1 of 1

The Atlas of Major Appalachian Basin Gas Plays Data Collection and Compilation

Topical Report

January 1993

Work Performed Under Contract No.: DE-FC21-91MC28176

For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
Morgantown, West Virginia

By
West Virginia University Research Corporation
Morgantown, West Virginia

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**For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
P.O. Box 880
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January 1993

1   THE ATLAS OF MAJOR APPALACHIAN BASIN GAS PLAYS

2   TOPICAL REPORT #2

3   DATA COLLECTION AND COMPILATION

4
5   INTRODUCTION

6
7   The data collection phase of a project is a complex task
8 requiring careful planning. Data elements within the scope of
9 the project must be identified and carefully defined. It must be
10 determined 1) where existing data may be found, 2) how to acquire
11 the information, and 3) how to generate or experimentally derive
12 other essential data. Finally, the presentation, distribution,
13 and end-use of the information collected must be considered.

14   In addition to fulfilling the needs of the project, the
15 information collected also must fit into a broad, nation-wide
16 framework of energy related data. Elements must be defined and
17 collected with minimal regional bias. Each element definition
18 should mesh with existing data bases where possible.

19
20   OBJECTIVES

21
22   Task 2 of the "Atlas of Major Appalachian Basin Gas Plays"
23 is the data collection and compilation phase of the project. The
24 prime objective is to collect information by pool, i.e.,
25 producing reservoir within a field, that will provide 1) basic

1 reservoir data, 2) reservoir parameters, 3) fluid and gas
2 properties, and 4) volumetric data.

3   The statement of work in the contract further directs that
4 "data shall be collected from reports published by, but not
5 limited to, the various state geological surveys, the U.S.
6 Geological Survey, U.S. Department of Energy (DOE), the Federal
7 Energy Regulatory Commission, and from articles in the American
8 Association of Petroleum Geologists Bulletin, Interstate Oil
9 Compact Commission, International Oil Scouts, Independent
10 Petroleum Association of America, Society of Petroleum Engineers,
11 etc. Data also shall be collected from theses and dissertations,
12 from files and data bases in other state and Federal agencies,
13 and from company files and in-house reports."

14   The information collected will be the basis of geologic
15 descriptions of each play in the published atlas and an
16 electronic data base. Because there exists a wide variety of
17 expertise, experience, nomenclature, computing platforms, and
18 software among project participants, consistency must be
19 implemented as soon as possible to ensure compatible electronic
20 transfer of information.

21   All data collected are to be presented to DOE Morgantown
22 Energy Technology Center (METC) to determine sufficiency of
23 coverage. The number of original maps and figures to be
24 generated and the amount of additional data in the form of log
25 and core analyses for reservoir parameters will be determined.

1 It is imperative that all data elements be well understood by all
2 participants to facilitate this process.

3 This report presents an overview of data collection topics.
4 Three families of data that be part of this project: 1) the data
5 base of pool information, 2) drawings, charts, and maps, and 3)
6 text data, including bibliographic information. An initial data
7 definition will be presented with an emphasis on the data base of
8 basic information by pool. Because of the direct bearing on Task
9 2 of the project and the development of a data base as a
10 deliverable product, this report will concentrate mainly on data
11 definition and collection. A basic data collection strategy is
12 included.

13

14 Definitions

15

16 Several terms require definition. A "pool" is a producing
17 reservoir within a geographic area. Thus, a pool is the primary
18 framework for data collection and presentation for the project.
19 "Field" will be used in the geologic sense to mean geologically
20 related production from one or more pools in a particular
21 geographic area. For much of the Appalachian Basin, field and
22 pool may be used synonymously. To eliminate ambiguity, a "field"
23 in the data base sense will be referred to as a "data element".
24 A data element is a single item of information, explicitly
25 defined, and assigned a name (the "data element name" in a data

1 base). The data base will contain a record of specific length
2 for each pool. Each record will consist of data elements such as
3 a unique identifier, average pay depth, etc. For text, one byte
4 is required for each character; a data element representing a
5 name 20 letters long, requires 20 bytes. Numeric data will also
6 be represented as a string of ASCII digits that will contain a
7 decimal point as necessary.

8

9

DATA COLLECTION

10

11

Data Definition

12

13 In any data collection effort, exactly what is to be
14 collected must be decided. Data elements must be targeted,
15 defined, and assessed for "collectability." Collectability is a
16 subjective measure that includes an evaluation of whether an
17 element is germane, available, and can be acquired within the
18 time and budget constraints of the project.

19 From DOE Cooperative Agreement No. DE-FC21-91MC28176,
20 information has been compiled on each of the data elements shown
21 in Tables I and II of Part IV, Attachment A, "Statement of
22 Cooperative Agreement Objectives." This compilation is included
23 as Appendix 1. For each of the items in these tables a data
24 element name ("field name" in Appendix 1), a data element title
25 ("field title" in Appendix 1), a description or definition, a

1 data type, and a size in bytes (for data storage considerations)
2 have been proposed. The data element name is a one- to eight-
3 character string appropriate as a variable name in many computer
4 applications. The data element title is the entry from the data
5 collection forms in the contract.

6   The tables and appendices in this report are arranged
7 alphabetically by data element name. This glossary is intended
8 to provide a quick reference for both implementation and end user
9 access to the information in the data base. Alphabetic
10 arrangement of the data elements in this report does not imply a
11 similar arrangement in the data base.

12   With reference to Appendix 1, "data type" refers to the way
13 data will be stored electronically. Certain data elements lend
14 themselves to representation in a particular format. "Value
15 type" refers to the way data will be reported as tables in the
16 atlas and is shown in Appendix 1 as "REPORTED BY ... AS ..." .
17 The data element identifier ("field id" of Appendix 1) is an
18 arbitrary number; currently, it refers to the order in which data
19 element names were processed. Eventually, a data element
20 identifier will refer to the order in which that data element
21 will appear in the final data base.

22   A proposed data collection form is included as Figure 1
23 (following tables I and II) and reflects the proposed data base
24 definition.

1 Data items in Table II are additional data desired by DOE.
2 Much information from Table II 1) repeats an item requested from
3 Table I, 2) is undefined or ambiguous, 3) is not in the scope of
4 the project, or 4) is not available. These data elements have
5 been given names of "DOE01" through "DOE42". Many DOE items
6 refer to data that are appropriate to individual wells but do not
7 lend themselves to summaries by pool or field.

8 Several issues concerning data definition become immediately
9 evident. Each of the proposed data elements must be clearly
10 defined, evaluated, and a primary data source identified.
11 Secondly, a domain (i.e., family of acceptable values) must be
12 determined. And finally, the data base must be implemented in as
13 portable a fashion as possible with a minimum of software
14 development.

15 First, each candidate data element was defined. A data base
16 of information for each data element was created. This data
17 definition data base is presented in Appendix 1. The data base
18 in Appendix 1 includes 1) data element name ("field name"),
19 order, and definition information, 2) physical representation
20 information ("bits and bytes"), 3) evaluation criteria, and 4)
21 primary source data.

22 Evaluation criteria were derived for each data element.
23 These categories are: acquisition, availability, importance,
24 scope, and regional coverage. A survey was circulated among the
25 research members of the project and the results compiled (see

1 Appendix 1). Each proposed data element was ranked by category
2 on a scale of one (best) to five (worst). To guide the
3 evaluation process, values were assigned to each of the ranks to
4 give it a qualitative meaning. For any data element evaluated as
5 not being in the scope of the project, remaining evaluation
6 criteria are often omitted.

