Appendix B - Appalachian Basin Tight Gas Reservoirs: Screen Shots of the Web-Based Application

Figure B-1. The Appalachian Basin Tight Gas Reservoirs Project is formally titled, “Improving the Availability and Delivery of Critical Information for Tight Gas Resource Development in the Appalachian Basin”. The goal is to provide public access to well-specific and regional data for six tight or low-permeability gas plays to improve the understanding and recoverability of those resources.
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The Appalachian Basin Tight Gas Reservoirs Project provides a collection of tools/applications to give the user the ability to search and gather information about gas and oil wells in West Virginia and Pennsylvania. Data have been organized by play for the following plays: Berea/Murrellsville, Venango, Bradford, Elk, Medina"Clinton" and Tuscarora. The data have been provided by the geological surveys of these states.

**Interactive Mapping:** The Appalachian Basin Tight Gas interactive mapping system provides access to layers and documents categorized by play. Each play contains well, cross-section, and map layers. A number of tools are available for exploring the layers including the zoom, identify, query, buffer, and data extraction tools. And, supplemental information may be obtained for the well layers by using hyperlinks. Suplemental information includes well-based header data and, for selected wells: scanned logs, digitized logs, and core/sample data. Well layers were generated from data obtained from the West Virginia and Pennsylvania geological surveys; cross-section and map layers, for the most part, were obtained from The Atlas of Major Appalachian Gas Plays. In addition to the play-based layers, play-based documents may be accessed through the system. These documents include such items as charts, diagrams, and reports.

**Well Header Data:** (Detailed Help) This application allows the user to query oil and gas header records in our system through the given fields on the form. The query options include a combination of numeric, character, pull-down and checkbox searches. Once the user enters selection criteria and hits the search button, the matching header records are then returned. You must select a "Play" and enter/select at least one other condition for the application to run. If errors are made in your selection, error messages will appear in red to help you correct the problem. The returned records will also provide a link to other applicable information that might be available. More detailed help on this application can be found here.

