

**INTRODUCTION TO OIL & GAS WELL SHAPE FILE: KYOG83  
Version 5, 10-Oct-2001**

**COPYRIGHT**

Data in this distribution are copyrighted (2001) by the University of Kentucky, Kentucky Geological Survey. The user is granted the right to use these data to produce maps, charts, and reports. The user of this data is further granted the right to provide copies of these oil and gas well data shape files as described in this document provided:

- 1 The data is distributed in its original form, as acquired from the Kentucky Geological Survey or downloaded from its web site.
- 2 This documentation, including the notice of copyright and disclaimer, are provided without modification.

If you have acquired this data from a third party, the Kentucky Geological Survey invites you to visit our web site at:

<http://www.uky.edu/KGS/home.htm>

**DISCLAIMER**

Data in this file are presented "as is" with no warranty either expressed or implied as to the completeness or accuracy of any location or well status. Data on file at the Kentucky Geological Survey is submitted by well operators under requirements established by KRS 353. The producing or abandoned status of any well is dependent on the completion type reported by the operator on the well log and completion report, on the availability of a plugging affidavit, and on other information or maps on file in the Geologic Data Center of the Kentucky Geological Survey.

Some wells in the database have duplicate locations (i.e., there are sometimes more than one well at a given location). As in the case of workovers and deepenings of existing wells, this is intended. However, in the recent conversion of our database to new software on a new server, some valid locations were inadvertently duplicated to wells that have no location. These wells are being identified and corrected. Suspect invalid duplication if there are significantly more than 4 or 5 entries at a given location and the location is in the middle of a 1-minute or 5-minute Carter coordinate or the middle of a 7.5-minute topographic quadrangle map. Your assistance in this matter is requested.

**A NOTE ON THE WELLS INCLUDED IN THIS DISTRIBUTION.**

The wells in this distribution include only those wells for which a complete Carter coordinate location is available; that is, only wells for which latitude and longitude can be calculated. For most areas in Kentucky wells exist for which insufficient location data are available to determine latitude and longitude. To obtain data for wells with only the county, topographic map, or partial Carter coordinate are known, copies of the electronic data must be obtained.

**WHAT'S NEW**

**V5:** Update data with new wells permitted and completed to 10-Oct-2001.

**V4:** Regional location data fields have been added to provide easier extended searching capabilities: the county and topo names and the Carter coordinate section, letter, and number.

**V3:** This distribution contains more identifying data (operator, well number, and farm name) that will enable users to better access the well records on file in the Geologic Data Center at the Kentucky Geological Survey. The completion data of wells and their abandoned status is also included.

## **PRODUCTION DATA**

Limited production data by well is available at the Kentucky Division of Oil and Gas web site (<http://www.caer.uky.edu/kdmm/ong.htm>). Monthly oil and gas production data are available by county at the KGS web site:

<http://www.uky.edu/KGS/PTTC/STATISTICS/stathome.htm>

## **DATUM**

Location data in this shape file are supplied as latitude and longitude in both North American Datums of 1927 and 1983 (NAD27 and NAD83). The shape file, kyog83v5.shp, was created using location values from the two fields: Lat83 and Lon83. The file kyog83v5.dbf can be loaded into ArcView as a table and the fields "Lat27" and "Lon27" can be used to create a shape file projected to the NAD27 datum. Latitude and longitude are expressed as decimal degrees for both datums. By convention, west longitude is expressed as a negative number.

## **BASE MAP DATA**

These locations are best used posted on a base map. Base maps for displaying this data are available for downloading from the Kentucky Geological Survey web site located at:

[http://www.uky.edu/KGS/gis/kgs\\_gis.html](http://www.uky.edu/KGS/gis/kgs_gis.html) – a list of links to many Kentucky base maps

<http://www.uky.edu/KGS/gis/bounds.html> – State, county, and topo boundaries; the  
Carter coordinate grid system

<http://www.uky.edu/KGS/gis/geology.html> – surface geology and faults; the web location  
of the link for downloading this oil and gas data file.