7 The "acquisition" category estimates the ability to acquire
8 a particular data element, i.e., can the project personnel get
9 it? This category includes a consideration of confidentiality
10 issues. Acquisition was assigned the following values:

11

- 12 1) Easily acquired, already in electronic form
- 13 2) Available but must be processed and data entered
- 14 3) Can probably be calculated, estimated, or found
- 15 4) Representative values may be acquired in a few cases
- 16 5) Cannot be obtained within budget or time constraints of
17 the project

18

19 The "availability" category is an estimate of the
20 availability of a particular data element, i.e., do data exist
21 somewhere? If any data element is not available in the best

1 judgement of the participants, resources should not be devoted to
2 acquiring it. Availability was assigned the following values:

3

4 1) Available

5 2) Probably available

6 3) 50/50 chance of availability

7 4) Probably not available or rarely available

8 5) Not available

9

10 The "importance" category estimates the importance of a data
11 element to the project and the final atlas. A rank of one (1) is
12 assigned to a data element that will be important to operators
13 trying to make exploration and development decisions or is
14 essential to reservoir modeling. Importance was assigned the
15 following values:

16

17 1) Very important, essential

18 2) Important to most end users

19 3) Probably important to many applications

20 4) May be important to some applications

21 5) Not important and of limited utility

22

23 The "scope" category establishes whether a data element is
24 germane to the project. This category provided a forum for
25 assessing whether a data element should appear in the final data

1 base in the opinion of participating investigators, given time
2 and funding constraints of the project. This category required a
3 yes or no response. A "maybe" response was provided for
4 "interesting or useful" elements that additional funding may
5 provide the opportunity to address. This information is in the
6 "Within scope of project" column in Appendix 1.

7 The "statistics" category estimates significance of the
8 regional coverage expected as the result of data collection
9 efforts. This is a measure of how well populated a data element
10 will be in the published data tables and the final data base. If
11 "excellent," most pools will have an associated entry. If "bad,"
12 the vast majority of pools will have no entry for the data
13 element. "Statistics" was assigned the following values:

14

- 15 1) Excellent
- 16 2) Good
- 17 3) Fair
- 18 4) Poor
- 19 5) Bad, not significant

20

21 Data Elements Added

22

23 The survey of data elements and discussions among consortium
24 partners revealed several data elements that were missing from
25 Tables I and II. Table III summarizes names of the added data

1 elements. Most importantly, the play name ("PLAY") must be part
2 of the data base. Many Appalachian basin reservoirs are in areas
3 of multiple stacked pays with production from several zones often
4 mixed. This commingling ("COMMINGL") will affect all cumulative
5 production and reserve estimates based on production data.
6 Porosity and permeability are experimentally derived quantities
7 that have ranges of extremes. As in the Texas gas atlas, minimum
8 and maximum values are provided to give insight into variability
9 of reported data. The method used to determine porosity is
10 specified; log-derived porosities are subject to a variety of
11 mechanical assumptions. Finally, status of each pool with
12 respect to production or abandonment will influence exploration
13 and development decisions.

14

15   Data Elements Not Selected For Inclusion

16

17   Several data elements appearing in Tables I or II were not
18 selected for inclusion. Typically, these elements were: 1) not
19 within the scope of the project, 2) generally considered
20 unavailable, 3) not available within the time or budget
21 constraints of the project, 4) duplicates of another element to
22 be included, 5) included in or computed from another element, 6)
23 meaningful only when collected by well, or 7) best presented in
24 map, chart, or tabular form at the discretion of play author.

1 Table IV lists these data elements along with an explanation of
2 why each was excluded.

3

4   **The Appalachian Gas Atlas Data Base**

5

6   Table V is an alphabetic listing of data elements selected
7 to be included in the Appalachian Gas Atlas data base. Data
8 element titles and definitions are included. All of the data
9 elements from Appendix 1 are not in the data base definition.
10 Only those items that are in the scope of the project, cannot be
11 derived ("computed") from other data elements, and meet the
12 collectability standards are listed. Some comments are in order
13 concerning which data elements are in Table V.

14   First, the definition of average initial open flow (AVGIOF)
15 negates the need for an initial open flow before stimulation
16 (IOFBFT) data element. Also, data are not always available for
17 initial and final open flows; they are not always differentiated.

18   Permeability is sometimes measured in both the horizontal
19 and vertical directions. These values are rarely available and
20 most often an undifferentiated average value will be reported
21 along with a maximum and minimum to specify the data range. This
22 is consistent with the Texas gas atlas. If available, average
23 horizontal and vertical permeabilities will be reported.

24   Average thickness of the pay zone can be approached in
25 several ways: a simple thickness, a net pay thickness, gas

1 column thickness, and net porosity-feet of pay. This project's
2 personnel have insufficient time to process logs and completions
3 for thousands of wells. The most efficient option is to collect
4 information on pay thickness. This is the value most often
5 reported on completion reports as the "completion interval" and
6 is already usually available in machine readable form in state
7 survey data bases.

8   Whenever reservoir ("pay") names are included in the data
9 base, a widely accepted coding scheme should be defined. The two
10 options are to invent a code for the Appalachian Basin, or
11 utilize a currently defined stratigraphic coding framework. The
12 American Association of Petroleum Geologists (AAPG) established a
13 stratigraphic coding scheme (Cohee, 1967). This AAPG
14 stratigraphic code has been in use throughout the United States.
15 It also provides a flexible method of obtaining geologic age and
16 system names in addition to formation name. Adopted as the
17 reservoir name portion of the unique pool number (PNUMBER), the
18 need for separate age, system, and formation names is eliminated.
19 Utilization of such a system would facilitate correlation of
20 units across state lines in the study area while maintaining
21 consistency with commonly used local nomenclature. As an
22 example, a copy of the stratigraphic code list for Kentucky is
23 attached as Appendix 2.

24   Finally, trap type, reservoir lithology, and depositional
25 environment are maintained as three separate data elements. An

1 effort should be made to relate Appalachian Basin data to other
2 national data efforts. It is suggested that a classification
3 system be adopted that incorporates all three of these elements.
4 The geologic classification proposed as part of the "Reservoir
5 Heterogeneity Classification System for Characterization and
6 Analysis of Oil Resource Base in Known Reservoirs" (Geoscience
7 Institute, 1990) is one system that is more flexible than the
8 trap type codes adopted by Texas. Such a code also would be
9 compatible with the Tertiary Oil Recovery Information System
10 (TORIS) and proposed Gas Information System (GASIS) utilized by
11 DOE. In the system, each reservoir is assigned a code consisting
12 of a one character lithology designator followed by a three-digit
13 number. The first digit represents depositional system. The
14 second digit represents diagenetic overprint. The final digit
15 represents structural style.

16

17   **The Atlas of Major Texas Gas Reservoirs**

18

19   The "Atlas of Major Texas Gas Reservoirs" (Kosters and
20 others, 1989) is serving as a model for the Appalachian gas
21 atlas. It includes data tables with each play description. Data
22 tables in the Texas atlas contain information on the data
23 elements shown in Table VI. Permeability range from the Texas
24 atlas is included in the Appalachian gas atlas data base as two
25 fields: "MINPERM," and "MAXPERM." Production range in the Texas

1 atlas is a classification variable. In the Appalachian atlas,
2 this information is provided as explicit values of original gas
3 reserves ("OGR"), remaining gas reserves ("RGR"), and recovery
4 factor ("RF").

5

6

STRATEGIES

7

8 Overall strategy for data collection is to get as much
9 information as possible and move on quickly. Too much time spent
10 on esoteric or rarely available data will not result in
11 significant enhancement of the final product. Tactically, this
12 means exhausting the best sources first, and participating
13 surveys are the best source for much of the information. Private
14 industry will be the best source for reservoir information not
15 available at the surveys, especially production data.

16 First, target data elements to be collected. This topical
17 report addresses and defines those data elements (Table V). Any
18 items from the comprehensive data list in Appendix 1, but not in
19 Table V, may be of interest and should be passed to the
20 appropriate play author if found.

21 Second, inventory data available at the surveys. These data
22 are usually available by individual well and will be processed to
23 yield field and pool averages where appropriate. Completions,
24 core and log analyses, field sizes, numbers of wells, etc.,
25 should be gathered. As this information is compiled, a natural

1 result of the effort will be a series of regional pool maps.
2 These maps will provide the basis for basin-wide play maps.
3 Additionally, data for analysis by the Petroleum Engineering
4 Department of West Virginia University (WVU) will be identified.

5   A prototype data base should be implemented during the
6 inventory phase using the guidelines in this report. This
7 prototype should be used 1) as a platform for evaluating and
8 validating the data base design, 2) to meet the DOE/METC
9 requirement that DOE evaluate the information and determine
10 whether there is sufficient data collected, and 3) to work out
11 any implementation or data exchange problems between surveys.
12 Copies of the prototype should be made available to private
13 industry and the public for comment.

