a commercially available system, designed to be embedded in applications such as PETRA. The benefits of using it in this type of application, over a more common relational database engine from Oracle or Microsoft is its speed, flexibility, and robustness for an iterative, interactive workflow. The database engine is actually stored on and runs from the "client" PC.

The database files are typically stored on a Windows network server, and that server is just acting as a file server. This approach is different than the traditional (thin) client/ (fat) server structure. It takes advantage of the distributed horsepower on individual PCs and at the same time reduces the demand on IT to provide a single, extremely powerful (and costly) computer doing file serving AND all database searching for everyone in the group.

Full record locking is provided by the PETRA database engines when more than one person is working in the same project, and this record locking prevents any data collisions or corruption.

PROJECT ".INI" FILES

When a new project is created, a project "ini" file is created to provide information to PETRA about where the various data reside. These project files are named after the project, so a project named SAN JUAN would have a "SAN JUAN.ini" file created that would contain the various paths to the private and public PETRA and PetraSeis data. These project "ini" files are stored in a subdirectory called "PARMS" under the local path (typically c:\geoplus1\parms). They are simple ASCII files and can be opened with a text editor, such as Notepad. If the project "ini" file is not in the user's parms directory, the project will not show up when they want to select a project from the list of existing projects.
REGISTRY ENTRIES

Several operational parameters are included in the registry. Any parameter that needs to be customized for a particular installation can be edited through a PETRA tool called config.exe. Therefore there should be no reason to edit parameters directly through the Microsoft regedit.exe program.

PETRA.INI FILE

The petra.ini file is located in the server program directory and is used to control PETRA system wide parameters, such as the tops user control, log in file parameters, etc. The parameters that are included in this file are described in more detail later in this document.

GEOPLUS.INI FILE

The geoplus.ini file is located in the local program path (typically c:\geoplus1) and contains items about the previous session information such as the current project name, window size, the list of the last 5 projects (for the reopen list), some debug tools, etc. The content is managed by PETRA, so there should be no reason for any external editing.
2 Software Installation and Updates

2.1 Installation Overview

PETRA can be installed in either a network or standalone program configuration, but in this document we will only describe the network seat (sometimes called a floating seat) process. There are three general components to a PETRA network installation: the server software, the client software, and the license management. The server software is where all the functionality of PETRA resides. The client is a small piece of software to link to the server software and the data. The license management can be installed on the same file server or another server, as long as the server is accessible by the client PCs.

The software for the initial installation is provided on a CD. For future installations or updates, go to http://energy.ihs.com/Products.Petra.index.htm and http://energy.ihs.com/Products/petraseis/support-petraseis/protected/petraseis-customer-download.htm and download the latest versions of PETRA and PetraSeis, respectively.

The installation of these components is described below.

2.2 Installing PETRA Server Software

In a network installation, the PETRA executable files are installed on a network file server accessible to all PETRA users. These files are installed using an installation program called "SERVER.EXE". The default directory path is C:\PETRASRV and is referred to as the PETRA "system path." An example of a typical path would be \server1\petrasrv. It is important that users have read-write-create permissions to the "parms" and "usermod" folders under this system path, since several template and data files are placed in the "petrasrv\parms" folder and the "petrasrv\usermod" folder.

2.3 Installing PETRA Client Software

The PETRA client software is installed on individual PCs using a program called client.exe. The default location for installation is on the local drive in the c:\geoplus1 subdirectory. The client software is very small and rarely changes, since its primary role is to point to the location of the server software and to provide a mechanism to define the type of license management used in the installation.

The PETRA database engine is also installed on the client PC as part of this process.

At the end of the client installation process, a configuration utility is automatically run to allow the installer to define the desired paths and default settings. See the Configuring PETRA Client section immediately below for details.

2.4 Configuring PETRA Client

A utility called config.exe is included in the PETRA client installation and is located in the same subdirectory as the PETRA client software. It is automatically run as part of the client software installation, and can also be run at a later date to change any of the parameters.
In the example above, the installer is indicating the server software has been installed on `\server1\petrasrv`, the client software is on `c:\geoplus1`, the default path for the public or shared part of the projects is `\server2\geoplus\projects`, and the default path for each individual's private parameters starts at `\server3\geoplus1\users`.

This example also shows using the NetHASP security device (bitlock) and searching the network to obtain a license to run the software. This is the same configuration if you are using a network Flexlm license.

### 2.5 Installing PetraSeis Software

In a network installation, the PetraSeis executable files are installed in the same path as the PETRA software. These files are installed using an installation program called "PSVer2.exe". An example of a typical path would be `\server1\petrasrv`. License management is similar to PETRA. See the Configuring PETRA client section of the manual for details.

### 2.6 Typical Network Install Configuration

The following shows directory paths and contents of a typical network install of PETRA using the default folder names.

**On the SERVER**

- `x:\petrasrv`
  - executables and dlls
  - `petra.ini`, `nethasp.ini`
- `\Nethasp`
  - `nethasp.ini`
- `\parms`
  - hasp license manager install files
PETRA projects can be located locally on the client or anywhere on a network. The "client" user can share projects with any other PETRA user on the network.

The "client" user can access a PETRA license either from a network license manager or from a local "bitlock" by using "config.exe" to configure licensing.

2.7 Typical Standalone Install Configuration

The following shows directory paths and contents of a typical standalone install of PETRA using the default folder names.

c:\geoplus1
  < executables and dlls >
  < geoplus.ini, config.exe, petra.exe, and other utilities >
  \drivers
    < HASP bitlock driver - hdd32.exe >
  \parms
    < data files copied to new projects >
    < miscellaneous system data files >
    < INI files for each project the user can access >
  \projects
    < local projects create by user >
    \TUTORIAL (project)
  \usermod
    < log user model files >

PETRA projects can be located locally on the client or anywhere on a network. The standalone user can share projects with any other PETRA user on the network.

The standalone user install can access a PETRA license either from a local "bitlock" or from a network license manager using "config.exe" to configure licensing.
2.8 Installing NetHASP License Management

After installing the PETRA server software, use the NetHasp installation software (LMSetup.exe) located in the \petrasrv\nethasp subdirectory.

To load the NetHasp License Manager on a Windows server as a service:

1. Log on as a user with Administrator Privileges.
2. Attach the NetHasp key to the LPT1 port or a USB slot on the server.
3. Run LMSetup.exe located in the \PetraSrv\NetHasp directory. Be sure to select the option that loads the LM as a Service (i.e., Typical or Service).
4. Reboot the server or workstation to start the "Hasp Loader" service automatically. To keep the service from displaying its data screen, click the "Startup..." button on the Services window, then disable the "Allow Service to Interact with Desktop" option.
5. The ...PetraSrv\NetHasp directory contains a "skeleton" version of the NETHASP.INI file. You may need to copy this file to the PetraSrv folder and modify it by uncommenting the appropriate network protocol. For example, to force net hasp to only look at TCP/IP, uncomment or add a statement to the [NH_COMMON] section that says; NH_TCPIP=Enabled
6. The default timeouts may be edited if PETRA users randomly get dropped from the application. A NetHASP support representative suggested that the two following lines be edited:

```
; ; General Keywords.
;
;;NH_SESSION = <Num> ; See Adapting the Timeout Length
;;NH_SEND_RCV = <Num> ; in the HASP Programmer's Guide.
NH_SESSION = 20
NH_SEND_RCV = 10
```

7. To minimize traffic across the network when looking for a license, the NETHASP.INI file can list specific IP addresses to be searched for available licenses. The format is:

```
;;NH_SERVER_ADDR = <Addr1>, <Addr2> ; IP addresses of all the NetHASP
 ; License Managers you want to search.
 ; Unlimited addresses and multiple
 ; lines are possible.
 ;
 ; Possible address format examples:
 ; IP address: 192.114.176.65
```

NH_TCPIP_METHOD = TCP
NH_USE_BROADCAST = Disabled

2.9 Installing FlexLM License Management

Instructions For A Site Currently Running Flexlm Applications

INSTALLING THE FLEXLM FILES
Run the PETRA Flexlm installation program called PetraFlex.exe and install the files on the machine that runs the Flexlm license manager. The default folder is c:\petraflexlm.

OBTAINING A LICENSE FILE

After installing the Flexlm files you must run a small utility to display the "host id" of the PC that will be running the FLEXlm license manager.

Run c:\petraflexlm\flexhostid.exe or use Flexlm's lmtools.exe manager program, "System Settings" tab to get the host name and host id of the license manager machine. Communicate this information via email or phone to PETRA technical support to receive a valid license file for your site. The name of the license file will be ihs.lic.

ADDING THE IHS DAEMON AND LICENSE FILE

Copy c:\petraflexlm\ihs.exe to the folder where Flexlm's lmgrd.exe license manager application is installed. Copy ihs.lic (the license file you receive from PETRA technical support after running flexhostid) to the common license directory configured for the existing FLEXlm installation. Optionally, refer to the FLEXlm End Users Guide, "Managing Licenses from Multiple Vendors" chapter for options such as merging multiple vendor license files or running separate license managers on one machine.

Restart the FLEXlm server or service to read the new ihs.lic license file and start the new ihs.exe vendor license manager program. Use lmtools.exe, "Server Status" tab, "Perform Status Enquiry" to verify the license manager started and the number of licenses for the features you have purchased are available for use.

Proceed to "Configure Petra For Flexlm".

Instructions for a site not currently running FLEXlm applications

Choose a machine to be the license manager whose TCP / IP address is visible and reachable over the network by all client workstations. This is normally a central file server or a machine dedicated to license management.

INSTALLING THE FLEXLM FILES

Run the Petra Flexlm installation program called PetraFlex.exe and install the files on the machine that will run the Flexlm license manager. By default, the install folder will be c:\petraflexlm. If these files are to be installed on a remote drive, make sure the drive is accessible to the machine at boot up before the operating system services are started.

Run c:\petraflexlm\lmtools.exe from the license manager machine.

Select the "Service / License File" tab. Verify "Configuration using services" is selected.

Select the "System Settings" tab. Click on "Save HOSTID info to a file" and save the file as "Hostid.txt" without the quotes to the c:\petraflexlm folder. Communicate this information via email or phone to PETRA technical support to receive a valid license file for your site. The name of the license file will be ihs.lic. Copy the ihs.lic file you receive from PETRA technical support to the c:\petraflexlm folder, i.e., where ihs.exe is located.
Select the "Config Services" tab. Type "GeoPLUS License Manager" as the "Service Name." Click on the first "Browse" button. Locate and select the lmgrd.exe file. Click on the next "Browse" button. Locate and select the ihs.lic file. Optionally, click on the final "Browse" button, choose a folder with a good amount of free space and create a log file named "ihs.log" to record license activity and for debugging license server problems. Select the "Use Services" check box. Select the "Start server at power up" check box. Finally, click on the "Save Service" button.

Select the "Start / Stop / Reread" tab. Make sure "GeoPLUS License Manager" is highlighted. Click on the "Start Server" button. Verify "Server Start Successful" appears in the status box at the bottom of the screen. The license manager service is now running and ready to manage licenses.

Finally, select the "Server Status" tab and click the "Perform Status Enquiry" button to view the current status of the license manager service and see the user name / machine name of users who are currently issued licenses. Use the "Edit" menu, "Clear Window" command to clear the information between status checks.

NOTE - The ihs.log file may be viewed with Notepad, WordPad or Word to view license activity. The lmtools.exe "Config Services" tab also has buttons to "View Log" to view the contents of the log file and "Close Log" to close the viewing window.

Proceed to "Configure Petra For Flexlm".