Figure B-2. The “System Overview” section provides basic information about each of the applications available through the Appalachian Basin Tight Gas Reservoirs Project. The applications are shown on the navigation bar and include: Interactive Mapping, Well Header Data search, Well-Based E-Files search, Play-Based E-Files search, Project References search, Slabbed Core Photos access, File Repositories access, and WVGES “Pipeline”.
Figure B-3. One of the highlights of the Appalachian Basin Tight Gas Plays Project applications is the interactive mapping system. The system provides access to well data, cross sections, maps, and documents organized by play. In addition, a number of base layers are available to provide context.
Figure B-4. A detailed legend is available for each major category associated with the interactive mapping system. This particular example shows the legend for the Bradford play-specific layers. Other legends include general geography and geology, the Berea play-specific layers, the Venango play-specific layers, the Elk play-specific layers, the Medina play-specific layers and the Tuscarora play-specific layers.
Figure B-5. Well-based data are available through the interactive mapping system. Five different well-based layers are available for each play. This map shows wells with core/sample data and wells with scanned logs for the Bradford Play in West Virginia.
Figure B-6. Attribute data and additional data can be obtained for each well shown on the map by using the identify (i) tools. The black i tool shows data for the active layer while the red i tool shows data for all of the layers that are visible on the map. Additional data may be obtained by clicking on the API number which links the user to various materials including, for instance, any digitized or scanned logs.
Figure B-7. Queries can be performed on the well data. In this example, all wells that have a gas volume before treatment greater than 1000 MCF (thousand cubic feet) are highlighted in light blue on the map. In addition, well-based attribute data can be displayed for all of the wells that meet the query criterion or criteria.
Figure B-8. Cross-sections lines and corresponding images are available for each of the tight gas plays. This example shows the cross-section lines that are available for the Bradford Play in Pennsylvania and West Virginia.
Figure B-9. Cross-sections are accessed by making the cross-section layer active and then by clicking on one of the cross-section lines with the hyperlink tool (lightening bolt). The cross-section image is then displayed in a new window.
Figure B-10. Various types of maps are available from the interactive mapping system. This example shows one of the maps associated with the Bradford Play. Specifically, the example is an isopach map of the upper Balltown sandstone in Harrison County, West Virginia.
Figure B-11. This example shows yet another map associated with the Bradford Play. Specifically, the example shows a regional thickness map in Pennsylvania and West Virginia.
Figure B-12. Well header data are accessible through a search page. Several criteria are available to enable a user to create a collection of well data based on their specific interests or needs (please see above). Well header data includes well-specific data such as surface owner, operator name, total depth, and deepest formation.
Figure B-13. The well header data search provides access to a wealth of well-based data. In addition, links to other sources of data are provided. Search results can be exported to Excel.
Figure B-14. A link to scanned logs is one of the link types available from the well header data search result. Scanned logs and other electronic documents can be searched, viewed, or downloaded. A scanned log for well 4703300862 is shown in the viewer on the right-hand side of the page. Users should be able to scroll down through the log image, zoom in, and zoom out.
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Figure B-15. Well-based e-files or documents (as opposed to well header data) are accessible through a search page. Several search criteria are available including play, API number, data type, and county. Well-based files would include such items as well plats, completion reports, scanned logs, core photographs, and core and sample descriptions.
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Figure B-16. The well-based e-file search provides basic data about and access to documents about a particular well. For example, as shown here, a core photograph for well 4703300862.
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Figure B-17. Play-based e-files are accessible through a search page. Several search criteria are available including play category, data type, and author. Play-based files would include such items as abstracts, reports, cross sections, and maps.
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Figure B-18. The play-based e-file search provides basic data about and access to documents about a particular play.
Figure B-19. A specific play-based document can be accessed by clicking on the “Details” link given the play-based e-files search result (see previous figure). The document is then shown in a viewer on the right-hand side of the Web browser page. The user should be able to change the size of the image, scroll, zoom in, and zoom out. Along with the image, full reference information and scanned document information is given.
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Figure B-20. Project references are available through a search page. Search criteria include play, year, author, and title.
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Figure B-21. The links from the project reference search provide additional details about the document that was selected.
Figure B-22. Finally, links provide access to individual project reference documents that have been scanned. This example provides a scanned image of a geothermal gradient map from a West Virginia Geological & Economic Survey (WVGES) publication.
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Figure B-23. Photographs for slabbed cores are available for about a dozen wells. Access to the photographs is available in a number of places in the Appalachian Basin Tight Gas Reservoirs Project system, including through a table of links.
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Figure B-24. Numerous photographs are typically available for any given well. The photographs are shown here in depth order with four images per page.
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Figure B-25. Data can be accessed in various ways. For those who have already determined what they need, the “File Repository” section provides easy access to downloadable files. Data are organized by county within each data type.
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Figure B-26. “Pipeline” provides access to all of the well data that the West Virginia Geological & Economic Survey (WVGES) has for West Virginia wells. County, permit number, and the type of data can be selected.

Please try our new “Pipeline-Plus”. This system allows you to search oil & gas well header information and link directly to "Pipeline" plus other new features.

Usage Notes

DISCLAIMER REGARDING THE RELEASE OF DATA AND USER REQUIREMENTS

The West Virginia Geological and Economic Survey (WVGES) makes basic data available to the public from its computerized databases on mineral resources under the following conditions:

1. We believe the data in the WVGES computer databases to have been generated and assembled with a high degree of professionalism, accuracy, and precision for the purposes for which they were originally intended. In this context, “data” refer to numerical and textual data (such as in the "pipeline" application), digital data (such as .las files), digital images (such as digital photographs), scanned records (such as completion reports), and spatial data (such as shapefiles). Some data have been compiled from other sources and the WVGES accepts no responsibility for any inaccuracies in

Figure B-26. “Pipeline” provides access to all of the well data that the West Virginia Geological & Economic Survey (WVGES) has for West Virginia wells. County, permit number, and the type of data can be selected.
Figure B-27. “Pipeline” results can show all of the data that the West Virginia Geological & Economic Survey has for a particular well. In this example, location and production data were selected for well 4703300862.
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Figure B-28. Contact information has been provided for the Appalachian Oil and Natural Gas Research Consortium (AONGRC), the West Virginia Geological & Economic Survey (WVGES) and the Pennsylvania Geological Survey (PGS). The project was funded through AONGRC while WVGES and PGS completed the work including data gathering and application development.