## **COMPONENTS OF THE KYOG83v5 SHAPE FILE**

KYOG83 is a zipped archive file containing an ArcView shape file that provides the user an introduction and overview of the oil and gas well data available in Kentucky. This shape file was created using ArcView 3.2. These data may be viewed with ArcView, Arc Explorer, or any software that supports shape files. Arc Explorer is a free viewer available for downloading at the ESRI web site:

<http://www.esri.com/software/arcexplorer/index.html> (visited 27-Apr-2000)

The KYOG83v5 shape file contains data for 113,058 oil and gas well locations in Kentucky and consists of seven separate files:

KYOG83v5.AVL (an ArcView legend file, not required for plotting)  
KYOG83v5.DBF  
KYOG83v5.PDF (this documentation file)  
KYOG83v5.SBN  
KYOG83v5.SBX  
KYOG83v5.SHP  
KYOG83v5.SHX

Data for each well includes:

Recno -- Unique identifier for each well in the KGS database  
Permit -- Permit issued by the Division of Oil and Gas  
Operator -- Well operator of record when the well was originally drilled (truncated to 16 characters)  
Well -- Well number assigned by operator  
Farm -- Farm or lease name (usually mineral owner in the case of severed minerals, truncated to 16 characters)  
County -- Kentucky county in which the well is located  
Topo -- Name of the 7.5-minute, 1:24,000-scale topo on which the well is located  
Sec -- 1-minute Carter coordinate section in which the well is located (1 to 25)  
Ltr -- 5-minute Carter coordinate section letter (" A" to " Z" and "AA" to "GG").  
Num -- 5-minute Carter coordinate section number (0 to 92)  
TD -- Total depth of the well in feet  
Tdfm -- Name of the formation penetrated at the total depth of the well. Formation codes are derived from the AAPG stratigraphic code, see:

<http://www.uky.edu/KGS/PTTC/miscdata/strtcodes.htm>

Result -- Completion type of well (see table of values)  
DeepestPay -- Name of the deepest or only producing formation (AAPG codes same as above.)  
cdate -- Date well was completed, if known  
Abnd -- Value of -1 indicates the well is abandoned, see especially abandoned producers, else the value is 0  
Elog -- Value of -1 indicates an electric log is on file at the KGS, else the value is 0, no log on file  
Lat27 -- North latitude of well in decimal degrees (NAD27)  
Lon27 -- West longitude of well in decimal degrees (NAD27)  
Lat83 -- North latitude of well in decimal degrees (NAD83)  
Lon83 -- West longitude of well in decimal degrees (NAD83)

#### KEY TO VALUES FOR THE RESULT FIELD

OIL wells completed as oil or combined oil and gas wells (including abandoned producers)  
O&G wells completed as combined oil and gas producers (including abandoned Producers)  
GAS wells completed as gas wells (including abandoned producers)  
D&A Dry and abandoned wells (Abnd = -1 by default)  
SRV Secondary recovery input and other miscellaneous well types  
STR Stratigraphic tests released to the public (Abnd = -1 by default)  
LOC Newly permitted locations or historic wells for which completion data are not available in the KGS database  
MSC Miscellaneous well types including cathodic protection, observation, water supply wells, and others

Some notes on stratigraphic tests: by state law, data for wells permitted as stratigraphic tests are held permanently confidential, *unless information is released by the operator directly to the Kentucky Geological Survey and designated by the operator to be publically available*. Those wells designated as "STR" in the data file have been publically released. When electronic data are provided as lists or databases, these publically released stratigraphic tests are designated "STRP." For a time, an operator was allowed to convert a well drilled as a stratigraphic test to another purpose. This practice led to producing wells for which no information was publically available. To eliminate this, a policy was adopted that all

wells permitted as stratigraphic tests must be plugged, no conversions are allowed. Thus, there may be a few stratigraphic tests for which a producing interval is reported; these wells are assumed abandoned.