CONFIGURE PETRA FOR FLEXLM

( See "Creating a New PETRA.INI File" for additional information )

After installing the Flexlm license manager and the ihs.exe and ihs.lic files, you must instruct Petra to look for a network Flexlm license instead of a network bitlock. This is done by adding two statements to the PETRA.INI file. PETRA.INI is located in the Petra program folder (typically c:\petrasrv). If you currently do not have a PETRA.INI file you can copy the one from the c:\petraflexlm folder from the previous steps. The PETRA.INI file requires two statements under the [NETLOGIN] section as shown in the following example:

```
[NETLOGIN]
FLEXLM=ENABLED
FLEXMLICPATH=27000@hostname
```

If you have purchased PETRA "Data Access" licenses, you will need to include an extra line as follows:

```
[NETLOGIN]
FLEXLM=ENABLED
FLEXMLICPATH=27000@hostname
FLEXLMDATALIC=YES
```

If you have multiple Flexlm servers that you want to obtain licenses from, you can have multiple license path records as follows:

```
[NETLOGIN]
FLEXLM=ENABLED
FLEXMLICPATH=27000@hostname
FLEXMLICPATH1=27000@hostname_a
FLEXMLICPATH2=27000@hostname_b
```
FLEXLMLICPATH3=27000@hostname_c

In the above examples, the "hostname" should be replaced with the machine name of the computer running the Flexlm license manager. Using IP addresses normally results in faster license acquisition. "27000" is a default port number.

(Optional)
In addition to the PETRA.INI changes, the client's workstation must be configured to use a network license. If you have already been using a network bitlock licensing mechanism, such as Net HASP, then the client's PC is already configured correctly and there is nothing else to do. Use the c:\geoplus1\config.exe on the client workstation for this purpose.

BORROWING LICENSES FOR TEMPORARY, REMOTE USAGE

Your PETRA Flexlm license file may authorize license borrowing on a temporary basis. That is, a network license may be borrowed or checked out for remote usage. PETRA allows licenses to be borrowed for up to 30 days.

PETRA has a special utility program for borrowing licenses. This program is called PetraBorrow.exe and is installed with the other PETRA Flexlm files.

The Flexlm license manager will automatically free a borrowed license after it expires on the workstation.

FLEXLM ENVIRONMENT VARIABLES

One issue that can effect PETRA's ability to obtain a Flexlm license is the use of environment variables by other vendors using the same flexlm license manager. PETRA does not use or require such environment variables, however, some other applications do. These environment variables can redirect the flexlm license manager to a specific license file which would not contain the PETRA license information. PETRA would not be able to obtain a license.

The solution is the remove the environment variables or add the vendor-specific license information to the appropriate license file.

The Flexlm licensing software provided by Macromedia will attempt to override Petra's ini settings using client-side environment variables. Flexlm uses two methods to resolve license information from environment variables.

First is the generic variable called LM_LICENSE_FILE.

The second is a variable named using the vendor's name, ie, VENDOR_LICENSE_FILE, where "VENDOR" is replaced with the actual name that matches the daemon name, such as, XYZSOFT_LICENSE_FILE.

IT IS NOT RECOMMENDED to use a IHS_LICENSE_FILE variable to resolve conflicts.

IT IS RECOMMENDED that you add the other vendor's license file variable to resolve conflicts.

DO NOT USE the generic LM_LICENSE_FILE variable.
Another issue that can affect Petra’s ability to obtain a Flexlm license is the FLEXLM_TIMEOUT environment variable. This variable controls the timeout value for the license request to the license server.

If the users are experiencing license request failures when they start Petra for the first time after logging into their machine, but are able to start Petra successfully afterwards, then this value may need to be increased.

The value is specified in microseconds (millions of a second). The default value is 100000 (100 milliseconds, or 1/10 second). On slower networks this value will need to be increased. A value such as 5000000 (5 seconds) should be sufficient.

2.10 Migrating to Citrix

PETRA now has limited support of Citrix for customers who want to migrate PETRA network licenses to the Citrix environment. The requirements are:

- PETRA network licenses are being used, rather than PETRA standalone licenses.
- PETRA is already installed in a networked environment and projects are already being shared by multiple user's.
- The PETRA private parameters are grouped in a common structure, based on user names as part of the path (i.e. \server1\users\%username%\geoplus1).
- Citrix Access Suite 4.0 or later is being used, and your organization is familiar with publishing applications in that environment.
- Windows Server 2003 or later is being used for the terminal server and all the latest patches have been applied.

Before starting the installation of PETRA:

1. Make sure Citrix is installed and the version is Access Suite 4.0 or greater and that all updates have been applied.
2. Make sure that the resolution for the client machines is set high enough for PETRA. For example: 1024X768 True Color (24Bit).
3. Make sure that the Windows Server Operating System is current with the latest Windows updates and Service Packs applied.
4. Search http://technet.microsoft.com/ for "enabling users to connect remotely" to read an article describing how to enable users to connect remotely to a terminal server. Add the PETRA users to "Remote Desktop Users" group.

To install PETRA for Citrix:

Login as Administrator or with an ID that has administrative privileges to register PETRA.
Install the PETRA server software on the Citrix server, as described in the "Installing PETRA Server Software" portion of this document.

Install the "client.exe" for PETRA in the same folder where the server software is installed (typically called the \Petrasrv folder). NOTE: the standard instructions are for installing the PETRA Client on an individual workstation. Client installation on each workstation is not necessary for Citrix as each client will run in separate sessions on the server.

During installation of the PETRA client, a "PETRA Workstation Network Configuration Program" dialog screen is displayed, as shown below. Enter the path to where PETRA was installed on the server, in the (System Path) data entry field.

![PETRA Workstation Network Configuration Program](image)

Enter the generic path to where the user's have their private parameters, in the (Client Path) data entry field. Use the %username% environment variable in the path to keep each user's private parms in separate folders.

Enter the path where shared or public projects are to be created on the network in the (Project Path) data entry field.

For installations using a hardware bitlock, select the appropriate key type in the "Security Key Type" section. Check your PETRA network bitlock for confirmation of the type. The "Red" key and the USB keys are "NetHASP". The Beige key is a "Rainbow NetC" key. If you are using FlexLM for PETRA license management, just go to the next step.

Verify the "Network Server" option is checked in the "Obtain PETRA License From" section, and then click on "OK" to save.

**Enable Sharing of PETRA software with Remote Users**

Right click on the Petrasrv folder, select the "sharing and security..." option and change the share name to
Petrasrv. Under the Permissions tab, add "Remote Desktop Users" group to the "Group or user names" section and give this group "Read and Change" permissions.

Now, follow the Citrix instructions to publish PETRA as an application.

2.11 Remote Access with Standalone License

It is possible to use a single user, "stand alone" bitlock in a remote access configuration under the following conditions:

1) The remote "host" can not be a server. It must be a "workstation" such as XP Pro.

2) There can be only one connection to the host when Petra attempts to obtain a license.

3) If you have a Hasp (memo hasp) bitlock, you must have already logged on at the host (not remotely). Then, from the remote PC you can "logon" to connect. Then you must "disconnect" from the host when you are done. Do NOT "logoff" from the host, else you will have to drive to your office and logon again.

4) Condition #3 is not required if you have one of the older technology Rainbow bitlocks. You may logon and logoff remotely using the Rainbow bitlock.

2.12 Installing the ArcMap Extension

General:

The ArcMap extension is a menu tool added to ESRI's ArcMap product that allows data exchange with a PETRA project.

Requirements:

- PETRA "ESRI" License(s) using FlexLM for Windows license management
- ESRI ArcMap 9.1 or newer

Summary:

After verifying the above requirements are met, there are two steps to install the software.
1. Install and register the PETRA DB Server
2. Install the ArcMap Extension (also known as the PETRA ESRI Toolbar) into ArcMap

Installation of the PETRA DB Server Software:

(Automatic Registration)
Beginning with PETRA Version 3.1.8.5 (November, 2006), there is a new menu item in the PETRA main module under Project > Settings > Register PetraDBServer for ESRI Plug-in to automatically register the
components in the PC Registry. The user needs to have Administrative rights to be able to register the components. If you have an older version of PETRA and don't see this menu item, proceed to the Alternate Installation Instruction section below.

Alternate PETRA DB Server Installation Instructions.

(Manual Registration)
These steps are to be used if you are using a version of PETRA prior to Version 3.1.8.5 or if PETRA is not installed on the PC.

PetraDBServer.exe and PetraESRI.dll are to be physically copied to the Petra installation folder. PetraDBServer must be with the rest of the Petra software so it can access Petra's data libraries (*.dll). In networked installations, the folder is typically \servername\petrasrv. In standalone installations, the folder is typically c:\geoplus1.

PetraDBServer.exe must then be run (executed) at least once from the workstation where ArcMap is run, and not on the server. Running the executable on the workstation where ArcMap is used registers the COM components in Windows so ArcMap can use those components to access Petra's libraries. There will be no indication that it is running. Run the task manager to kill the PetraDBServer task, or reboot the workstation.

NOTE: The user who is logged into Windows must have administrator rights or at least the rights to install software and register COM objects in Windows. This user can also run RegEdit and search for the PetraDBServer namespace in the registry. Components such as PetraDB, Overlay, Workgroups, Zone, Location, Well, etc... should be registered under this namespace, if the install was successful.

Installation of the PETRA Toolbar in ArcMap:

To add this toolbar to ArcMap, start ArcMap and click on "Tools > Customize". Click on the button to "Add from file" and browse to and select the PetraESRI.dll file. Then go to "Tools > Customize" and check the box next to the word "PETRA". The toolbar added to ArcMap will then be able to access Petra data using these components. If Petra can open the project and access the data in Main, then the ArcMap toolbar can open the project and access the data.
3 Software Updates

3.1 Force Shutdown of PETRA

Before updating PETRA, it is necessary to shut it down so all pertinent program files are available. Many times the update is done after hours and there may be some PETRA sessions still active with project files open. The following procedure is available if it becomes necessary to shut down all PETRA users and have them get out of PETRA:

Place a file called "NOTIFYKILL.RTF" in the PetraSrv folder (typically \server1\petrasrv).

Alternatively, you can place the "notify kill" file in the root folder of a particular project to shut down users in that project only.

There is a default file called XNOTIFYKILL.RTF already available. It is in a rich text format (rtf) and can be customized for your environment. Just rename the file to NOTIFYKILL.RTF when you are ready to initiate the shutdown.

Within 5 minutes, all PETRA users will be notified of the impending shutdown and told their data will be saved (via the NOTIFYKILL message). Wait 10-15 minutes before proceeding with maintenance duties in order that all users have had time to exit after automatically saving data. Some overlay files may take several minutes to write to disk.

To allow users back into PETRA, rename NOTIFYKILL.RTF back to XNOTIFYKILL.RTF.

The following modules save data in the PrivateParms folder using a time stamped (xxxxx) file name:

- Map - Overlay File: OVERLAY_xxxxx.OVL
- Map - Control Pt File: CTRLPTS_xxxxx.CPT
- Map - Production Patterns: PRODPAT_xxxxx.PAT
- Map - Posted Data Offsets: DBWOFFSETS_xxxxx.OFF
The following optional PETRA.INI file variables apply to the kill notification:

```
[NOTICE]
KILLWAITSEC=10 Seconds to display user notice before closing
KILLSOUND1=<wave file> Sound file to play when notice appears
KILLSOUND2=<wave file> Sound file to play once per second
KILLSOUND3=<wave file> Sound file to play when removing notice
```

If the above "KILL" controls are not placed in the PETRA.INI file, the default values are 10 seconds notice before the shutdown begins and some common sounds for each of the three sounds (an "uh-oh" sound, a "ding" sound, and a ??? sound).

### 3.2 Updating Software

The client software (installed on each geoscientists' PC) rarely changes. In fact it has only changed 3 or 4 times since 1997. However, a new version of PETRA (as part of the server software) is routinely uploaded every 3 to 4 weeks. Because of the way PETRA is packaged, it is easy to update everyone in the organization with less than 10 minutes effort. (In general it takes more effort to get everyone out of PETRA, than to do the actual update).

PETRA updates periodically contain changes and additions to the database tables. If an updated version of PETRA is used to access a shared project, older versions of PETRA may no longer be able to access that project. All PETRA seats within an organization should be updated at the same time. If the organization prefers to test new versions of PETRA before general release to all users, it is best that testing be done with dedicated testing projects rather than projects that the organization wishes still be accessible to older versions of PETRA.

To perform a PETRA update, download the latest version server.exe from [http://energy.ihs.com/products/petra/support/protected/petra-customer-support.htm](http://energy.ihs.com/products/petra/support/protected/petra-customer-support.htm), make sure no one is running PETRA (see "Force Shutdown of PETRA" section), start server.exe and reinstall PETRA in the same directory as before.