14   An adjunct to the inventory of data is the literature
15 search. Survey publications, theses, and dissertations are most
16 important. Information here is gathered usually by pool or
17 region. Maps, charts, cross-sections and reservoir data should
18 be available. A data base of references is being compiled using
19 the PAPYRUS bibliographic software package.

20   Once the inventory and literature search are nearly
21 completed, areas of sparse data will become evident. The biggest
22 pitfall will be the lack of production data and reserve
23 estimates. This will begin the "production attack" phase of the
24 project. Representative pools within a play should be selected.
25 Log and core data for these pools should be submitted for

1 analysis to the Petroleum Engineering Department of WVU.
2 Companies with interest in the basin will be contacted in order
3 to get vital production data. It is essential that one result of
4 the survey data inventory and literature search be a list of
5 target wells and reservoirs for use in framing data requests from
6 private industry. Gas-in-place, cumulative production, and
7 reserves calculations will be performed using data collected.
8 Finally, data collected will be compiled into a basin-wide
9 data base. Each play author will receive appropriate subsets of
10 data as needed. Data validation and regional statistics will be
11 compiled.

12

13

SUMMARY

14

15 An initial definition of the Appalachian Basin gas atlas
16 data base has been presented. This definition will be used to
17 target data elements to be collected and provide a platform for
18 implementation and documentation of the data base to be delivered
19 to DOE. As information from the Surveys and literature are being
20 inventoried, key data elements and wells will be identified for
21 analysis by the Petroleum Engineering Department of WVU and
22 collection of private industry data. Finally, based on data
23 collected by well, pool and reservoir data will be calculated and
24 incorporated into the data base.

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TABLE I

DATA COLLECTION FORM

Basic Reservoir Data:

Field/Pool Name _____ Pool Number _____

Location (States, Counties, Townships, & Range) _____

Discovery Date _____ Depth to Top of Reservoir _____

Age _____ Formation/Group _____

Trap Type _____ Main Lithology _____

Depositional Environment _____

Initial Potential of Discovery/Average Well _____

Drive Mechanism _____

Logging Practice _____

No. Producing Wells _____ No. Abandoned Wells _____

Productive Area _____ Well Spacing _____

Oldest Formation Penetrated _____

Producing Reservoir _____

Market for Production _____

Completion Practice (Open Hole, etc. and Stimulation) _____

Expected Heterogeneity due to:

Deposition _____ Structure _____

Fractures _____ Diagenesis _____

Reservoir Parameters:

Avg. Pay Thickness _____ Avg. Porosity _____

Porosity-ft _____ Gas Column _____

Permeability (Horizontal & Vertical) _____

Reservoir Temperature _____ Initial Reservoir Pressure _____

DATA COLLECTION FORM Reservoir Parameters: (cont.)

Producing Interval Depth _____

Present Reservoir Pressure & Date _____

Continuity of Reservoir _____

Natural Fracture Spacing _____

Fluid and Gas Properties:

Rw and/or Salinity _____

Gas/Oil Ratio _____

Gas Gravity _____

Gas Saturation _____

Water Saturation _____

Oil Gravity _____

Associated or Non-Ass'd Gas _____

Btu _____

Volumetric Data:

Production History from (Year) _____ Through _____

Cumulative Production _____

Original Gas in Place _____

Original Gas Reserves _____

Remaining Gas in Place (Year) _____

Remaining Gas Reserves (Year) _____

Initial Open Flow (Indicate What Flow) _____

Final Open Flow (Indicate What Flow) _____

Recovery Factor _____

Other:

Coalbed Desorption Data _____

Measured Coalbed Gas Content _____

Relative Permeability _____

Table II

ADDITIONAL DATA DESIRED -- GAS ATLASES

Additional data are needed for inclusion in current and future gas atlases in order to evaluate applicability of current and advanced extraction technologies. The following is a list of desired data for the gas atlases. It is understood that some of this data may not be available for every well in every formation.

Geologic Data/Coalbed Methane

- Capillary pressure data
- Topographical information
- Thickness isopachs
- Mine surface subsidence measurements
- Designated minable and non-minable coals
- Post mining measurements (typically performed by Bureau of Mines)

Well Completion Data

- Total number of perforations per well
- Total perforated interval
- Perforation size, phasing and type
- Formation top and bottom from electric log
- Log information comments, types and references
- Cementing, packers, tubular information and other equipment

Production Data

- Well shut-in times and duration
- Well test information
- Gas quality data (i.e. composition)

Gas Processing

- Wellhead gas composition
- Processed gas requirements (composition/heating value)
- Gas processing systems and methods

Table II (cont.)

ADDITIONAL DATA DESIRED -- GAS ATLASES

Gas Processing (cont.)

- Gas processing costs
- Minimum, maximum and nominal pipeline delivery pressure
- Maximum pipeline water content and delivery temperature
- Pipeline heating value specifications
- Allowable concentration of contaminants to pipeline
- Allowable solids concentration to pipeline

Stimulation Data

- Breakdown pressure
- Treatment casing pressure
- Injection rates
- Fluid pad amount
- Proppant quantity per stage
- Proppant type
- Treatment time
- Instantaneous shut-in pressure
- Other stress measurements in adjacent strata

Rock Properties

- Elastic modulus
- Poissons ratio
- Tensile and compressive strength
- Fracture toughness
- Rock pore pressure
- Stratigraphic wellbore column
- Rock cohesion and cohesive strength
- Density
- Earth pressure gradient
- Composition of rocks (i.e., coal/sulfur, ash etc., shale or sands hydrocarbon content/oil etc.)

Gas Atlas Project Data Collection Form

Field/Pool Name: _____ Pool Number: _____ (Age: _____)

Geologic Play: _____

County: _____

Location: _____

	Log Core
Depositional Environment _____	Avg Porosity _____
Trap Type _____	Min Porosity _____
Drive Mechanism _____	Max Porosity _____
Lithology _____	Number of Wells _____
Discovery Date _____	Avg Permeability _____
IOF of Discovery Well _____	Max Permeability _____
Avg IOF _____	Min Permeability _____
Avg FOF _____	Avg Vertical Permeability _____
Oldest Formation Penetrated _____	Avg Horizontal Permeability _____
# Producing Wells _____	
# Abandoned Wells _____	
Type of Gas _____	
Commingled _____	Avg Matrix Density _____
Productive Area _____	Earth Pressure Gradient _____
Well Spacing _____	
Heterogeneity due to:	Producing Interval Depth _____
Structure _____	Avg Pay Thickness _____
Fractures _____	
Diagenesis _____	Field Status _____
Deposition _____	Commingled _____
Continuity of Reservoir _____	
Reservoir Temperature _____	Rw (@25 Deg C, 77 Deg F) _____
Reservoir Pressure _____	Water Saturation _____
Initial Pressure _____	Gas Gravity _____
Present Pressure _____	Sg _____
Date _____	BTU _____
Original Gas-in-place _____	
Original Gas Reserves _____	
Production History	Remaining:
From _____	Gas-in-place _____
To _____	Year _____
Cumulative Production _____	Gas Reserves _____
Recovery Factor _____	Year _____
Log Suite: _____	
Completion Practice: _____	
Comments: _____	

Investigator: _____ Entered _____ (Who/Date) _____

Survey: _____ Checked _____ (Who/Date) _____

Form v2.4 BCN/KGS (196)

Figure 1.