## **DIGITAL WELL DATA RESOURCES AT THE KENTUCKY GEOLOGICAL SURVEY**

The database provided with this distribution is limited in scope. These data were used to compile Map and Chart Series 9, Distribution of Oil and Gas Wells in Kentucky and are designed to accompany various base map resources available through the Kentucky Geological Survey world wide web site at:

<http://www.uky.edu/KGS/home.htm>

and in particular: [http://www.uky.edu/KGS/gis/kgs\\_gis.html](http://www.uky.edu/KGS/gis/kgs_gis.html)

Additional details for each well are available in electronic form. Subsets of the data may be specified. Well data may be selected based on counties, Carter coordinates, topographic quadrangle names, latitude and longitude bounded areas, depth of penetration, available records, and others. For example, a database of the wells in Leslie and Perry Counties that penetrate the Devonian Shale or deeper zones with litho-density logs may be created. Data are distributed by electronic mail. For larger databases, the information can be written to CD-ROM or posted to an anonymous ftp site for downloading.

The cost for digital well record data that includes latitude and longitude and stratigraphic tops is \$10 plus a per well charge of \$0.15. Kentucky sales tax, postage, and handling will be charged as appropriate. MasterCard and VISA are accepted. You may place an order by phone or email to Brandon C. Nuttall at [bnuttall@kgs.mm.uky.edu](mailto:bnuttall@kgs.mm.uky.edu). The Survey does not have a secure server so call Publication Sales at 859-257-5500 with your credit card information.

## **OTHER BASE MAP DATA**

Georeferenced images are available for topographic, geologic, and aerial photographic maps at various web sites. In general, single maps may be downloaded for free, or prepared CD-ROMS of multiple maps may be purchased. Note that these base map data files are projected to state plane or UTM coordinates; GIS software is required to align the oil and gas well record data file with these base maps.

**DRG:** Digital raster graphic versions of the U.S. Geological Survey 1:24,000-scale, 7.5-minute topographic maps are available from the Kentucky Office of Geographic Information Systems web site:

<http://www.state.ky.us/agencies/finance/depts/ogis/gisdept.htm>

follow the links to "DOWNLOAD or Order on CD Kentucky Spatial Data"

These maps are projected to the Kentucky State Plane coordinate system, NAD83, U.S. feet. They have been trimmed and paneled to allow seamless joining of adjacent maps. Images are compressed, tagged image format (tif) files. You will need WinZip to decompress the image. The georeferencing data for the image, a tif world file (tfw) must be downloaded separately.

**DOQQ:** Digital ortho quarter quadrangles are georeferenced 1:12,000-scale composite air photos. These files are available from the Kentucky Office of Geographic Information Systems web site:

<http://www.state.ky.us/agencies/finance/depts/ogis/gisdept.htm>

follow the links to "DOWNLOAD or Order on CD Kentucky Spatial Data"

The maps are free for downloading, but you must register with the site.

These maps are projected to the Kentucky State Plane coordinate system, NAD83, U.S. feet. They have been trimmed and paneled to allow seamless joining of adjacent maps. Images and georeferencing data are compressed together into a single file. You will need WinZip to decompress the distribution file. The image is supplied using MrSID compression. The MrSID viewer and plugins are available for free from:

<http://www.lizardtech.com/>

To use MrSID files with ArcView, you must enable the MrSID extension. ArcExplorer version 1.x does not support MrSID. Version 2 of ArcExplorer is slated to include MrSID support.

**Digital geologic quadrangles** are georeferenced 1:24,000-scale versions of the U.S. Geological Survey surface geologic maps of Kentucky. These files are available from the Kentucky Geological Survey web site:

<http://www.uky.edu/KGS/gis/gqmaps.html>

These maps are projected to the Kentucky State Plane coordinate system, NAD83, U.S. feet. The maps are tif images of the scanned GQ maps. As of this writing, the complete coverage of the state has not been posted. Images and georeferencing data are compressed together into a single file. You will need WinZip to decompress the distribution file. The maps are distributed using MrSID compression. The MrSID viewer and plugins are available for free from:

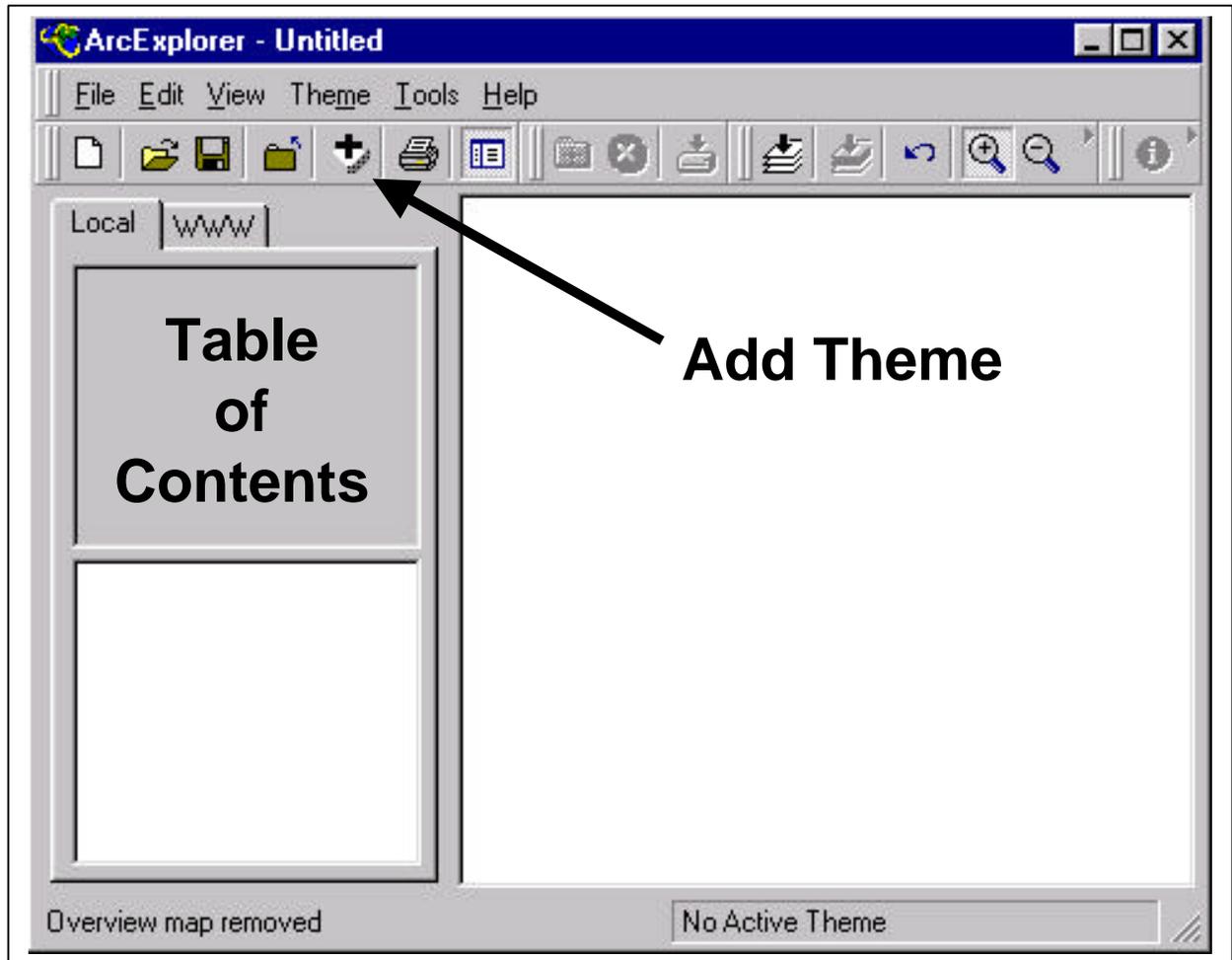
<http://www.lizardtech.com/>

## MAKING AN OIL AND GAS MAP WITH ARCEXPLORER

This procedure illustrates making an oil and gas well location base map using ArcExplorer. Note that ArcExplorer is not a full featured GIS and the resulting map of Kentucky will be unprojected, that is, the map will appear compressed north to south and stretched east to west. In addition, because all coordinates are geographic (decimal degrees of latitude and longitude), the topographic map and Carter coordinate grids will appear square. For simplicity, the necessary files will be assumed to be installed on your local hard drive in the temporary directory (c:\temp).