To perform a PetraSeis update, download PSVer2.exe from [http://energy.ihs.com/Products/petraseis/support-petraseis/protected/petraseis-customer-download.htm](http://energy.ihs.com/Products/petraseis/support-petraseis/protected/petraseis-customer-download.htm), make sure no one is running PETRA or PetraSeis (see "Force Shutdown of PETRA" section), start PSVer2.exe and reinstall PetraSeis in the same directory that contains PETRA. NOTE: When updating PetraSeis, it is highly recommended that PETRA be updated immediately before, since PetraSeis shares many of the libraries and functions in PETRA.
4  Placement of Projects

4.1  Defining Workgroups

The default setting in PETRA is to allow the end user full control of where new projects are stored within their network. In large companies, there can be several business groups using PETRA and therefore a desire to group the location of projects by business unit. For example the Anadarko Basin folks should store their projects on "server1" and the Western Canadian group should store their projects on "server3".

PETRA provides an optional way for an administrator to restrict where new projects are placed. There is a utility to then report various project metrics (such as disk space used, number of wells, etc.) for each of the workgroups or business units. The first step is to create a workgroup definition file (workgroup.def) with one line for each of the desired business units. Each line contains the name of the business unit, a path name for the public dataset, and optionally, a path name for the private dataset. The format for this file is:

"Anadarko Basin","\server1\Anadarko\projects", "\server1\Anadarko\users"
"Permian Basin","\server2\Permian\projects", "\server2\Permian\users"
"Western Canada","\server3\WCanada\projects", "\server1\WCanada\users"

The workgroup.def file must reside in the same directory where the PETRA software resides (typically \servername\petrasrv). The utility program, PetraProjectReport.exe must be inserted in the PETRA software directory, as well.

4.2  Creating a New Project

As new projects are created, the workgroup definition file is used by PETRA to control the physical placement of the project data files.

![Create New PETRA Project Window](image)

After indicating a new project is to be created, and whether it is to be shared with other team members, a new
dialog box is displayed by PETRA to allow the user to point to the desired group, and therefore where the project should be created.

In this example the project path is displayed as a local drive (c:\geoplus1\projects), but it could also be a URL (uniform resource locator) style as shown in the workgroup.def example above. If the optional path for storing a user’s private data has been defined in workgroup.def, then there will be a similar display for pointing to the desired path for the user private data.

4.3 Connecting to an Existing Project

Connecting to an existing project (to share with other team members) uses the same process as before.

However, it is much easier, because the user just points at the (predefined) name of the group and desired project name in order to be connected to the public portion of the project.
The next step is to point at the directory where the user files have been set up as part of the overall layout. The result is that PETRA will link the user to the public data and create the necessary private tables (for "look and feel" and user templates).

4.4 Workgroup Reporting Tool

A utility called PetraProject Report.exe will easily generate reports summarizing the "metadata" of the projects (project name, description, size, Lat/Lon limits, creator, who last accessed a project and when, and number of
wells), based on the workgroup paths defined in the workgroup.def file. After copying PetraProjectReport.exe into the PETRA software directory (typically \servername\petrasrv), run it to generate the following displays.

The second screen shows a 3D pie chart of the project within the specified workgroup and their relative sizes.

The third screen shows a bar chart of the 15 largest projects.
OUTPUT FILES

This reporting tool exports a comma separated variable (csv) file with the project data displayed in the first screen, and a shape file with the projects extents. All of the fields displayed on the data screen above are included in the shape file. The sample shape file shown below has the labels for project name, date last accessed, and the number of wells.
5  The PETRA.INI File

5.1  Overview

The PETRA.INI file can be used to control "global" configurations for all Petra users.

The PETRA.INI file is placed in the Petra "system" folder, normally this is PetraSrv

5.2  Creating a New PETRA.INI File

The PETRA.INI file must reside in the folder where the PETRA executables are located. If the defaults were taken at install time, this would be the PETRASRV folder.

PETRA.INI is not created automatically, but must be created manually, either from scratch, or by copying the sample provided by the install procedure.

The sample PETRA.INI file is located in the PETRASRV\PARMS folder. Copy this file to the PETRASRV folder and edit it using "Notepad" or "WordPad".

5.3  GENERAL Section

The [GENERAL] section contains the following parameters:

SHOWWEBSITE=NO
Add this statement to hide the IHS web link from the main "help" menu.

NOTIFY=NO
Add this statement to hide the license expire messages during startup. This could be useful when using a temporary license or you don't want the users to know your maintenance is about to expire.

MJDELAYSEC=seconds
Add this statement to increase the amount of time Petra waits and retries to receive direct connected raster logs from MJ LogSleuth.

ADMINPSWD=password
Add this statement so an administrator can open a password protected project. Replace the "password" with the appropriate text used as the overriding project password.

LICUNCNAMES=YES
Add this statement to force Petra to use UNC names when accessing images (logs and maps). When a user saves a raster calibration file, all filename references will use the UNC path name in place of the drive letter mapping.
The next 2 entries allow Petra to launch a user-supplied application and pass the selected well UWI to it.

USERAPPLNAME=name
Name of application to appear in Petra's menu (30char max)
(e.g., Company Document Manager)

USERAPPLPATH=path
Fully qualified directory path and filename of the executable program.
Petra will launch this program and pass the well UWI as a single run-time parameter.
(e.g., \geoapps\welldocs\software\mgr.exe)

NOTE - The above 2 parameters can also be specified in the client "geoplus.ini" [STARTUP] section as a local override to the system (petra.ini) setting.

MODIFYPLACESBAR=NO
Add this statement to prevent Petra from modifying the "Places Bar" in the user's registry. By default, Petra will modify HKEY_CURRENT_USER entries to add various Petra project paths to the Open and Save Dialog places bar.
(default=YES)

BINGMAP=NO
Use this option to disable Bing satellite imagery maps in the main and map modules. This option replaces the GOOGLEMAP option.
(default=YES, enable Bing)

BING_WGS84_DATUMSHIFT=NO
Use this to disable PETRA from converting lat-lons to WGS84 before sending them to Bing. This option replaces the GOOGLE_WGS84_DATUMSHIFT option.
(default=YES, perform conversions)

CLIPBOARD_WGS84_DATUMSHIFT=NO
Use this to disable PETRA from converting lat-lons to WGS84 before copying them to the clipboard when using the map's "Copy Location Lan/Lon to Clipboard" context menu option.
(default=YES, perform conversions)

The next 2 entries allow control of map projection options.

SAVEDEFAULTPROJECTION=NO
Add this statement to prevent any user from creating a system-wide default projection file. The default projection file is kept in the system parms folder (petrasrv\parms) as either DEFPROJECTION.BIN or DEFPROJECTION1.BIN.
These files can be deleted if you wish.

ALLOWUSERPROJECTION=NO
Add this statement to prevent users from creating user-defined coordinate systems under the "standard" tab.

**BKGNDSCAN=**YES
Add this statement to have PETRA scan your project well locations to compile the lat-lon extents of the project. These limits are then stored in the project ini file (in the project directory).

**BKGNDSCANTIME=integer**
This sets the amount of time (in minutes) PETRA waits between scans of the project extents (see BKGNDSCAN above). Leaving this statement out causes PETRA to default to a 30 minute interval.

**SKIPUPDATECHECK=**YES
Setting this switch will skip the version update check. To enable update checking set SKIPUPDATECHECK=NO. Individual user control of this option is obtained by adding SKIPUPDATECHECK=(0 or 1) to the [STARTUP] section of the users geoplus.ini file.

**AllowPrivateMode=**NO
Enables or disables the ability for users to use Private Mode in Petra v4 and above.
*(default=**YES**)*

**HideLoginDialog=**YES
If enabled (YES), then the initial mode selection/login dialog when Petra is opened will not be displayed. In this instance, Petra will automatically use the last mode/user login information that was used.
*(default=**NO**, introduced in Petra v4.0.6)*

**UserPrivateParmsPath=path**
The following variables can be used within the specification of the "path":
#UserName#, #ProjectPath#, #ProjectName#
If used, this option forces the location of each users private path based on the "path" entered (please see input variables above). This change affects creating new projects, opening a project which a user has not previously connected to, and re-migrating Private Parameters from v3.
*(default is off, introduced in Petra v4.0.8 - SampleEntry:
"UserPrivateParmsPath=#ProjectPath#\UserParms\#UserName#")*

**PriParmsMigrationPrompt=**NO
If NO, users will not automatically be prompted to migrate private parameters from v3 when opening a project which they have not previously connected to.
*(default=**YES**, introduced in Petra v4.0.8)*

### 5.4 USERSOURCE Section

**IMPORTANT - These settings may be placed in a copy of the PETRA.INI located in each project's root folder and will override the settings from the system PETRA.INI file. Normally, there is no PETRA.INI file in the project root folder, so one will have to be created.**

The [USERSOURCE] section provides restriction of data by source. In addition to limiting changes to other
users' data, such as tops, based on source code, Petra limits the following functions to users set up as administrators:

- Deleting Wells
- Making Global Datum Changes
- Performing Global Data Deletion
- Modifying the Map Projection

The following USERSOURCE parameters are available:

**ENABLED=0 or 1**
When set to 1, all Petra projects will use the source code restriction mechanism. This will restrict users to being able to only edit their own formation tops. Upon starting Petra, they will be prompted for their initials or source code. All tops they create will use this source. They will be prevented from modifying tops with other source codes.

**BLANKS=0 or 1**
0 means no one can modify a top if it has a blank source code (except administrators).
1 means everyone can modify a top if it has a blank source code.

**ADMINLIST=aaa,bbb,ccc, ... etc**
This is a list of source codes for those users that have the right to modify any Fm Top regardless of the source.

**EXAMPLE:**
```
[USERSOURCE]
;
; lines beginning with a semicolon are comments
;
ENABLED=1
BLANKS=1
ADMINLIST=hlm,tdw,bob
```

In the above example, the USERSOURCE control mode has been enabled and three people, hlm, tdw, and bob are designated as administrators. Therefore, hlm is able to update tops for anyone in the group, but Sam, who is not an administrator, can only create and update his own tops. With "BLANKS" enabled (BLANKS=1), anyone can change a top that has a blank source code.

### 5.5 LOGARC Section

The [LOGARC] section contains the following configuration parameters for LogTech software. Petra can interface with the LogArc software to retrieve logs from a LogArc database.

**PROGRAM=fullpathLOGarcve.exe**
This is the program path where the logarc retrieve executable resides if it can not be determined from the user's registry.
5.6 NOTICE Section

The [NOTICE] section contains configuration parameters when using the "Notification Page" (see Posting a Notice Page)

**BACKCOLOR=r,g,b**
Set the r, g, and b values to a number from 0 to 255 to represent an RGB color value for background screen color of the notification page.

**SOUNDFILE=filename.wav**
Play this "wave" sound file when the notice is first displayed.

The following parameters apply to the "Kill Notify" feature (see Force Shutdown of a Project)

**KILLWAITSEC=seconds**
Set the number of seconds the Kill Notify Screen will display until the user clicks Close.

**KILLSOUND1=filename.wav**
Play this "wave" sound file when the kill notify message is first displayed.

**KILLSOUND2=filename.wav**
Play this "wave" sound file while the kill notify message counts down to 0.

**KILLSOUND2=filename.wav**
Play this "wave" sound file when the kill notify message closes.

The following parameters apply to the "User Broadcast Notification" feature

**UBCBACKCOLOR=r,g,b**
Set the r, g, and b values to a number from 0 to 255 to represent an RGB color value for background screen color of the notification page.
Default is white background color

**UBCWAITSEC=seconds**
Set the number of seconds the User Notify Screen will display until the user clicks Close.
Default is 10 seconds.

**UBCSOUND1=filename.wav**
Play this "wave" sound file when the User Notify Screen is first displayed. Set to "NONE" for no sound.
Default = SND8.WAV

**UBCSOUND2=filename.wav**
Play this "wave" sound file while the User Notify Screen counts down to 0. Set to "NONE" for no sound.
Default = SND8.WAV

**UBCSOUND3=filename.wav**
Play this "wave" sound file when the User Notify Screen closes. Set to "NONE" for no sound.
Default = SND5.WAV
5.7 NETLOGIN Section

The [NETLOGIN] section contains parameters pertaining to obtaining a network license.