Table III. Data Elements Added

ELEMENT NAME	ELEMENT TITLE
AVGPORC	Average observed porosity from core analysis
AVGPORL	Average observed porosity from log analysis
COMMINGL	Commingled
MAXPERM	Maximum observed permeability
MAXPORC	Maximum observed porosity from core analysis
MAXPORL	Maximum observed porosity from log analysis
MINPERM	Minimum observed permeability
MINPORC	Minimum observed porosity from core analysis
MINPORL	Minimum observed porosity from log analysis
NCORE	Number of wells with core derived porosity data
NLOGS	Number of wells with log derived porosity data
PLAY	Geologic play
PSOURCE	Source of porosity data
STATUS	Field status

Table IV. Data elements excluded from the Gas Atlas Data Base

ELEMENT NAME	ELEMENT DESCRIPTION	REASON EXCLUDED
AGE	Geologic age See "PNUMBER"	5
COALGAS	Measured coalbed gas content	1, 2, 3
DESORPT	Coalbed desorption data	1, 2, 3
DOE01	Capillary pressure data Coalbed methane data	1, 2, 3
DOE02	Topographical information See "LANDGRID" and "PNUMBER"	5
DOE03	Thickness isopachs	7
DOE04	Mine surface subsidence measurements	1, 2, 3
DOE05	Designated minable and non-minable coals	1, 2, 3
DOE06	Post mining measurements	1, 2, 3
DOE07	Total number of perforations per well See "CMPL"	3, 5, 6
DOE08	Total perforated interval See "CMPL" and "AVGTHICK"	3, 5, 6
DOE09	Perforation size, phasing, and type See "CMPL"	3, 5, 6
DOE10	Formation top and bottom from electric log See "PRODEPTH"	3, 4, 6

Reason Codes:

1. Not in scope of project
2. Not available
3. Not within time or budget constraints
4. Duplicate of element included
5. Computed from element included
6. Meaningless by field/pool
7. Representative data included at discretion of play author
as a map, chart, or table

Table IV. Data elements excluded from the Gas Atlas Data Base

ELEMENT NAME	ELEMENT DESCRIPTION	REASON EXCLUDED
DOE11	Log information comments, types, and references See "LOGS"	4
DOE12	Cementing, packers, tubular information & other equipment See "CMPL"	3, 5, 6
DOE13	Well shut-in times and duration	3, 6
DOE14	Well test information See "CMPL", "PPRESS", "TEMP", etc.	5
DOE15	Gas quality data (i.e., composition) A few examples may be found	2, 3
DOE16	Wellhead gas composition Same as "DOE15"	2, 3
DOE17	Processed gas requirements Same as "DOE15", see also "BTU"	1, 2, 3, 4
DOE18	Gas processing systems and methods	1, 2, 3
DOE19	Gas processing costs	1, 2, 3
DOE20	Minimum, maximum, and nominal pipeline delivery pressure	1, 2, 3
DOE21	Maximum pipeline water content and delivery temperature	1, 2, 3
DOE22	Pipeline heating value specifications See also "BTU"	1, 2, 3, 4

Reason Codes:

1. Not in scope of project
2. Not available
3. Not within time or budget constraints
4. Duplicate of element included
5. Computed from element included
6. Meaningless by field/pool
7. Representative data included at discretion of play author
as a map, chart, or table

Table IV. Data elements excluded from the Gas Atlas Data Base

ELEMENT NAME	ELEMENT DESCRIPTION	REASON EXCLUDED
DOE23	Allowable concentration of contaminants to pipeline	1, 2, 3
DOE24	Allowable solids concentration to pipeline	1, 2, 3
DOE25	Breakdown pressure Some values may be reported in "CMPL"	2, 5, 6
DOE26	Treatment casing pressure Some values may be reported in "CMPL"	2, 5, 6
DOE27	Injection rates Some values may be reported in "CMPL"	2, 5, 6
DOE28	Fluid pad amount Some values may be reported in "CMPL"	2, 5, 6
DOE29	Proppant quantity per stage Some values may be reported in "CMPL"	2, 5, 6
DOE30	Proppant type Some values may be reported in "CMPL"	2, 5, 6
DOE31	Treatment time Some values may be reported in "CMPL"	2, 5, 6
DOE32	Instantaneous shut-in pressure See "AVGIOF" and "PPRESS"	2, 4, 5, 6
DOE33	Other stress measurements in adjacent strata	1, 2, 3
DOE34	Elastic modulus	1, 2, 3

Reason Codes:

1. Not in scope of project
2. Not available
3. Not within time or budget constraints
4. Duplicate of element included
5. Computed from element included
6. Meaningless by field/pool
7. Representative data included at discretion of play author
as a map, chart, or table

Table IV. Data elements excluded from the Gas Atlas Data Base

ELEMENT NAME	ELEMENT DESCRIPTION	REASON EXCLUDED
DOE35	Poissons ratio	1, 2, 3
DOE36	Tensile and compressive strength	1, 2, 3
DOE37	Fracture toughness	1, 2, 3
DOE38	Rock pore pressure Average rock pore pressure (psi)	2, 7
DOE39	Stratigraphic wellbore column	6, 7
DOE40	Rock cohesion and cohesive strength	1, 2, 3
DOE42	Composition of rocks See "LITH"	4
FM	Formation name See "PNUMBER"	5
FRACSP	Natural fracture spacing	2, 3
GASCOL	Gas column See "AVGTHICK" (best available)	2, 3, 4
GOR	Gas-oil ratio	2, 3, 7
IOFBFT	Initial open flow See "AVGIOF"	4
MARKET	Market for production	1, 3

Reason Codes:

1. Not in scope of project
2. Not available
3. Not within time or budget constraints
4. Duplicate of element included
5. Computed from element included
6. Meaningless by field/pool
7. Representative data included at discretion of play author as a map, chart, or table

Table IV. Data elements excluded from the Gas Atlas Data Base

ELEMENT NAME	ELEMENT DESCRIPTION	REASON EXCLUDED
OILGRAV	Oil gravity (Representative values will be collected and reported to DOE via TORIS)	1, 2
PAY	Producing reservoir See "PNUMBER" (translated in "FM")	5
RELPERM	Relative Permeability (Since available data is measured with respect to air, all data are relative permeabilities, see included data)	2, 3
STATE	Location/state See "PNUMBER"	5
TOPRES	Depth to top of reservoir See "PRODEPTH"	5

Reason Codes:

1. Not in scope of project
2. Not available
3. Not within time or budget constraints
4. Duplicate of element included
5. Computed from element included
6. Meaningless by field/pool
7. Representative data included at discretion of play author as a map, chart, or table

Table V. Gas Atlas Data Base Definition

ELEMENT NAME	ELEMENT TITLE
AREA	Productive area (ACRES) Total productive area in acres
AVGFOF	Average final open flow (MCF/D) Final open flow after stimulation
AVGIOF	Average initial open flow (MCF/D) Average initial open flow before stimulation
AVGPERM	Average permeability (MD) Usually average total permeability with direction not specified
AVGPORC	Average porosity from core analysis (%) Average observed porosity from core analysis
AVGPORL	Average porosity from log analysis (%) Average observed porosity from log analysis
AVGTHICK	Average net pay thickness (FEET) Average net pay thickness in feet
BTU	BTU Heating value of gas in british thermal units
CMPL	Completion practice Summary description of typical completion practice (open hole, etc., and stimulation method)
COMMINGL	Commingled Y)es if gas in subject reservoir is produced commingled with other reservoirs, else N)o
CONTINUS	Continuity of reservoir Ranking (1 to 5) of continuity, 1=continuous, 5=discontinuous reservoir dominated by heterogeneity
COUNTY	County name County in which pool/field lies (FIPS code, for general reference)
CUMULATV	Cumulative production (BCF) Total cumulative production for specified years (see "PRODFROM" and "PRODTO")

Table V. Gas Atlas Data Base Definition

ELEMENT NAME	ELEMENT TITLE
DENSITY	Average matrix density of reservoir rock (suggested by DOE) determine mostly from nuclear logs
DEPENV	Depositional environment Depositional environment of reservoir in pool/field
DISCOVER	Discovery date (YEAR) Discovery date of field/pool (year)
DRIVE	Drive mechanism Mechanism responsible for moving hydrocarbons through reservoir to wellbore
GASTYPE	Type of gas Gas is A)ssociated, N)on-associated, T)ight, etc.
GEOPRESS	Earth pressure gradient Geopressure determinations: O)verpressured, N)ormal, U)nder pressured
GRAVITY	Gas gravity
HETDEPOS	Heterogeneity/depositional environment Expected heterogeneity due to depositional environment D)ominant, M)inor, L)ocally important, N)ot applicable
HETDIAGN	Heterogeneity/diagenesis Expected heterogeneity due to diagenesis D)ominant, M)inor, L)ocally important, N)ot applicable
HETFRAC	Heterogeneity/fractures Expected heterogeneity due to fractures D)ominant, M)inor, L)ocally important, N)ot applicable
HETSTRUC	Heterogeneity/structure Expected heterogeneity due to structure (faults, folds, etc.) D)ominant, M)inor, L)ocally important, N)ot applicable
HPERM	Average horizontal permeability (MD)
IOFDISC	Initial open flow of discovery well (MCF/D) Initial open flow in thousands of cubic feet of gas per day