1. Create a directory for the data and basemap files for this project, then download these files to that directory.
  - a) If you don't have it, download ArcExplorer version 2 from <http://www.esri.com/software/arcexplorer/overview2.html>, and install it.
    - i) Hint: After installation, point to any button on the tool bar to find out what it does.
  - b) From <http://www.uky.edu/KGS/gis/geology.html>, download KYOG83.ZIP
  - c) Other files you might want from <http://www.uky.edu/KGS/gis/geology.html>: FAULTS.ZIP, the surface faults digitized from the 1:500,000-scale geologic map of Kentucky
  - d) From <http://www.uky.edu/KGS/gis/bounds.html>, download COUNTY.ZIP
  - e) Other files you might want from <http://www.uky.edu/KGS/gis/bounds.html>
    - i) CARTER1.ZIP – 1-minute Carter coordinate grid
    - ii) CARTER5.ZIP – 5-minute Carter coordinate grid
    - iii) QUADSKY.ZIP – grid of topographic map boundaries
2. Unzip the shape files to the directory you created for the download (see: <http://www.winzip.com/> for WinZip)
3. Start ArcExplorer and click OK to close the tip window.

- a) Make sure the Local tab is selected in the table of contents window.
4. Add themes to the view by clicking on the Add Theme(s) button (the plus to the left of the button with the printer icon on the toolbar). Navigate to the directory where your themes are stored. To select multiple themes, click on one then press the control ("Ctrl") key and click other themes. Once selected, click the Add Theme button in the dialog box and close it.



- a) KYOG83V5
- b) COUNTY
5. Format the View
  - a) In the table of contents window to the left of the map window, the oil and gas well shape file should be first (on top) with the county data following. If not in this order, click and drag the entries to the correct order.
  - b) Click the check box next to its title to enable display of the county boundary file.
6. Change the county shape file legend
  - a) Click the county shape file entry in the view table of contents to make it the active theme
  - b) Click Theme | Theme Properties or double-click on the entry to open the Theme Properties dialog box.

- c) Double-click the color panel and change the foreground color to light blue
- d) Click Apply then close the properties window
- 7. Change the oil and gas well legend
  - a) Double-click the KYOG83V5 entry in the table of contents menu
  - b) Choose unique values in the classification options box and set the field name to RESULT
  - c) Either accept the default colors and symbols, or click on the symbol(s) you want to change and make selections from the dialog box. If you set the style to a True Type marker, then any symbol from any of your installed fonts may be used.
- 8. Optional: Add Carter coordinate or topographic map grid themes. To see wells, make sure to set the style to "Transparent fill" in the theme properties dialog box.
- 9. To identify wells:
  - a) Click on the well data theme, KYOG83v5, in the table of contents to make it the active theme. It will be highlighted.
  - b) Zoom in on the map by clicking on the magnifier button on the tool bar then click and drag a zoom box in the map area. To zoom back out, click on the Zoom to Full Extent button (a black down-pointing arrow over three stacked sheets).
  - c) Click the identify button (black circle with a white "I"), then point to a well and click to open the identify results dialog box.
- 10. Other themes may be downloaded to provide information on streams, roads, populated places, and others.
- 11. Note that the themes used in this demo and provided on the web were designed to be manipulated with a full-featured GIS so they can be matched with DRG, DOQQ, and other map elements available on the web.

## **MORE INFORMATION**

If you have any questions or problems contact:

Brandon C. Nuttall  
Kentucky Geological Survey  
228 MMRB  
University of Kentucky  
Lexington, Kentucky 40506-0107

Phone: 859-257-5500  
Email: [bnuttall@kgs.mm.uky.edu](mailto:bnuttall@kgs.mm.uky.edu)