IMPORTANT
Additional information can be found in the section entitled "Software Installation and Updates"

LogFile=pathname
Set the path and file name of a file that can be written to whenever user open/close projects. Users must have full read/write access to this file. This file can be used to determine when users are denied licenses.

LogProjectAccess=YES
Include this parameter to have the "userlog.ini" updated with information each time a user opens or closes a project. This log file will be located in the root of the project folder.

SysProjectLog=YES
Include this parameter to have the master "userlog.ini" updated with information each time a user opens or closes a project. This log file will be located in the system parms folder, normally PetraSrv\Parms.
NOTE - This option requires LogProjectAccess=YES

The following parameters apply to the "FLEXLM" license feature

FLEXLM=ENABLED
Must be set to allow use of a Flexlm license.

FLEXMLMLICPATH=port@server
Specify the port and server where the flexlm license manager is located. An example might be:
27000@DAVIDXP64

FLEXLMDATALIC=YES
Use this parameter when you have purchased Petra "Data Access" licenses and want to use data transfer purposes. Without this parameter, a Petra license is be used for data transfer.

5.8 IMPORT Section

The [IMPORT] section allows default pathnames for importing certain data types:

LASPATH=foldername
Sets the folder name of the default folder when importing LAS log curve files.

RASTERPATH=foldername
Sets the folder name of the default folder when importing the various raster log calibration files.

The following entries define the catalog setting distributed with IHS (US) raster logs

IHSLOGNDXROOTFOLDER=foldername
Sets the folder name of the "root" folder, below which reside the IHS directory structure containing the LIC and TIF files.
For example, say you received folder of logs from IHS called IHS_ENERY, beneath which are many
subfolders of rasters and LICs. You might create a folder on your network called, H:\LOGDATA and copy
the IHS_ENERGY folder beneath it. So your logs are: H:\LOGDATA\IHS_ENERGY\Rocky
Mountains\Colorado\...
Set IHSLOGNDXROOTFOLDER=H:\LOGDATA

IHSLOGNDXDBFOLDER=foldername
Sets the folder name containing the IHS catalog database files (tblLogs.dat and tblLogs.idx)
In the above example, you might have to set
IHSLOGNDXDBFOLDER=H:\LOGDATA\IHS_ENERGY\Rock Mountains\database\

The following entries define the raster log catalog created from "LICCat.exe"

LICCATALOG=catalogtablename
Sets the path and name of the catalog database file created by LICCat.exe. This is the DBIsam database file
without an extention. This catalog can be used for batch import of LIC files.

5.9 MAPTEXT Section

The MAPTEXT section allows an administrator to force a message to be printed at the bottom of each map
produced by PETRA. An example would be if you wanted all maps generated by your company to display a
copyright or disclaimer message at the bottom. Up to 5 lines of text can be plotted and are positioned just
above the map border. The text can be positioned at the left side, center (default position), or right side of the
map. The text height can also be specified in inches. The default text height is 0.065 inches.

MAPTEXT Parameters:

TEXTHT = text height in inches. Default is 0.065 inches

POSITION = Relative position of text along bottom of map. Values can be LEFT, CENTER, or RIGHT.
Default value is CENTER.

LINE1 through LINE5 = Text lines to plot.

The following is an example of the map text ini parameters:

[MAPTEXT]
TEXTHT=0.1
POSITION=LEFT
LINE1=Property of XYZ Oil & Gas Company
LINE2=Copyright 2006
LINE3=All Rights Reserved

5.10 ENERDEQ Section

The ENERDEQ section allows an administrator to set company-wide settings to control Petra's access to the
US IHS 'Direct Connect' feature.

Normally, these parameters are only required for INTRANET installs of the data server or if your company
has a proprietary version of the IHS databases.

**ENERDEQ Parameters:**

**URL** = inter/intranet address of the IHS Web Services (WS) server.
  Default value is handle by the Petra software.

*The following is an example of the parameters:*

```
[ENERDEQ]
url=https://webservices1-2.ihsenergy.com/WebServices
```

### 5.11 IHSCAN Section

The IHSCAN section allows an administrator to set company-wide settings to control Petra's access to the CANADIAN IHS "Direct Connect" features.

Normally, these parameters are not required to be entered. They are only necessary to override the default settings and behavior.

**IHSCAN Parameters:**

**WELLSERVER** = Server address of the Canadian IHS *well* data server
  Default value is handle by the Petra software.

**WELLPORT** = Port address on the Canadian IHS *well* data server
  Default value is handle by the Petra software.

**SERVER** = Server address of the Canadian IHS *log* data server
  Default value is handle by the Petra software.

**PORT** = Port address on the Canadian IHS *log* data server
  Default value is handle by the Petra software.

**HIST22** = Switch to use well location types based on the historical 2.2 grid or location types based on province.

  In NAD27 only, download historical well locations based on the ATS2.2 grid. By default (HIST22=NO or not entered) PETRA downloads the most recent well locations based on the ATS2.6 grid for Alberta, the BC2.0 grid for British Columbia, the MLI07 grid for Manitoba, and the STS25 grid for Saskatchewan.

  In NAD83, well locations are only available in BCTS20 for British Columbia, MST0305 for Alberta, MTS10 for Manitoba and STS25 for Saskatchewan. The HIST22 parameter does not apply for projects in NAD83.
The HIST22 setting will be reported at the top of all log files for Canadian Direct Connect well data downloads.

Default value is FALSE.
Valid values are TRUE/FALSE/ON/OFF/1/0.

The following is an example of the parameters:

```
[IHSCAN]
WELLSERVER=petra.ihsenergy.com
WELLPORT=5557
SERVER=dlp001.ihs.internal.corp
PORT=9503
HIST22=TRUE
```

5.12 WMS Section

The WMS section allows an administrator to set company-wide settings to control PETRA's access to WMS (Web Map Service) Imagery features.

WMS Parameters:

- **url#:** URL address of the WMS service.
- **description#:** (Optional Description of the service)
- **user#:** (Optional Username not required for most services)
- **password#:** (Optional Password not required for most services)

The # symbol is a numerical value and must be the same for each associated entry. The petra.ini file can have a list of urls to choose from in the [WMS] section. Typically this will be set by a local admin that can supply all users with a predefined list of WMS servers available to them. Each url can be thought of as part of a "group". Each url "group" can have up to 4 associated keyword/value pairs. The "url" which is the http address of the WMS server, the "user" which is required only if authentication is needed for the WMS server, the "password" which is required only for authentication also, and the "description" which can be up to 256 characters and describes the WMS server. Each url "group" has an associated number with it, such that all keywords having that number belong to the same "group", such as url1/user1/password1//description1, url5/user5/password5/description5, or url10/description10. The only required keyword is "url" with its associated group number. The only requirement for each group's number is that it is unique to that group, it does not need to start at 1 and increment by 1. The group's keyword/value pairs also don't need to be located in any particular order in the file itself, i.e., all the url's can be listed then all the descriptions, or each url can have it's description following it on the next line.

Example:
[WMS]
url1=http://www.server.xyz1
user1=username
password1=password
description1=Description for url1
url2=http://www.server.xyz2
url3=http://www.server.xyz3
url4=http://www.server.xyz4
description3=Description for url3
description2=Description for url2

5.13 DEFAULT Section

The DEFAULT section allows an administrator to set company-wide settings to control PETRA default settings. These parameters are not required to be entered.

DEFAULT Parameters:

MAP_DIRSURVENABLE=TRUE or FALSE
Allows administrator to set default behavior of Map Module > Wells > Directional Survey > Enable switch.

MAP_OVLYAUTOSAVEMINS=(Number of minutes)
Allows administrator to set number of minutes between overlay autosaves.

MAP_OVLYAUTOSAVELVLS=(Number of saved overlays to keep)
Allows administrator to set number of saved overlays to keep as backups during overlay autosave process.

MAP_GRIDDIR=(Full path to grid folder)
Allows administrator to set grid default folder.

These settings may require a reset of the Map Module (Main Module > Project > Settings > Reset Module) before they will take effect in existing projects.

Example:

[DEFAULT]
MAP_DIRSURVENABLE=FALSE
MAP_OVLYAUTOSAVEMINS=60
MAP_OVLYAUTOSAVELVLS=1
MAP_GRIDDIR=c:\geoplus1\datanewgrid

5.14 HTTP Section

The HTTP section allows an administrator to set company-wide settings for accessing the internet. These parameters are not required to be entered.

HTTP Parameters:
ConnectTimeout=(number of msec).
Optional timeout when connecting in msec. Default is 60,000.

SendTimeout=(number of msec)
Optional timeout when sending request in msec. Default is 30,000.

ReceiveTimeout=(number of msec)
Optional timeout when receiving response in msec. Default is 30,000.

Example:

[HTTP]
ConnectTimeout=120000
SendTimeout=60000
ReceiveTimeout=60000
6 Posting a Notice Page

6.1 Creating a Notice Page

PETRA administrators have the option to define a simple notice page which will be automatically displayed each time someone starts PETRA. Also, a "notify" file can be placed in the root folder of a project to display a notice whenever users open the project.

The file must be a rich text format file with the name of notify.rtf and the file must be stored in the subdirectory where PETRA resides (typically \server\petrasrv for network users and c:\geoplus1 for standalone licenses). A project-specific file is placed in the root folder of the project. These rtf files can be created and edited by MS Word and MS Wordpad, among other text editors. An example of this file follows.

The color of the text is defined in the rtf document, as determined by the capabilities of the editor. The background color of the notice is controlled by the "BACKCOLOR" statement in the PETRA.ini file in the petrasrv subdirectory. An optional sound file will be played when the file is displayed. Examples of these controls are below:

[NOTICE]
BACKCOLOR=255,255,183
; The three numbers indicate the value of Red, Green, and Blue colors.
; The range is 0 (fully off) to 255 (fully on).
;
SOUNDFILE=<wave file>
The notification message can be displayed at any time by clicking on the "Help > Show Notice Message" in the main module.
7 Controlling Data Modification

7.1 Restricting Changes By User Source

The default setting in PETRA is to allow any member of the asset team to see and change any formation tops within a project they can access. An optional data management feature allows an administrator to globally define who can change any of the tops, regardless of the source of the tops, and who can only create, pick, and edit their own formation tops.

In addition, certain “administrative” functions, such as, deleting wells or changing the map project, can be restricted to certain individuals.

This optional functionality is controlled in the PETRA.ini file, located in the petrasrv subdirectory. An example is below.

```
[USERSOURCE]
;
; lines beginning with a semicolon are comments
;
ENABLED=1
BLANKS=1
ADMINLIST=hlm,tdw,bob
```

In the above example, the USERSOURCE control mode has been enabled and three people, hlm, tdw, and bob are designated as administrators. Therefore, hlm is able to update tops for anyone in the group, but Sam, who is not an administrator, can only create and update his own tops. With "BLANKS" enabled (BLANKS=1), anyone can change a top that has a blank source code.

**Restricting Access to project "administrator" functions:**
If you set ENABLED=2 then only those users assigned to the "ADMINLIST" will be allowed access to functions such as, deleting wells or change the map projection of a project.

7.2 User Restriction File (UR)

You can include a file called "UR" in the system (PetraSrv) folder or the "root" folder of a single project, if you have a situation in which you wish to restrict one or more users from exporting data from a PETRA project.

When a user selects an export function in PETRA, a check is made for their log in name included in the UR file. The user will receive a denial message and a record will be added to the project log file.

To implement the UR mechanism, create a text file called UR (no extension) and place it in the PetraSrv folder (for all projects) or in the root folder of a specific project. PETRA looks first in the root of the project for the UR file, then in the system folder.

The following is an example for a UR file to prevent two users from exporting data from projects:

```
! Petra User Restriction File (UR)
!
! Comments start with ! or /
```
Tom would be restricted from exporting data from all Petra projects (if placed in the system folder).
Bob would be restricted from importing and exporting data from all Petra projects (if placed in the system folder).