Table V. Gas Atlas Data Base Definition

ELEMENT NAME	ELEMENT TITLE
IPRESS	Initial reservoir pressure (PSI) Initial shut-in reservoir pressure, psi
LANDGRID	Location/land grid coordinates Township/range, carter coordinates, lat/long of center of pool/field (for general reference)
LITH	Lithology Primary lithology of reservoir in pool/field
LOGS	Log suite List of logs in typical or usual logging suite
MAXPERM	Maximum permeability (MD)
MAXPORC	Maximum porosity from cores (%) Maximum observed porosity from core analyses
MAXPORL	Maximum porosity from logs (%) Maximum observed porosity from log analyses
MINPERM	Minimum permeability (MD)
MINPORC	Minimum porosity from cores (%) Minimum observed porosity from core analyses
MINPORL	Minimum porosity from logs (%) Minimum observed porosity from log analyses
NCORE	Number of wells with core analyses Number of wells with core derived porosity data
NLOGS	Number of wells with log analyses Number of wells with log derived porosity data
NUMABND	Number of abandoned wells Total number of wells initially completed as producers and subsequently abandoned (does not include dry holes)
NUMWELLS	Number of producing wells Total number of wells known to be producing from given reservoir in pool/field

Table V. Gas Atlas Data Base Definition

ELEMENT NAME	ELEMENT TITLE
OGIP	Original gas-in-place (BCF) Calculated original gas-in-place in thousands of cubic feet (Bcf)
OGR	Original gas reserves (BCF) Could be calculated given "OGIP" and "RF"
OLDESTFM	Oldest formation penetrated Oldest formation penetrated by any well within area of pool/field (AAPG stratigraphic code)
PDATE	Date of present reservoir pressure (YEAR) Year for present reservoir pressure data measurement
PLAY	Geologic play Name of geologic play for reservoir within given pool/field
PNUMBER	Pool number Unique identifier for each pool: 2 digit state, 5 digit state id no. for pool, and 8 character AAPG pay/reservoir code
POOL	Field/pool name Name of pool or field, usually assigned by state survey or regulatory board
PORFT	Porosity-feet Prosity-thickness product used to delineate a reservoir Usually presented as a contour map with a specified cutoff value
PPRESS	Present reservoir pressure (PSI) Present reservoir pressure, psi (see "IPRESS" for comments)
PRODEPTH	Producing interval depth (FEET) Average drilling depth to top of producing interval
PRODFROM	Production history start date (YEAR) Start of production history
PRODTO	Production history to (YEAR) Final year of production history, i.e., last available year for production data

Table V. Gas Atlas Data Base Definition

ELEMENT NAME	ELEMENT TITLE
PSOURCE	Source of porosity data Source of data used in average porosity calculation: C)ore analysis, L)og analysis, or U)ndifferentiated and mixed source
RF	Recovery factor (%) Recovery factor expressed as a percentage
RGIP	Remaining gas-in-place (BCF) Volume of remaining gas-in-place in billions of cubic feet
RGIPYR	Year for remaining gas-in-place estimate (YEAR)
RGR	Remaining gas reserves (BCF) Remaining gas reserves in millions of cubic feet
RGRYR	Year for remaining gas reserves (YEAR) Base year for remaining reserves calculation (see RGR)
RW	Resistivity of formation waters (OHM-M) Resistivity at 25°C (77°F) from SP/R log
SG	Gas saturation (%) Average gas saturation in percent
SPACING	Well spacing (ACRES) Acreage for a single well
STATUS	Field status Whether field is P)roducing, A)bandoned, converted to G)as storage, etc.
SW	Water saturation (%) Average water saturation in percent
TEMP	Reservoir temperature (DEGREES F) Initial reservoir temperature (fahrenheit)
TRAPTYPE	Trap type Type of trapping mechanism in pool/field (i.e., S)tructural, stR)atigraphic, F)racturing, P)inchout, etc.)
VPERM	Average vertical permeability (MD)

Table VI. Data elements from the Texas gas atlas tables. See Kosters and others (1989), Table 2, page 3.

Field Name	Description	Appalachian Equivalent
RRC	Railroad commission district number	(None)
COUNTY	County name	COUNTY
FIELD	Field name	POOL
RESERVOIR	Reservoir name	FM
DISC	Discovery year	DISCOVER
LITH	Lithology	LITH
TRAP	Trap type	TRAPTYPE
DRIVE	Drive mechanism	DRIVE
SPAC	Well spacing (acres)	SPACING
PAY	Net pay (ft)	AVGTHICK
ACRES	Reservoir acreage	AREA
POR	Porosity (percent)	AVGPOR
PERM	Permeability (millidarcys)	AVGPERM
RANGE	Permeability range	+
TEMP	Initial reservoir temperature	TEMP
PRESS	Initial reservoir pressure	IPRESS
G/N	Geopressure status	GEOPRESS
GRAV	Gas gravity	GRAVITY
SW	Water saturation (percent)	SW
TYPE	Type of gas	GASTYPE
R	Production range	*
CUMPROD	Cumulative reservoir production (MMcf)	CUMULATV
OGIP	Original gas-in-place	OGIP

+ Permeability range is represented by two fields, MINPERM and MAXPERM

* Production range is addressed by original reserves (OGR), remaining gas reserves (RGR), and the recovery factor (RF) for fields in the Appalachian gas atlas project study area.

APPENDIX 1

DATA COLLECTION: DEFINITION AND SURVEY RESULTS

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

23-Nov-1991
Page 1

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
9	AGE	GEOLOGIC AGE OF RESERVOIR (COMPUTED FROM AAPG STRATIGRAPHIC CODE FOR FORMATION IN "PNUMBER") VERY IMPORTANT. ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS TEXT REPORTED: AVAILABLE AVAILABILITY: EASILY ACQUIRED. ALREADY IN ELECTRONIC FORM ACQUISITION: EXCELLENT REGIONAL COVERAGE STATISTICS: PUBLIC RECORDS (SURVEYS) SOURCE:	COMPUTED	0	YES
20	AREA	PRODUCTIVE AREA TOTAL PRODUCTIVE AREA IN ACRES DESCRIPTION: VERY IMPORTANT. ESSENTIAL IMPORTANCE: BY POOL/FIELD COLLECTED: BY POOL/FIELD AS VALUE REPORTED: PROBABLY AVAILABLE AVAILABILITY: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED ACQUISITION: EXCELLENT REGIONAL COVERAGE STATISTICS: PUBLIC RECORDS (SURVEYS) SOURCE:	TEXT	7	YES
60	AVGFOF	AVERAGE FINAL OPEN FLOW FINAL OPEN FLOW AFTER STIMULATION DESCRIPTION: VERY IMPORTANT. ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS AVERAGE REPORTED: 50/50 CHANCE OF AVAILABILITY AVAILABILITY: CAN PROBABLY BE CALCULATED. ESTIMATED. OR FOUND ACQUISITION: GOOD REGIONAL COVERAGE STATISTICS: PUBLIC RECORDS (SURVEYS) SOURCE:	TEXT	5	YES
15	AVGIOF	AVERAGE INITIAL OPEN FLOW AVERAGE INITIAL OPEN FLOW BEFORE STIMULATION DESCRIPTION: VERY IMPORTANT. ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS AVERAGE REPORTED: PROBABLY AVAILABLE AVAILABILITY: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED ACQUISITION: EXCELLENT REGIONAL COVERAGE STATISTICS: PUBLIC RECORDS (SURVEYS) SOURCE:	TEXT	6	YES
34	AVGPERM	AVERAGE PERMEABILITY USUALLY AVERAGE TOTAL PERMEABILITY WITH DIRECTION NOT SPECIFIED DESCRIPTION: VERY IMPORTANT. ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS AVERAGE REPORTED: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE AVAILABILITY: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES ACQUISITION: FAIR REGIONAL COVERAGE STATISTICS: INDUSTRY SOURCE:	TEXT	6	YES

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE (BYTES)	FIELD SIZE	WITHIN SCORE OF PROJECT
31	AVGPORC	AVERAGE POROSITY DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	TEXT	5	YES
		AVERAGE OBSERVED POROSITY FROM LOG ANALYSES VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS AVERAGE 50/50 CHANCE OF AVAILABILITY REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES GOOD REGIONAL COVERAGE INDUSTRY			
117	AVGPORL	AVERAGE POROSITY DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	TEXT	5	YES
		AVERAGE OBSERVED POROSITY FROM LOG ANALYSES VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS AVERAGE 50/50 CHANCE OF AVAILABILITY REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES GOOD REGIONAL COVERAGE INDUSTRY			
30	AVGTHICK	AVERAGE PAV THICKNESS DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	TEXT	5	YES
		AVERAGE PAV THICKNESS IN FEET VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS AVERAGE PROBABLY AVAILABLE AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED EXCELLENT REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)			
49	BTU	BTU DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	TEXT	5	YES
		HEATING VALUE OF GAS IN BRITISH THERMAL UNITS IMPORTANT TO MOST END USERS BY WELL BY POOL/FIELD AS AVERAGE 50/50 CHANCE OF AVAILABILITY CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND FAIR REGIONAL COVERAGE INDUSTRY			
125	CMPL	COMPLETION PRACTICE DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	TEXT	60	YES
		SUMMARY DESCRIPTION OF TYPICAL COMPLETION PRACTICE (OPEN HOLE, ETC., AND STIMULATION METHOD) VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS VALUE PROBABLY AVAILABLE CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND GOOD REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)			

ATLAS OF MAJOR APPALACHIAN GAS BASINS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	BYTES	WITHIN SCOPE OF PROJECT
63	COALGAS	MEASURED COALBED GAS CONTENT DESCRIPTION: 1 2 3 4 5 IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4	TEXT	5	NO
110	COMMINGL	COMMINGLED DESCRIPTION: YES IF GAS IN SUBJECT RESERVOIR IS PRODUCED COMMINGLED WITH OTHER RESERVOIRS, ELSE N/O IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: AVAILABLE ACQUISITION: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	ENUMERATED	1	YES
40	CONTINUS	CONTINUITY OF RESERVOIR DESCRIPTION: RANKING (1 TO 5) OF CONTINUITY. 1=CONTINUOUS, 5=DISCONTINUOUS IMPORTANCE: RESERVOIR DOMINATED BY HETEROGENEITY COLLECTED: VERY IMPORTANT, ESSENTIAL REPORTED: BY POOL/FIELD AVAILABILITY: AS VALUE ACQUISITION: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE STATISTICS: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES SOURCE: POOR REGIONAL COVERAGE LITERATURE	ENUMERATED	1	YES
4	COUNTY	COUNTY NAME DESCRIPTION: COUNTY IN WHICH POOL/FIELD LIES (FIPS CODE) IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	3	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATE TYPE	STATUS	TEXT	DATE	STATUS
52	CUMULATIVE PRODUCTION	TOTAL CUMULATIVE PRODUCTION FOR SPECIFIED YEARS (SEE PRODUCTION AND "PRODOT")	TEXT	YES			
105	DENSITY	IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL AS VALUE REPORTED: BY POOL/FIELD AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: FAIR REGIONAL COVERAGE SOURCE: INDUSTRY	TEXT	YES			
13	DEPENV	AVERAGE MATRIX DENSITY OF RESERVOIR ROCK (SUGGESTED BY DOE) DETERMINE MOSTLY FROM NUCLEAR LOGS DESCRIPTION: IMPORTANT TO MOST END USERS COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: GOOD REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	YES			
62	DESORPT	DEPOSITIONAL ENVIRONMENT DESCRIPTION: DEPOSITIONAL ENVIRONMENT OF RESERVOIR IN POOL/FIELD IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: PROBABLY AVAILABLE ACQUISITION: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: LITERATURE	TEXT	YES			
6	DISCOVER	COALBED DESORPTION DATA DESCRIPTION: INFORMATION ON DESORPTION (I.E., PRODUCTION) RATE/EFFICIENCY OF COAL (THIS IS RATE/TIME DATA AND NOT A SINGLE VALUE) IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE SOURCE: 1 2 3 4	TEXT	YES			

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
65	DOE01	CAPILLARY PRESSURE DATA DESCRIPTION: COALBED METHANE DATA IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4	UNDEFINED	5	NC
66	DOE02	TOPOGRAPHICAL INFORMATION DESCRIPTION: IT IS UNCLEAR WHAT THIS MEANS. IS THIS THE NAME OF THE TOPO ON WHICH THE POOL IS LOCATED? IMPORTANCE: 1 2 3 4 5 COLLECTED: BY POOL/FIELD AS (NOT DETERMINED) REPORTED: BY POOL/FIELD AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4	UNDEFINED	0	NO
67	DOE03	THICKNESS ISOPACHS DESCRIPTION: ISOPACH MAPS WILL BE INCLUDED AT THE DISCRETION OF THE PLAY AUTHOR (IN ATLAS, BUT NOT IN DATA BASE) IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY GEOLOGIC PLAY AS MAP/CHART AVAILABILITY: PROBABLY AVAILABLE ACQUISITION: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED STATISTICS: DOES NOT APPLY REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED	0	VES
68	DOE04	MINE SURFACE SUBSIDENCE MEASUREMENTS DESCRIPTION: IS THIS A MAP? SHOWING DISCRETE VALUES? OR PROBABILITY? IMPORTANCE: 1 2 3 4 5 COLLECTED: 1 2 3 4 REPORTED: 1 2 3 4 AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4	UNDEFINED	0	NO
69	DOE05	DESIGNATED MINABLE AND NON-MINABLE COALS DESCRIPTION: DOES DOE WANT PROJECT TO DETERMINE MINABILITY OF COALS? IMPORTANCE: 1 2 3 4 5 COLLECTED: 1 2 3 4 REPORTED: 1 2 3 4 AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4	UNDEFINED	0	NO

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
70	DOE06	POST MINING MEASUREMENTS DESCRIPTION: IF "TYPICALLY PERFORMED BY BUREAU OF MINES", DOES DOE REALLY WANT THIS IN OUR ATLAS?	UNDEFINED	0	NO
		IMPORTANCE: 1 2 3 4 5 COLLECTED: 1 2 3 4 REPORTED: 1 2 3 4 5 AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4			
71	DOE07	TOTAL NUMBER OF PERFORMATIONS PER WELL DESCRIPTION: REDUNDANT, SHOULD BE COVERED BY "CMPL". THIS HAS MEANING ONLY IN A DATA BASE BY WELL, NOT BY POOL OR FIELD.	UNDEFINED	0	YES
		IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY WELL AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4			
72	DOE08	TOTAL PERFORATED INTERVAL DESCRIPTION: SEE "CMPL" AND "AVGTHICK". HAS MEANING BY WELL AND NOT ON A POOL/FIELD BASIS.	UNDEFINED	0	YES NO MAYBE
		IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY WELL AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4			
73	DOE09	PERFORATION SIZE. PHASING, AND TYPE DESCRIPTION: SEE "CMPL". BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS	UNDEFINED	0	NO
		IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY WELL AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 SOURCE: 1 2 3 4			

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD
NAME
ID

FIELD
TYPE
(BYTES)

FIELD
TITLE

FORMATION TOP AND BOTTOM FROM ELECTRIC LOG
DESCRIPTION: SEE "PRODEPTH". I DON'T THINK DOE WANTS A TOPS DATA BASE IN THE

74 DOE10

UNDEFINED
0

NO

IMPORTANCE: 1 2 3 4 5
COLLECTED: BY WELL
REPORTED: BY WELL AS (NOT DETERMINED)
AVAILABILITY: 1 2 3 4 5
ACQUISITION: 1 2 3 4 5
STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE
SOURCE: 1 2 3 4

UNDEFINED
0

NO

LOG INFORMATION COMMENTS, TYPES, AND REFERENCES
DESCRIPTION: SEE "LOGS"
IMPORTANCE: 1 2 3 4 5
COLLECTED: BY WELL
REPORTED: BY WELL AS (NOT DETERMINED)
AVAILABILITY: 1 2 3 4 5
ACQUISITION: 1 2 3 4 5
STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE
SOURCE: 1 2 3 4