### 7.3 Direct Connect Access Restriction

You can include a file called "DCUA" in the system (PetraSrv) folder or the "root" folder of a single project, if you have a situation in which you wish to allow only specific users to use the IHS Direct Connect feature.

When a user selects a Direct Connect function in PETRA, a check is made to see if their computer login name is included in the DCUA file. If the user is not listed in the DCUA file, they will receive a denial message and a record will be added to the project log file.

To implement the DCUA mechanism, create a text file called DCUA (no extension) and place it in the PetraSrv folder (for all projects) or in the root folder of a specific project. PETRA looks first in the root of the project for the DCUA file, then in the system folder.

The following is an example for a DCUA file that allows only two users access to Direct Connect import options:

```
! Petra Direct Connect Restriction File (DCUA)
!
! Comments start with ! or /
!
! Format is USERLOGINNAME
!
abc12345
xyz98765
```

**When this DCUA file is present, only the two users listed will be granted access to the Direct Connect well and production loaders.**
8 Database Management

8.1 Project Password Protection

The default setting is to allow anyone to view and/or edit a project if they have Windows permissions to access the project subdirectories. As an option, it is possible to define a password for a project, which is then required for any subsequent work in the project. To set the password, go to the PETRA main module menu item "Project > Settings > Password Protect Project" and enter the desired password.

8.2 Force Shutdown of a Project

If a project database needs to be repaired or condensed, all users must be out of the project so all the pertinent data files are available for exclusive use. It is easy to force a graceful shutdown of a specific project, so that project database can be repaired even during regular business hours. All other projects will continue to be available for use. NOTE: TO FORCE A SHUTDOWN OF ALL USERS IN ALL PROJECTS, SEE THE SECTION ON "FORCE SHUTDOWN OF PETRA".

To initiate the process, simply place a file called NOTIFYKILL.RTF in the root directory of the project.

There is a default file called XNOTIFYKILL.RTF already available in the PETRA software directory (typically \server1\petrasrv). It is in a rich text format (rtf) and can be customized for your environment.
Just copy the file to the root directory of the project and rename the file to NOTIFYKILL.RTF when you are ready to initiate the shutdown of that particular project. Within 5 minutes, all PETRA users in that specific project will be notified of the impending shutdown and told their data will be saved (via the NOTIFYKILL message). Wait 10-15 minutes before proceeding with maintenance duties in order that all users have had time to exit after automatically saving data. Some overlay files may take several minutes to write to disk.

If someone attempts to open a project while it is shut down, they will receive a message similar to the one below.

To allow users back into the project, rename NOTIFYKILL.RTF back to XNOTIFYKILL.RTF.

### 8.3 Repairing Database Tables

Occasionally the database indexes get corrupted (due to a power failure on the local PC while it is writing data back to the server, for instance). To repair these tables, PETRA provides a utility to verify and fix the database. The utility is called PetraDBIRepair.exe and is located in the main PETRA subdirectory (usually `\server\petrasrv`).

**Interactive Database Repair**

After verifying everyone is out the project database, (or gracefully forcing everyone out of the desired project - see section above) run PetraDBIRepair and click on the 'Open' button and open the "*.ini" file for the desired project. The program will show a list of database tables and give you the opportunity to select any or all of the tables.
Clicking on the "Verify" button will not change any of the tables, but will verify they are OK, generate a report about the tables under the "Report" tab, and uncheck those tables that are OK. The "Repair" button will only try to repair those tables that are checked on this screen.

Use the "ReIndex" button when to delete the table's index and rebuild it. "Repair" will also rebuild the index but takes more time.

Use the "Optimize" button to remove unused space for the table. This should be done periodically after deleting data from the database. It can greatly improve performance.

Batch Mode Database Repair

PetraDBIRepair.exe can also be run in Windows command line (batch) mode. The report is written to the project's root folder as "PetraDBIRepair.txt".

The general format is:
PetraDBIRepair.exe projectini  (optional switches)

"projectini" is the full path name of the ini file located in the project's root folder.
The following switches are optional:
/NOVERIFY = Do not verify any tables
/NOREPAIR = Do not repair any tables
/REPAIRALL = Repair all tables regardless whether or not there are any errors
/ARCHIVE = Create zip files of all files prior to repair
/KEEPOPEN = Prevents the GUI from closing when complete
/NOPACK = Suppress packing tables and removing orphaned records

The default mode is to verify all tables and repair any table that verify flags as having problems. PetraDBIRepair will only work on projects that are not open by any other processes, including PETRA itself. Therefore, it may be useful to force closing of PETRA and the database files before attempting a repair. See
"Force Shutdown of PETRA" for details.

8.4 Enhanced Repair Tools

PetraDBIRepair.exe has been split from one application into two applications, DBIRepair.exe and PetraRepair.exe.

DBIRepair.exe is a stand-alone command line driven application. You can use it to verify, repair, reindex or optimize one single table in a PETRA project and then it ends. The operating system will assign one CPU core and allocate memory for each DBIRepair.exe process. You can write your own scripts to launch DBIRepair.exe on as many individual tables as desired in as many PETRA projects as desired. The operating system will assign a core and memory individually to each DBIRepair.exe process you start… making more efficient use of available hardware. Modern (Windows Vista™ and beyond) operating systems do all the work of managing the CPU cores and memory per process. Windows XP™ will work somewhat but is not recommended and could actually be slower, as it was developed before the widespread use of multi-core hardware.

PetraRepair.exe is completely optional. It is simply a GUI front end that will ask you to select a PETRA project, verify the tables you want processed have check marks beside them and automatically launch a DBIRepair.exe for each table with a check mark beside it on the screen, so you don’t have to create your own script and it looks a little like the original PetraDBIRepair.exe. Do not be alarmed by the number of individual DBIRepair.exe screens that pop up on the monitor and then one by one disappear! There is NO command line option for PetraRepair.exe as you can bypass PetraRepair.exe and write your own scripts to launch as many DBIRepair.exe processes on as many tables in as many projects as desired.

DBIRepair.exe

DBIRepair.exe is a new command-line tool for scripting PETRA database verification, repair, reindexing, and optimization.

DBIRepair.exe is able to accept a full path filename to a single PETRA table (with automatic VERIFY and REPAIR, if necessary) with parameter switches for FORCEREPAIR, REINDEX and/or OPTIMIZE (for scripting). DBIRepair.exe requires exclusive access to the table (all users must be out of the project). There is a separate report .txt file created with the same name as the table in the same folder as the table for each table processed containing any exceptions during the process.

The format for the command line is:

\texttt{DBIRepair.exe fully\_qualified\_path\_and\_table\_file\_name \FORCEREPAIR\REINDEX\OPTIMIZE}

\texttt{fully\_qualified\_path\_and\_table\_file\_name} specifies the full path to the PETRA database table (see note 1)

\texttt{\FORCEREPAIR} (optional, see note 2) forces a full repair of the table
\REINDEX
(optional – see note 3)
Reindexes the table

\OPTIMIZE
(optional – see note 4)
Optimizes the table

Notes:
1. DBIRepair.exe with just the fully qualified path and table file name on the command line will automatically perform a Verify. It will automatically perform a Repair, if it is found necessary by the Verify. This is the safest and fastest option, since a Verify only reads the data and doesn’t have to write any data to a new table.
2. \FORCEREPAIR is optional and will bypass the Verify and force a Repair even if it is not necessary. This is a longer process as it has to create a new table to write the data into.
3. \REINDEX is optional and will delete the existing index(es) on a table and create them again from scratch.
4. \OPTIMIZE is optional. It will create a new table and write the existing data in the order of the primary key index, effectively shrinking the file size by eliminating any deleted data. It will speed up data access somewhat as the data will now be stored on disk in the actual index order.
5. All users must be out of the project before any repair processes are started.
6. Backup (copy and zip) your PETRA project folder before any repairs are undertaken.
PetraRepair.exe

PetraRepair.exe is a graphical interface for the DBIRepair.exe command-line application. It is similar to PetraDBIRepair.exe and makes it easy to verify, reindex, repair, and optimize an entire PETRA project. PetraRepair launches separate DBIRepair processes to work in parallel on each table in the PETRA project.

Windows™ manages these multiple processes and assigns them to different cores of the processor and separate areas of available memory per process. This reduces the total time per project as each table is processed in parallel on multiple cores and separate memory spaces.

Notes:
1. All users must be out of the project before any repair processes are started.
2. Backup (copy and zip) your PETRA project folder before any repairs are undertaken.

To start PetraRepair, simply double-click on the file (PetraRepair.exe) in your PETRA installation directory:
Click the “Open” button to choose the .ini file for the project you would like to repair (in the PARMS folder):

By default all the tables are checked. If you would like to only repair some of the tables, select them now:
The default for PetraRepair (no check boxes selected at the bottom) is to verify the tables and “automatically” repair only tables with a problem.

Click “Start” to launch DBI Repair for each table with the appropriate switches:

Do not be alarmed by the number of individual DBIRepair.exe screens that pop up on the monitor and then one by one disappear!
PetraPack.exe

PetraPack.exe is now separate and can be run at any time (without having to kick anyone out of the project). It will accept a command line full path to a Petra project .ini file (for scripting) or an open dialog will appear for .ini selection, if the command line is left blank.

PetraPack can be launched once for different Petra projects and the operating system will assign each process to separate cores and memory space. This allows packing of more than one Petra project at a time, making use of the available cores and memory. A report .txt file with the same name as the .ini file will be created in the folder with the .ini file containing information about the pack (before and after record counts or any exceptions during the process).

Notes:
1. Backup (copy and zip) your PETRA project folder before any repairs are undertaken.
2. It is recommended but not required that you Verify, Repair and Reindex your tables before packing them with PetraPack.exe, since PetraPack.exe relies on a table and index that is not corrupt to correctly determine what records are orphaned and need to be deleted. Otherwise, you might delete records that appear orphaned because of an error in the table or index when the records are really not orphaned, but rather their parent just cannot be properly located.
3. Launching PetraPack simply opens a dialog for you to choose the project:

![Select Petra ProjectINI File](image)

PetraPack then runs the Pack function on all that project’s tables as below.
8.5 Moving Externally Referenced Data

8.5.1 Moving Raster Images

In large multi-user environments, raster images (logs and georeferenced images) are typically stored in subdirectories separate from the PETRA database files. If these images are moved to another server, the links or paths to the files in the PETRA project are no longer valid and need to be updated. There is a short-term temporary solution to search additional paths if the images are not found in their original locations, but this solution can dramatically slow response and increase network traffic.

SPECIFYING AN ALTERNATE SEARCH PATH (IMAGESEARCH.TXT)

If your images have been moved from the locations originally assigned in the project, a temporary solution is to tell PETRA to search additional paths for the images it doesn't find. This is done by placing a file called IMAGESEARCH.TXT in the PETRA program folder (where geoplus1.exe is located). This file must contain one or more entries (folder names) where the images and/or calibration files are located. PETRA searches the folder and all subfolders listed in this file for images and LIC files. If the folder name is preceded by a minus sign (-), then subfolders are not searched. The "local" copy of IMAGESEARCH.TXT can also be placed in a project's images folder and is used in place of the "system" file.

TEMPORARY SEARCH THROUGH ADDITIONAL PATHS (BY USER)

As an alternative to using the IMAGESEARCH.TXT file, you may set up alternate search paths for each individual user. In the main module, go to "Project > Settings... > Program Options" and select the "Files" tab.
In this example, the raster logs have been moved to H:\geology\Raster Images (TIFF)\Texas, so adding that path to the list (as shown above) allows PETRA to find the images and display them. PLEASE NOTE: Be very specific about the paths. If you put a generic "H:\" or "\server1\", it can take a long time to search every subdirectory in the path.

It is better to update the tif and LIC files to point to the new locations, and not use this temporary solution. See the following sections for details.

This dialog box also allows simple remapping of drive letters in the "Image File Drive Mapping" section of the dialog box.