UNDEFINED
0

NO

CEMENTING, PACKERS, TUBULAR INFORMATION & OTHER EQUIPMENT
DESCRIPTION: SEE "CNPL". BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS
IMPORTANCE: 1 2 3 4 5
COLLECTED: BY WELL
REPORTED: BY WELL AS (NOT DETERMINED)
AVAILABILITY: 1 2 3 4 5
ACQUISITION: 1 2 3 4 5
STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE
SOURCE: 1 2 3 4

UNDEFINED
0

NO

WELL SHUT-IN TIMES AND DURATION
DESCRIPTION: BETTER REPORTED AND UNDERSTOOD BY WELL AND NOT BY RESERVOIR OR
IMPORTANCE: 1 2 3 4 5
COLLECTED: BY WELL
REPORTED: BY WELL AS (NOT DETERMINED)
AVAILABILITY: 1 2 3 4 5
ACQUISITION: 1 2 3 4 5
STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE
SOURCE: 1 2 3 4

UNDEFINED
0

NO

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
83	DOE19	GAS PROCESSING COSTS	UNDEFINED	0	NO
		DESCRIPTION:			
		IMPORTANCE:		1 2 3 4 5	
		COLLECTED:		1 2 3 4	
		REPORTED:		1 2 3 4	AS (NOT DETERMINED)
		AVAILABILITY:		1 2 3 4 5	
		ACQUISITION:		1 2 3 4 5	
		STATISTICS:		1 2 3 4 5	6 REGIONAL COVERAGE
		SOURCE:		1 2 3 4	
84	DOE20	MINIMUM, MAXIMUM, AND NOMINAL PIPELINE DELIVERY PRESSURE	UNDEFINED	0	NO
		DESCRIPTION:			
		IMPORTANCE:		1 2 3 4 5	
		COLLECTED:		1 2 3 4	
		REPORTED:		1 2 3 4	AS (NOT DETERMINED)
		AVAILABILITY:		1 2 3 4 5	
		ACQUISITION:		1 2 3 4 5	
		STATISTICS:		1 2 3 4 5	6 REGIONAL COVERAGE
		SOURCE:		1 2 3 4	
85	DOE21	MAXIMUM PIPELINE WATER CONTENT AND DELIVERY TEMPERATURE	UNDEFINED	0	NO
		DESCRIPTION:			
		IMPORTANCE:		1 2 3 4 5	
		COLLECTED:		1 2 3 4	
		REPORTED:		1 2 3 4	AS (NOT DETERMINED)
		AVAILABILITY:		1 2 3 4 5	
		ACQUISITION:		1 2 3 4 5	
		STATISTICS:		1 2 3 4 5	6 REGIONAL COVERAGE
		SOURCE:		1 2 3 4	
86	DOE22	PIPELINE HEATING VALUE SPECIFICATIONS	UNDEFINED	0	NO
		DESCRIPTION:			IS THIS DIFFERENT FROM "DOE17"? SEE ALSO "BTU".
		IMPORTANCE:		1 2 3 4 5	
		COLLECTED:		1 2 3 4	
		REPORTED:		1 2 3 4	AS (NOT DETERMINED)
		AVAILABILITY:		1 2 3 4 5	
		ACQUISITION:		1 2 3 4 5	
		STATISTICS:		1 2 3 4 5	6 REGIONAL COVERAGE
		SOURCE:		1 2 3 4	
87	DOE23	ALLOWABLE CONCENTRATION OF CONTAMINANTS TO PIPELINE	UNDEFINED	0	NO
		DESCRIPTION:			
		IMPORTANCE:		1 2 3 4 5	
		COLLECTED:		1 2 3 4	
		REPORTED:		1 2 3 4	AS (NOT DETERMINED)
		AVAILABILITY:		1 2 3 4 5	
		ACQUISITION:		1 2 3 4 5	
		STATISTICS:		1 2 3 4 5	6 REGIONAL COVERAGE
		SOURCE:		1 2 3 4	

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
88	DOE24	ALLOWABLE SOLIDS CONCENTRATION TO PIPELINE DESCRIPTION: IMPORTANCE: 1 2 3 4 5 COLLECTED: 1 2 3 4 REPORTED: 1 2 3 4 5 AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE SOURCE: 1 2 3 4	UNDEFINED	0	NO
89	DOE25	BREAKDOWN PRESSURE DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: BY WELL AS VALUE AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED	0	YES
90	DOE26	TREATMENT CASING PRESSURE DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: BY WELL AS VALUE AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED	0	YES
91	DOE27	INJECTION RATES DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: BY WELL AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: INDUSTRY	UNDEFINED	0	YES
92	DOE28	FLUID PAD AMOUNT DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: BY WELL AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED	0	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE (BYTES)	FIELD SIZE (BYTES)	WIT-IN SCOPE OF PROJECT
93	DOE29	PROPANT QUANTITY PER STAGE DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED C	C	YES
94	DOE30	PROPANT TYPE DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED 0	0	YES
95	DOE31	TREATMENT TIME DESCRIPTION: SEE "CMPL", BETTER REPORTED BY WELL AND NOT ON POOL/FIELD BASIS IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS COLLECTED: BY WELL REPORTED: AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: LITERATURE	UNDEFINED 0	0	YES
96	DOE32	INSTANTANEOUS SHUT-IN PRESSURE DESCRIPTION: SEE "AVGIOF" AND "PPRESS" FOR ALTERNATIVES. BETTER REPORTED BY WELL AND NOT BY POOL/FIELD. IMPORTANCE: PROBABLY IMPORTANT TO MANY APPLICATIONS COLLECTED: BY WELL REPORTED: AS (NOT DETERMINED) AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	UNDEFINED 0	0	YES
97	DOE33	OTHER STRESS MEASUREMENTS IN ADJACENT STRATA DESCRIPTION: 1 2 3 4 5 IMPORTANCE: BY WELL COLLECTED: BY WELL REPORTED: AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE SOURCE: 1 2 3 4	UNDEFINED 0	0	NO

ATLAS OF MAJOR APPALACHIAN GAS CITIES
DATA COLLECTION: DEFINITION AND SCOPE

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
98	DOE34	ELASTIC MODULUS	UNDEFINED	C	NO
		DESCRIPTION: 1 2 3 4 5			
		IMPORTANCE: BY WELL			
		COLLECTED: BY WELL			
		REPORTED: AS (NOT DETERMINED)			
		AVAILABILITY: 1 2 3 4 5			
		ACQUISITION: 1 2 3 4 5			
		STATISTICS: 1 2 3 4 5			
		SOURCE: 1 2 3 4			
99	DOE35	POISSONS RATIO	UNDEFINED	C	NO
		DESCRIPTION: 1 2 3 4 5			
		IMPORTANCE: BY WELL			
		COLLECTED: BY WELL			
		REPORTED: AS (NOT DETERMINED)			
		AVAILABILITY: 1 2 3 4 5			
		ACQUISITION: 1 2 3 4 5			
		STATISTICS: 1 2 3 4 5			
		SOURCE: 1 2 3 4			
100	DOE36	TENSILE AND COMPRESSIVE STRENGTH	UNDEFINED	C	NO
		DESCRIPTION: 1 2 3 4 5			
		IMPORTANCE: BY WELL			
		COLLECTED: BY WELL			
		REPORTED: AS (NOT DETERMINED)			
		AVAILABILITY: 1 2 3 4 5			
		ACQUISITION: 1 2 3 4 5			
		STATISTICS: 1 2 3 4 5			
		SOURCE: 1 2 3 4			
101	DOE37	FRACTURE TOUGHNESS	UNDEFINED	C	NO
		DESCRIPTION: 1 2 3 4 5			
		IMPORTANCE: BY WELL			
		COLLECTED: BY WELL			
		REPORTED: AS (NOT DETERMINED)			
		AVAILABILITY: 1 2 3 4 5			
		ACQUISITION: 1 2 3 4 5			
		STATISTICS: 1 2 3 4 5			
		SOURCE: 1 2 3 4			
102	DOE38	ROCK PORE PRESSURE	TEXT	5	YES
		DESCRIPTION: AVERAGE ROCK PORE PRESSURE (PSI)			
		IMPORTANCE: MAY BE IMPORTANT TO SOME APPLICATIONS			
		COLLECTED: BY WELL			
		REPORTED: BY POOL/FIELD AS AVERAGE			
		AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE			
		ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES			
		STATISTICS: BAD, NOT SIGNIFICANT REGIONAL COVERAGE			
		SOURCE: INDUSTRY			