**UPDATING LINKS TO RASTER LOGS**

There is a tool built into PETRA to make it easy to change the links for raster logs after the raster logs have been moved. In the main module, go to the "Raster" tab, and click on the "Maintenance" button. Then go to the "Misc Tools" tab of that dialog box. There is a pull down menu with a variety of choices, including "Find/Replace tif/LIC paths". Select that option, provide the names of the paths and click on the "Perform Task" button. This will replace the old path with the new path.
In this example, the images have been moved from `c:\geoplus1\projects\SanJuan\Images` to `\server1\projects\SanJuan\Images`.

**UPDATING LINKS TO MAP IMAGES**

When images such as georeferenced topo maps and small images of cross sections or an index map are moved from their original locations, there are tools within PETRA to either manually edit the link or automatically edit the link. Both options are located in the map module under the menu item "Overlay > Layers and Preferences". Click on the "Images" tab and then click on the box labeled "List Image File Names" to see the paths of all images referenced in the overlay.

To manually edit an invalid link, click once on the listed link, click on the "Rename..." button, and then enter the new path. To automatically update the paths, click on the "Locate Images" button.
This will bring up the dialog box confirming that it is to scan the list of image paths in this project (described in the beginning of this section) looking for the file names listed in the previous dialog box. Clicking on OK will launch a search and if the images in the overlay are found in one of the other paths, PETRA will automatically update the path. IMPORTANT: Save the overlay back to your server, so the changes will be available next time you open the overlay.

### 8.5.2 Moving Hyperlinked Files

PETRA has a feature that allows it to store a file path to an external file and then with a couple of mouse clicks, hyperlink to that file. This causes the operating system to start up the appropriate application and then open that file in that application.

The drilling reports are tif images stored on server1, the well reports are html files stored on the company intranet, and the geology reports are Microsoft Word documents stored on the (mapped) "H" drive. If any of these file groups are moved, then the paths in PETRA are no longer valid. (NOTE: The tank battery diagram tif image for this well is in a subdirectory called "REPORTS" that is located under the folder for this particular project. The "@:" characters indicates the path is a relative path, not an absolute path. When the project is moved, the relative path is still correct and will not need to be changed). For example, to link a file, "REPORTS\Sample.txt", you would set the hyperlink to "@:REPORTS\Sample.txt" or "@:\REPORTS\Sample.txt".

To change the paths to these hyperlinked files, use the PETRA spreadsheet module, select the column to be
edited and use the standard "find and replace all" option to change the paths.

### 8.5.3 Temporary Raster Folder

When working with "associated" raster log images such as those from IHS or MJ Systems, temporary image files are created to improve performance. The default folder for these temporary raster images is the user’s "private parameters" folder. An entry in the GEOPLUS.INI file (client machine) can be added to specify the location for storing temporary raster log images. The following line should be added to the [STARTUP] section of GEOPLUS.INI:
8.6 Copying and Renaming Project Files

8.6.1 Copying project databases

PETRA provides a project moving tool to make it simple to move a project database from one location to another. The utility is called CopyProj.exe and is available in the petrasrv subdirectory.

To copy a project, run CopyProj, click on the "Open ini..." button, search for the desired project "ini" file and fill in the desired name and new paths, as shown in the example above. Click on the "Copy" button to initiate the copy process. Note that this will not automatically move any external files, such as raster logs, topo maps, or files referenced in hyperlinks in the zone tables. Those links will remain pointing to the original paths. If the raster logs were also moved, then the ideal solution is to also change the references to the raster tif and lic files. A temporary solution is to insert the new image path in the list of paths to be searched in the project. This temporary solution is quick to implement, but can cause slowdowns and extra network traffic. Therefore it should be used with caution. See the section on Moving Raster Images for details.

8.6.2 Changing "ini" Pointers

The inifix.exe utility is used to change the paths in an individuals project *.ini files after the project files have been moved to a new server or subdirectory. Enter the path to search for .ini files in the first window. Then enter the beginning part of the paths for the projects that have been moved in the "FIND" field, and the beginning of the new project path in the "REPLACE" field. In the example below, several projects are to be moved from the local drive (c:\geoplus\projects) to a network server (\server3\petra\projects).
The default setting when starting this utility is to NOT change the paths, but to generate a report indicating what would get changed if the "Test (report only)" box is unchecked. In the above example there are two "from-to" entries for each project because the private data path was the same as the public data path and the utility is showing that both would be changed.

8.6.3 Renaming Project Databases

The Copyproj.exe utility is also used to rename an existing project. See the Copying Project Databases section of this chapter for details.

8.7 PetraSync Program

The PetraSync.exe program can be used to copy data directly from one project (source) to another project (target) database. This program is located in the Petra "system" folder, normally, "petrasrv".

Important - No one else can be accessing the two projects.

The following data types can be copied from one project to another:

- **Well Headers** (operator, lease name, etc)
- **Well Zone Items** (KB, TD, etc)
- **Locations** (latlons, xys, Congressional, Texas, Offshore) (Dir Survey NOT included)
- **New Zone Definitions**
- **New User Zone Items**
- **Existing User Zone Items**
- **New Tops** (allows selection of individual tops)
- **Existing Tops** (allows selection of individual tops)
- **New Digital Logs** (allows selection of individual logs)
- **Existing Digital Logs** (allows selection of individual logs)

"Change Dates" are utilized to determine if data from the source project is newer than the data in the target project. It is copied only if the source data is newer than the target data.
8.8 Monitoring Access

8.8.1 Logging User Access

The following is a fragment of the PETRA.ini file (located in the petrasrv subdirectory) pertaining to tracking login and logouts of PETRA users. This logging is an optional feature of PETRA and must be enabled by setting the LogProjectAccess=YES flag and defining a valid path for the log file. Lines starting with ";" are comment lines. Note all users must have read/write access to this log file.

```plaintext
[NETLOGIN]

;-------------------------------------------------------
; ****LOGIN LOG FILE****
; Network version login monitoring log file. This file
; will contain date-time stamp of each time a user
; acquires or is denied a Petra network license.
;-------------------------------------------------------
; uncomment and put path to common location that
; all users have read/write access to
; LogFileName=\server1\petrasrv\petralogin.txt
;
; set LogProjectAccess=YES to have the user's project name added
to
; the login file to track opening and closing Petra projects
LogProjectAccess=YES

The resulting file will have each opening and closing of any project listed in the petralogin.txt file. The latest transaction is at the beginning of the file, and the oldest is at the bottom of the file. A simple example of a single opening and closing is below:

Joseph Bleaux, 1/17/2005 5:22:52 PM, Closed: d:\geoplus1\projects\SoonerDemo
Joseph Bleaux, 1/17/2005 3:43:02 PM, Opened: d:\geoplus1\projects\SoonerDemo

When the file gets too big, it can be renamed and saved for historical reasons. PETRA will create a new "LogFileName" the next time someone logs in or out of PETRA.

8.8.2 Logging Map Projection Changes

A "log" file is written each time a user changes the map projection in a project. Records are appended to a file called MAPPROJ.LOG which is located in the root of the project (public) directory. This file can be used as a record of when (and who) changed the map projection settings. These messages are also written to the PETRALOG.TXT file (see Logging Project Changes).
8.8.3 Logging Project Changes

PETRA keeps a "log" file called PETRALOG.TXT in the project root directory (i.e. \server1
\projects\gulf_offshore) containing various project related changes, such as deleting wells, changing projection
(which is also in mapproj.log), footage calc parameters, loading/saving overlays, and deleting seismic lines.

8.8.4 User Profile INI File

A User Profile INI can be supplied to provide detail user information when PETRA logs various data changes
in the Project. The profile contains user information that is associated with the "login" name.

The file is called USERPROF.INI and must be placed in the "system parms" folder. By default this folder is ..\petrasrv\parms for a network install.

The contents of the USERPROF.INI file are as follows:

There is one Section for each user "login" name. 
The section name must match the user's login id. 
The following Value fields are available and limited to 64 characters each:
  NAME=
  DEPT=
  DESC=
  PHONE=
  EMAIL=

NAME is the only required field at this time.

Example of two entries in a sample USERPROF.INI

[mxz27455]
NAME=Tom Whitwell
DEPT=PETRA Development
DESC=Lead PETRA Architect
PHONE= xxx-xxx-xxxx
EMAIL=xxxxxxxx@xxxxxxxxx.com

[bke28543]
NAME=H.L. Moore
DEPT=PETRA Technical Support
DESC=Senior Technical Analyst
PHONE= xxx-xxx-xxxx
EMAIL=xxxxxxxx@xxxxxxxxx.com

8.9 Location of Temporary Database Tables

When using the DBI database engine PETRA occasionally uses SQL queries that create temporary results on
disk. The default location of these temporary query files is the user's private parameters folder. This can be
overridden to use the PETRA "client" parms folder (i.e., geoplus1\parms) using an ini setting.
To override the temporary file location for all users, add the following statements to the PETRA.INI file located where the PETRA executables are located:

```
[DBI]
LOCALTEMPDIR=LOCAL
```

To override the temporary file location for a single user, add the following statements to the GEOPLUS.INI file located in the PETRA "client" folder:

```
[DBI]
LOCALTEMPDIR=LOCAL
```

### 8.10 US IHS Raster Import

When importing US IHS Rasters, it is best to import them using the version 2 XML "RasCal" format. You will have more flexibility over group names.

"PARMS\USIHSLOGNAMES.TXT" Translation File

This is a translation file that can be provided when loading the XML files. This file is used to translate logs with multiple log types into a preferred log type.

USIHSLOGNAMES.TXT must be placed in the "system" PARMS folder, i.e., petrasrv\parms for network installs or geoplus1\parms for local installs.

For example, a log might contain an IHS-provided log type of

CALIPER/GAMMA RAY/DENSITY

The sample translation file below would translate this to a PETRA group name of DENSITY based on the ordered preference in this file. The names are listed in most preferred to least preferred order. The log type will remain untranslated if a match cannot be found.

Sample USIHSLOGNAMES.TXT File:

```
INDUCTION
RESISTIVITY
DENSITY
NEUTRON
NEUTRON/DENSITY
SONIC
GAMMA RAY
```

### 8.11 Batch Updates From IHS Enerdeq

#### 8.11.1 Batch Well Data Imports
CREATE WELL IMPORT BATCH IMPORT COMMAND FILE:

1) Open Petra and select Enerdeq Well Import option
2) Establish an area of interest (AOI). Batch well imports require an AOI.
3) For Updates, be sure to set the "Last Change Date" to something like "Last 30 Days to reduce the amount of downloaded data.
4) Select the appropriate "Import Options". Batch well imports always use the option to "Update any well in the database and you cannot select individual Fm Tops.
5) Select "File>Save Batch Command INI File" menu.
6) You will be asked to first save a file containing the import options (.IWL) followed by the name of the command (.INI) file.

TO RUN THE BATCH WELL LOAD:

From a command line or script enter the following line:

<program path> <command file>

Replace "program path" with the path to the folder containing the Petra well data loader program. For example, H:\PETRASRV\IHSLOADER.EXE

Replace "command file" with the full path name to the command (ini) file saved in step 6 above.

A log file is written to the Petra "system" folder (petrasrv). The name of the log file is IHSLOADER_yyyymmdd_hhmmss.LOG

Upon successful completion of the batch import, a copy of this log file is placed into the "Reports" folder of the project.

8.11.2 Batch Production Imports

CREATE PRODUCTION BATCH IMPORT COMMAND FILE:

1) Open Petra and select Enerdeq Production Import option
2) Choose the method "I'll Decide Later".
3) Set the import options. For Updates, be sure to set the "Last Change Date" to something like "Last 30 Days to reduce the amount of downloaded data.
4) Select "File>Save Batch Command INI File" menu.
5) You will be asked to first save a file containing the import options (.IPL) followed by the name of the command (.INI) file.

TO RUN THE BATCH PRODUCTION LOAD:

From a command line or script enter the following line:
Replace "program path" with the path to the folder containing the Petra production loader program. For example, `H:\PETRASRV\IHSPRODLOADCODE.EXE`

Replace "command file" with the full path name to the command (ini) file saved in step 5 above.

A log file is written to the Petra "system" folder (petrasrv). The name of the log file is `IHSPRODLOADCODE_yyymmdd_hhmmss.LOG`

Upon successful completion of the batch import, a copy of this log file is placed into the "Reports" folder of the project.

### 8.12 PETRA File Extensions

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<td>REG</td>
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</tbody>
</table>
| RPT  | Report File (Like Scout.RPT) (NOTE: this has been changed to TXT as
Word had problems opening files with a .RPT extension

SEG Contour Capture File
SHP Shape Files
SHT Symbol Highlight Template
SIF A2D New Interchange Calibration File Format
SLL Seismic Selected Line List
SMT Seismic Mapping Template
SRV Export Directional Survey
SSC Spread Sheet Columns Definition
SSS Spread Sheet Template
TIF Tiff Image File
TXT ASCII/Text Data File
USR Saved Equations - User Files like Symtrans.usr
UWI UWI List File
V2 Lasser V2 Production File
VOL Volumetric Report
WCS Tobin Well Coordinate Service File
WDI Popup Menu (Map) Well Data Template
WDS Dwights WDS File
WLX Landmark OWX Format File
WMF Windows Meta File - 16 Bit
WSN Well Sequence List File
WSP Well Selection Polygon
XPO Log Cross Plot Overlay
XPP Log Cross Plot Polygon File
XSO Cross Section Overlay File
XSW Cross Section Post Template
XTP Cross Section Tops Template
XYZ Grid Export (MCS, SCA, XYZ Files)
ZIL Zone Item List
ZOL Saved Z Order List
ZPL Color Palate Template
ZSC Z Colors Scale Template
065 PD CUM Report Template
97F IHS Well data Files, Fixed or Comma Delimited format is acceptable
   297 files are year 2000 compatible, 97 and 197 files are not year
   2000 compatible)
98C IHS Production data Files, Comma Delimited format only (298 files are
   year 2000 compatible, 98 files are not year 2000 compatible) DMP and
   DMP2 files can be loaded as well, but are not recommended. The DMP2
   format is the best one to use if you can only get the DMP or DMP2
   formatted files due to the IHS CD-Rom formatting error when exporting
   the DMP files)

Database engine file extensions

The "DBI" extensions are .DAT, .IDX, & .BLB

The "BDE" extensions are .DB, .MB, .PX, .VAL, .XG0, .YG0, .XG1, .YG1, & .YG2 (NO LONGER USED)

The "ADS" extensions are .ADI, .ADM, & .ADT (NO LONGER USED)

If you have a mixture of engine extensions, you can delete the files for the
engine that is no longer being used or you can run the PetraDBZip program to zip
the desired engine files (ADS and or BDE). Use the "Move" option to delete the file after they are zipped. Once you have a backup of the files, they can be deleted.

To determine the database engine you are using, open PETRA, click on the "Help> About PETRA" menu in the "Main" module or click on the PETRA logo at the bottom right of the "Project" tab if you have a recent version of PETRA.

In red at the bottom of the screen the following will be displayed:

For "DBI" you will see: "Using Local DBI Database Server" (Note: This is the only engine that will be available after March 31, 2006 for updates to PETRA. The other engines will no longer be supported.

For "BDE" you will see: NETDIR: (There will be a path to where the PDOXUSRS.NET file is written.) for instance NETDIR: D:\Petra_Lck

For "ADS" you will see: "Using ADS Local Database Server"
9 Performance Issues

9.1 Anti-virus Scanning

If your anti-virus scanner is checking all files, which is a typical default, then it will significantly slow access to large, shared projects. To speed response time, change the scanner to prevent it from scanning the following file types: .DAT, .BLB, and .IDX. These file types are used by the PETRA DBI database engine. If you are using an older version (BDE or ADS), please contact our customer support team for assistance.

Please note: some tools, such as Norton AntiVirus with its SmartScan provide a list of file types TO BE scanned. In that case, verify the above file types are not on the list.

Some anti-virus software provides the option to turn off all scanning in particular folders. If you use that option, set it to the upper level for the projects.

Some virus scanners have been known to automatically delete temporary database tables created from SQL queries, which then creates runtime errors. See "Location of Temporary Database Files" section for more details.

9.2 Network traffic

There are many analysis tools in PETRA to make it easy to glean information from the raw data. Examples are the computational tools under the "Compute" menu item in the main module, and the Attribute tool in the cross section. Since PETRA can efficiently handle large numbers of wells, there are many times when users put a great deal of traffic on the network, searching through hundreds of thousands of wells for those wells that meet multiple criteria, or computing a water saturation curve for thousands of wells.

This traffic can be very "bursty", and may not be obvious if you are looking at 5 minute averages.

The ideal solution for large volumes of network traffic is to increase the speed of the network to 1Gb, dedicate one or more servers for just PETRA projects, and segregate the geoscientists so they are on a different network segment than the business office and others. As the cost of hardware continues to drop rapidly, it becomes easier and easier to approach an ideal network.

9.3 Overlay Files

The PETRA map overlay files are perhaps the least understood area of PETRA, and close attention to what cartographic data gets loaded into layers, how the data are assigned, and how the layers are managed can significantly improve responsiveness and minimize confusion.

IMPORTANT: Every person that is editing the overlay must have their own copy of the overlay file. If two people open the same overlay file, make changes to it, and each save it back to the server, then the changes made by the first person will be "lost" because the second persons overlay file replaced the first. SEE LAYER MANAGEMENT SECTION BELOW FOR A WAY TO SHARE DATA.
Duplicate or Obsolete Data

The overlay file can have up to 256 individual layers and each layer can be displayed or not. Sometimes the same cartographic data can get loaded multiple times in one or more layers, causing the initial load time and refresh times to be much longer than necessary. If the overlay file is greater than 50 or 60MB, then duplicate data could be an issue. To remove duplicate data in an overlay, use the map module menu item "Overlay > Edit > Delete Duplicate Items...". NOTE: This process can take a very long time, so MAKE A BACKUP of the overlay file and then start the process before you go home in the evening.

Also, if data has been loaded into a layer and that layer is no longer needed, then that layer should be cleared. Use the "Clear Layer" button on the Overlay Preferences and Layers dialog box.

Data Outside the Area of Interest

A common mistake is to load cartographic data for a very large area (i.e. Western Canada), even though the project is in a very small portion of that area. Each time the map display is refreshed, the program has to scan through each element in the file and determine if it is a layer that is to be displayed, and whether it is within the area being displayed on the screen. Clipping out excess cartographic area and saving the result as a new overlay file will speed up the refresh time and also reduce the load and save time of the overlay. When you need to do the large regional work, simply reload the original (large) overlay.

Layer Management

It is common to have designated persons responsible for specific types of cartographic data. For example one person is responsible for maintaining the section lines, rivers, highways. Another person is responsible for maintaining the contour lines for subsurface tops. A third person is responsible for maintaining the lease polygons. A technique to manage these files and make the current information available automatically each time a team member opens their individual overlay, is to use the Associated Layer technique.

Associated Layer Technique

A common scenario that asset teams ask about when dealing with cartographic data: They have more than one user working in the same project and have one or more persons (usually geotechs) designated to update specific items, such as the lease holdings or contour lines. They also want each team member to add their individual interpretations, text boxes, titles, etc. without clobbering other peoples work. Sound familiar?

A very good solution to deal with the overlay data that are frequently updated by one team member and shared with all the other team members, is to use the associated layers. The designated person will update the layer in the usual fashion, and save that layer in an agreed upon subdirectory that all others can access. The other team members in the past have had to manually update their individual overlay files with several layer files to get the latest data. This process is laborious and error prone if done infrequently and in a hurry.

However, by linking to a layer as an associated layer (rather than merging or replacing a layer with a layer file), the data in that layer only gets loaded into memory if that layer is made visible. Each time the overlay file is loaded (such as when you start the map module), the current information in the associated layer files are loaded dynamically for each one that is turned on in the overlay. Therefore the other team members no longer have to manually load the layer files to get each of the updates. The associated layers are read only, so the possibility of accidental changes to the data (by someone not designated to change these data) is eliminated.
Another great feature of the associated layer is that it is removed from memory when the layer is turned off. The benefit is that the map can be updated much quicker, since PETRA does not have to go look at each of the items in that layer to decide if it should be plotted or not. (When a standard layer is loaded into an overlay, PETRA has to look at each item to determine which layer it is in, and then decide if that is one of the visible layers). A case where this would be useful is when someone loads data into the overlay to be used in regional maps (such as state boundaries and the townships for all western states), but spends a large percentage of their time working small prospects in one or two counties. By loading these types of data into associated layers, the map refresh time will be much quicker when they are working prospects that don't need those layers turned on.

To create an overlay with associated layers, first have the person responsible for the managing the data (say the leases) select the appropriate layer in an existing overlay and write that layer out as a layer file. This is done in the map module menu item "Overlay > Save > Save Overlay Layer File". Then select the layer and provide a file name. (NOTE: The overlay file can have up to 256 layers, but a layer file is just an individual layer). Then have the person that needs access to that layer open up the map module and load the layer into one of the 256 layers, with the Associated Layer option selected. This does not actually load the data into the overlay file, but instead makes a link to that layer file. Now, each time that person opens the map module with their own overlay turned on, the latest information in the associated layer is automatically loaded if that layer is turned on. It is possible to have multiple associated layers (one for the section lines, one for the rivers, one for leases, and so on). When the data (in this example, the leases) needs to be updated, the data manager loads the layer file into a spare layer in the normal way, makes the edits, and saves the file back in the same place with the same name. Everyone with an associated link will see the updated leases the next time they open the map.

### 9.4 DBI Buffer Sizes

The PETRA database engine (DBI) uses client-side memory caching to improve performance for read-ahead operations. The default setting for the DBI buffers is sufficient in most cases. A user can change these settings for their connection to projects causing more data to be read into memory on each database read operation and possibly speeding up read intensive operations, such as, map redraws. However, the bigger the buffer size, the longer it will take to refresh and flush these buffers when the system requires it. This can reduce performance in a highly congested network.

### 9.5 PetraSeis Trace Files

As an option, it is easy to copy the trace files from the server to a local disk and change a path in the .ini file so PetraSeis will pull the trace data from the local file, rather than from the network drive. The advantage is two-fold. The responsiveness of PetraSeis is much better when pulling trace data from a local drive. Also, the amount of network traffic is much less, so there is less network performance impact on others on the network.

### 9.6 Database Compression

A project database can become slower as the database tables become larger. Continual data deletions and additions can create "garbage" records that should be removed.

You should run the PetraDBIRepair utility program occasionally, to remove unused space and improve performance.
PetraDBIRepair.exe is deployed with the server version of Petra. Contact Petra support if you can not find it.

Make sure you have a good backup before proceeding!

From the PetraDBIRepair screen:

- Select the project's INI file
- Uncheck the "Archive (zip) Tables" option
- Check the "Pack Tables" option
- Click the "Optimize" button and wait...
10 Exchanging Data with Other Systems

10.1 Import Formats supported by PETRA

**WELL DATA IMPORTS**

PETRA Well ASCII (used by data vendors, including Petro-Lab and others)
PETRA Project (used between PETRA project)
PETRA Template (used to define tops, logs, zones, and zone items)
Generic ASCII
IHS (PI) 97, 197, 297, 98, 298 Download
GDS-II
Geographix ASCII V1 and V2
Tobin WCS
NRIS (Oklahoma)
GCS
Dwights WDS
Landmark 3x Metafile, Standard 29, OWX
QC Data AXXses DPDT Request
IOG RedTop (Kansas)
SeisX Well Data
Drilling Info "DRI" (V2)

**DIGITAL LOGS IMPORTS**

LAS individual load, batch load
LIS
Tabular ASCII
MORE Simulator
MIRA format

**RASTER LOGS IMPORTS**

MJ Logs (exported and LogSleuth Direct Connect)
A2D SmartRaster™ (old and new SIF)
MMS (US gulf of Mexico)
Uncalibrated TIF files
Geographix "dra"
PETRA LIC

**MONTHLY PRODUCTION IMPORTS**

Dwights DMP, DMP2 Detail
Tabular ASCII
MORE History Match
Production Analyst "*NAME"
OFM "KEYNAME"
Lasser V2 (Texas)
AccuMap ARIES
Dwights Power Tools PTX
IDP Production History
OGRE Monthly Production
IHS 298 Injection Data
DrillingInfo "DRI" (V2)

CARTOGRAPHIC DATA IMPORTS (for the Map Module)

Tobin Land Grid (old format)
GII or Tobin Infobase
Platte Rive Assoc. TownRgeSec
Z-Map Plus Vertex
Z-Map Plus Text
Z-Map Plus ASCII Contours
Z-Map Fault File (x, y, SegID)
Landmark ASCII Metafile
Contour SEGID
Digitized Contours (x,y,z)
Digitized Contours (Lon, Lat, Z)
TMC TownShip/Range
TMC Texas Landgrid
Geographix Cartographic Data Format (CDF)
ESRI Shape File (x, y)
ESRI Shape File (Lat, Lon)
AutoCAD DXF (x, y)
AutoCAD DXF (Lat, Lon)
MapInfo Mid-Mif
InfoPipe Mid-Mif
GeoQuest CPS-3 Contours
SMT Planimeter Polygon
PETRA ASCII Overlay

GRID IMPORTS

Landmark Z-Map Plus Grid
GeoQuest CPS-3 Grid
Generic XYZ triplets
MORE Simulator Grids
GeoFrame Grid
USGS GXF Grid
10.2 Export Formats supported by PETRA

PETRA WELL EXPORTS

PETRA Project (used between PETRA project)
PETRA Template (used to define tops, logs, zones, and zone items)
ASCII Tabular Well Data
ASCII Tops (UWI, Formation name, value, …)
ASCII Tops Definition (Formation name, source, description)
ASCII Zone Items
ASCII Directional Surveys
ASCII Perfs, Cores, Production Tests, Formation Tests
Landmark Standard 29 and OWX
PETRA to MJ LogSleuth (through direct connection)
Geographix GES V2 (Tops)
SCA-MCS (Tops and zone items)

DIGITAL LOG CURVE EXPORTS

Digital Log Curves (LAS 2.0, LIS)

RASTER LOG EXPORTS

PETRA LIC

MONTHLY PRODUCTION EXPORTS

Tabular ASCII
Production Analyst
More Simulator

CARTOGRAPHIC DATA EXPORT (from the Map Module)

PETRA ASCII Overlay
Z-Map Plus ASCII Contours (x,y)
Z-Map Plus ASCII Contours (Lat, Lon)
Landmark ASCII Metafile (Lines and Text)
Geographix CDF (Lines and Text)
GeoQuest Culture Format (Lines and Text as x,y)
ESRI Shape File (x,y Lines)
ESRI Shape File (Lat, Lon Lines)
ASCII Lat, Lon, Seg ID
ASCII x, y, Seg ID

GRID EXPORTS

Z-Map Plus Grid Format
ASCII Tabular
ASCII Triplets (x, y, z)
ASCII Triplets (Lon, Lat, z)
More Simulator

10.3 ESRI Shape Files

The PETRA Thematic Mapper provides Graphical Information System (GIS) tools to open shape files and query based on content, comparisons, and distances. The shape files can be filtered and colored and inserted into the PETRA map module overlay for integration with all the other items available in the map module. The Thematic Mapper can also generate shape files from the PETRA well database for comparisons within the Thematic Mapper or for use by other programs.

10.4 Third Party Transfer Tools

As of this writing, there are two suppliers that have developed links between the PETRA database and other packages. These companies are InnerLogix and Petris Technologies. A third company, OpenSpirit, is also working on a link to the PETRA database.
11 Troubleshooting

11.1 Terminating a "Hung" Network License

The following procedures are available for terminating a network license that is not actually in use by a user, but is not available from the license manager.

NET HASP Licenses

There is currently no way to terminate an individual Net Hasp license without terminating all licenses by stopping and re-starting the Hasp license manager ("hasp loader").

FLEXLM Licenses

A command line utility from Macrovision (creators of FlexLM) is available that allows the removal of a FlexLM license that is hung. This command line utility is called "lmremove.exe".

The "lmremove.exe" file is deployed by IHS along with the other Flexlm utilities. If you can not locate "lmremove.exe", you can download it from https://petraftp.ihsenergy.com/lmremove.zip and save it to the petraflx folder or wherever you have LMTOOLS running. lmremove.zip contains lmremove.exe and lmremove.txt, which contains the "read me" information that follows.

To run "lmremove.exe", bring up a command screen. I use Start>Run and enter CMD to get my command screen.

Change directories to the folder where LMTOOLS is located.

NOTE: You can obtain the information needed from the LMTOOLS dialog screen for lmremove.exe. Click on the "Server Status" screen. Click on the "Perform Status Enquiry" button.

On the Command line prompt, change to the drive and folder where you are running LMTOOLS from.

On the Command line prompt, Enter lmremove PETRA user_login user_machine user_machine

For example to remove a hung license for logon user BRE25856 logged onto machine HLMXP you would enter:

```
   lmremove PETRA BRE25856 HLMXP HLMXP
```

on the command prompt line.

11.2 No License

Can't Get A License?

NETHASP LICENSE MANAGER
CONFIGURATION:

Petra communicates with the NetHasp license manager through either the TCP/IP, IPX or NETBIOS network protocol. If the client PC is not obtaining a license you may need to configure the license manager.

The NetHasp license manager is configured using an "INI" file called NETHASP.INI. This file is initially located in the \PetraSrv\NetHasp folder. Copy the NETHASP.INI file to the PetraSrv folder and modify its contents using an editor such as NOTEPAD.

In the [NH_COMMON] section add lines to enable and disable the appropriate protocol, such as:

```
NH_TCPIP = Enabled
NH_IPX = Disabled
NH_NETBIOS = Disabled
```

You can also set the license manager server IP address in the [NH_TCPIP] section such as:

```
NH_SERVER_ADDR = 192.168.0.3
NH_TCPIP_METHOD = TCP
HN_USE_BROADCAST = DISABLED
```

This can speed up getting a license in a large network environment.

FIREWALL ISSUES:

Firewall settings for ports 475/UDP and 475/TCP must be enabled to allow the Hasp License Manager to communicate with application. The newer "lmsetup" install file from Aladdin displays a screen allowing the installation procedure to enable these ports. If you don't enable them at install time, you will have to enable them by changing your firewall rules manually.

FLEXLM LICENSE MANAGER

Environment Variables - One issue that can effect PETRA's ability to obtain a Flexlm license is the use of environment variables by the flexlm license manager. PETRA does not use or require such environment variables, however, some other applications do. These environment variables can redirect the flexlm license manager to a specific license file which might not contain the PETRA license information. The solution is the remove the environment variables or add the PETRA license information to the appropriate license file. For further details, see "Installing FLEXLM License Management".

11.3 NetHasp Install

We have received a few reports from customers with AMD64 and XEON processors that the standard hdd32.exe Hasp installation did not work. Downloading https://petraftp.ihsenergy.com/haspusersetup.exe and running it before running hdd32.exe seems to resolve the problem.

11.4 Random Errors/Write Delay Errors

PETRA has been tested in a pure Microsoft Windows environment and is supported in that environment. Occasionally we hear of problems with shared projects on network attached storage (NAS) systems. There
appears to be a variety of configuration options on these NAS systems, and if not configured properly, they
don't fully mimic a Windows server. One particular option is to toggle the state of the "OPLOCK" flag if there
are issues with random access violations. The delayed write error is a known issue at Microsoft. Check the
Microsoft Knowledgebase for details on resolving that issue.

### 11.5 Long Map Load Times

**OVERLAY SIZE**

One of the biggest issues with long load times for the map module is the amount of extraneous data in the
overlay file. See the section under "Performance Issues - Overlay Files" for details.

### 11.6 Long CrossSection Load Times

Raster Logs can be relative inexpensive to obtain, but require a hefty CPU and lots of RAM to display in tools
such as the PETRA cross section module. There are two options in the cross section to control how rasters
are loaded and retained in a cross section.

In general, the best choice is to keep the rasters in memory (RAM) while working with a specific set of wells.
However, there may be certain conditions (minimal RAM, highly fragmented local disk) where the
performance may be better with the option to always load from memory.

If the user is doing a "quick look" at a lot of raster logs, and has many different names of raster groups, it is
common to tell PETRA to display many raster groups in track 0, which is centered below the well spots. If
any of the wells in the cross section has several rasters in the same track, only the last raster will be displayed,
and time will be wasted as PETRA repeatedly overlays previous rasters with additional rasters in that track.
To eliminate this issue, there is an option available to prevent scaling and displaying of multiple rasters in a
track. This option will display the first available raster on the list and then move on to the next track or the next well. Setting this option can dramatically improve display times in this situation.

11.7 Lost Project Password

Password protection for a project or map projection is an optional feature. If the password is forgotten, deleting the password file will remove the password from the project. The following password files are located in the "public parms" folder of the project:

PSWDBIN - Project Password
MPRJPSWDBIN - Map Projection Password

11.8 Can't View Help File

The PETRA help file is called "GEOPLUS1.chm" and is located in the PETRA system folder, i.e., the folder containing the PETRA program files. The help file requires an HTML viewer to display help information to the user.

PROBLEM: HELP FILE IS STORED ON A NETWORK DRIVE

When the help file is located on a network drive, as in a typical PETRA network install, Windows may not allow HTML files to be viewed across a network. As of release 3.1.9.0, PETRA was modified to copy the help file to the user's "client" path. However, if the client path is also a network drive, this copy may not be viewable either.

SOLUTION 1:
The help file must be copied to the user's local drive. This can be automatically by PETRA when you add the following statements to the user's GEOPLUS.INI file (located in the client folder).

[STARTUP]
ALTHELPPATH=c:\........ (what is appropriate)

SOLUTION 2:
Another way to resolve this issue is to make the following Registry entry change on the user's PC:
11.9 Error Opening a Project

If you get an error loading wells when first opening a project, such as code 222, you might try the following procedure.

Hold down the SHIFT+CTRL keys as the project is opening.

This causes PETRA to ignore the last list of WSN displayed and instead loads all wells from the database.
12 Document Revision History

This section provides the revision history of this document.

Aug. 29, 2005

Software Update - Expanded this section to describe new feature to force shutdown of PETRA and automatic closing of open PETRA projects. This tool is to ensure all necessary files are closed before updating PETRA or repairing PETRA projects.

Creating a Notice Page - Added new sound wave option.

Repairing Database Tables - Added new batch mode capability to automate the process of verifying or repairing PETRA project files.

October 6, 2005

Added section on "Migrating to Citrix" under Software Installation and Updates Chapter.

October 28, 2005

Database Management - Added section on "Force Shutdown of a Project" to describe the process of shutting down a specific project, so the database can be available for moving or repairing it.

November 22, 2005

Database Management - Added section on "Location of Temporary Database Tables".

December 1, 2005

Database Management - Documented NOPACK option on database repair utility.

February 16, 2006

New "The PETRA.INI File" section was added
Database Management - User Restriction File (UR) added.
Miscellaneous minor changes

April 5, 2006

Added comments about NetHasp firewall rules to trouble shooting section
Added comments about Flexlm environment variables to trouble shooting section
Removed overly temp work file notes from trouble shooting section
Added DBI buffer size comments to Performance Issues

June 26, 2006

Added section called "Moving Externally Referenced Data for IMAGESEARCH.TXT"
Removed "geoPLUS Corporation" references
February 21, 2007
Added troubleshooting section for terminating a "hung" license.

May 14, 2007
Added troubleshooting section for "can't view help file".

June 1, 2007
Added notes for batch import of IHS Enerdeq data

February 20, 2008
Added User Application Launch info to the [GENERAL] section of the PETRA.INI

March 26, 2008
Added MODIFYPLACESBAR entry to the [GENERAL] section of the PETRA.INI

October 7, 2008
Added GOOGLEMAP and GOOGLE_WGS84_DATUMSHIFT entries to the [GENERAL] section of the PETRA.INI

October 15, 2008
Added SAVEDEFAULTPROJECTION and ALLOWUSERPROJECTION entries to the [GENERAL] section of the PETRA.INI

June 4, 2009
Added BKGNDSCAN and BKGNDSCANTIME entries to the [GENERAL] section of the PETRA.INI

February 4, 2010
Added section to IHSCAN section