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD
ID
NAME

FIELD
TITLE

FIELD
ID
NAME

DATA TYPE

BYTES

WITHIN SCOPE
OF PROJECT

103 DOE39

STRATIGRAPHIC WELLBORE COLUMN

DESCRIPTION: PLAY AUTHORS WILL COMPILE REPRESENTATIVE GEOLOGIC COLUMNS AS
NEEDED (CHART WITHIN TEXT OF ATLAS)

IMPORTANCE: VERY IMPORTANT, ESSENTIAL

COLLECTED: BY WELL

REPORTED: BY GEOLOGIC PLAY AS MAP/CHART

AVAILABILITY: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED

ACQUISITION: EXCELLENT REGIONAL COVERAGE

STATISTICS: PUBLIC RECORDS (SURVEYS)

SOURCE:

ROCK COHESION AND COHESIVE STRENGTH

DESCRIPTION: 1 2 3 4 5

IMPORTANCE: BY WELL

COLLECTED: BY WELL AS (NOT DETERMINED)

REPORTED: 1 2 3 4 5

AVAILABILITY: 1 2 3 4 5

ACQUISITION: 1 2 3 4 5

STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE

SOURCE: 1 2 3 4

UNDEFINED 0 NO

107 DOE42

COMPOSITION OF ROCKS

DESCRIPTION: SEE "LITH"

IMPORTANCE: 1 2 3 4 5

COLLECTED: BY WELL

REPORTED: BY POOL/FIELD AS (NOT DETERMINED)

AVAILABILITY: 1 2 3 4 5

ACQUISITION: 1 2 3 4 5

STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE

SOURCE: 1 2 3 4

UNDEFINED 0 YES

16 DRIVE

DRIVE MECHANISM

DESCRIPTION:

IMPORTANCE: MECHANISM RESPONSIBLE FOR MOVING HYDROCARBONS THROUGH RESERVOIR

COLLECTED: TO WELLBORE

REPORTED: IMPORTANT TO MOST END USERS

AVAILABILITY: BY POOL/FIELD

ACQUISITION: AS TEXT

STATISTICS: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE

SOURCE: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES

POOR REGIONAL COVERAGE

LITERATURE

TEXT 10 YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
10	FM	FORMATION NAME OF RESERVOIR (COMPUTED FROM RESERVOIR NAME IN "PNUMBER" USING AAPG STRATIGRAPHIC CODE)	COMPUTED	0	YES
		IMPORTANCE: VERY IMPORTANT, ESSENTIAL			
		COLLECTED: BY POOL/FIELD			
		REPORTED: BY POOL/FIELD AS TEXT			
		AVAILABILITY: AVAILABLE			
		ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM			
		STATISTICS: EXCELLENT REGIONAL COVERAGE			
		SOURCE: PUBLIC RECORDS (SURVEYS)			
41	FRACSP	NATURAL FRACTURE SPACING	TEXT	5	NO
		DESCRIPTION: SPACING IN FEET BETWEEN FRACTURES IN A FRACTURE SET			
		IMPORTANCE: 1 2 3 4 5			
		COLLECTED: BY POOL/FIELD			
		REPORTED: BY POOL/FIELD AS VALUE			
		AVAILABILITY: 1 2 3 4 5			
		ACQUISITION: 1 2 3 4 5			
		STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE			
		SOURCE: 1 2 3 4			
33	GASCOL	GAS COLUMN	TEXT	5	YES
		DESCRIPTION: HEIGHT IN FEET OF PRODUCTIVE GAS COLUMN WITHIN THE RESERVOIR (DEPENDENT ON DEFINITION OF "AVGTH:CP", COULD BE SAME)			
		IMPORTANCE: VERY IMPORTANT, ESSENTIAL			
		COLLECTED: BY WELL			
		REPORTED: BY POOL/FIELD AS AVERAGE			
		AVAILABILITY: 50/50 CHANCE OF AVAILABILITY			
		ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND			
		STATISTICS: FAIR REGIONAL COVERAGE			
		SOURCE: INDUSTRY			
48	GASTYPE	TYPE OF GAS	ENUMERATED	1	YES
		DESCRIPTION: GAS IS ASSOCIATED, NON-ASSOCIATED, TIGHT, ETC.			
		IMPORTANCE: IMPORTANT TO MOST END USERS			
		COLLECTED: BY POOL/FIELD			
		REPORTED: BY POOL/FIELD AS VALUE			
		AVAILABILITY: PROBABLY AVAILABLE			
		ACQUISITION: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED			
		STATISTICS: FAIR REGIONAL COVERAGE			
		SOURCE: PUBLIC RECORDS (SURVEYS)			

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
106	GEOPRESS	EARTH PRESSURE GRADIENT DESCRIPTION: GEOPRESSURE DETERMINATIONS: O)VERPRESSURED, N)ORMAL, U)NDER PRESSURED (EQUALS "G/N" OF TEXAS ATLAS) MAY BE IMPORTANT TO SOME APPLICATIONS IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE: BY POOL/FIELD AS TEXT PROBABLY NOT AVAILABLE OR RARELY AVAILABLE REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES POOR REGIONAL COVERAGE LITERATURE	ENUMERATED	1	YES
43	GOR	AVERAGE GAS/OIL RATIO (CF PER BBL) IMPORTANT TO MOST END USERS BY WELL BY POOL/FIELD AS AVERAGE PROBABLY NOT AVAILABLE OR RARELY AVAILABLE REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES POOR REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)	TEXT	5	YES
44	GRAVITY	GAS GRAVITY DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE: BY WELL AS AVERAGE PROBABLY NOT AVAILABLE OR RARELY AVAILABLE REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES POOR REGIONAL COVERAGE INDUSTRY	TEXT	5	YES
26	HETDEPOS	HETEROGENEITY/DEPOSITIONAL ENVIRONMENT DESCRIPTION: EXPECTED HETEROGENEITY DUE TO DEPOSITIONAL ENVIRONMENT D)OMINANT, M)INOR, L)OCALLY IMPORTANT, N)OT APPLICABLE VERY IMPORTANT, ESSENTIAL IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE: BY POOL/FIELD AS TEXT 50/50 CHANCE OF AVAILABILITY CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND GOOD REGIONAL COVERAGE LITERATURE	ENUMERATED	1	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

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FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCORE OF PROJECT
29	HETDIAGN	HETEROGENEITY/DIAGENESIS DESCRIPTION: EXPECTED HETEROGENEITY DUE TO DIAGENESIS DOMINANT, MINOR, LOCALLY IMPORTANT, NOT APPLICABLE IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: GOOD REGIONAL COVERAGE SOURCE: LITERATURE	ENUMERATED	1	YES
28	HETFRAC	HETEROGENEITY/FRACTURES DESCRIPTION: EXPECTED HETEROGENEITY DUE TO FRACTURES DOMINANT, MINOR, LOCALLY IMPORTANT, NOT APPLICABLE IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: GOOD REGIONAL COVERAGE SOURCE: LITERATURE	ENUMERATED	1	YES
27	HETSTRUC	HETEROGENEITY/STRUCTURE DESCRIPTION: EXPECTED HETEROGENEITY DUE TO STRUCTURE (FAULTS, FOLDS, ETC.) DOMINANT, MINOR, LOCALLY IMPORTANT, NOT APPLICABLE IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: GOOD REGIONAL COVERAGE SOURCE: LITERATURE	ENUMERATED	1	YES
115	HPERM	HORIZONTAL PERMEABILITY DESCRIPTION: AVERAGE HORIZONTAL PERMEABILITY IMPORTANCE: IMPORTANT TO MOST END USERS COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: POOR REGIONAL COVERAGE SOURCE: INDUSTRY	TEXT	6	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

23-NOV-1981
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FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
59	IOFBFT	INITIAL OPEN FLOW DESCRIPTION: REDUNDANT, SAME AS "AVGIOF" IMPORTANCE: 1 2 3 4 5 COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS (NOT DETERMINED) AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE SOURCE: 1 2 3 4	UNDEFINED	5	YES
14	IOFDISC	INITIAL OPEN FLOW OF DISCOVERY WELL DESCRIPTION: INITIAL OPEN FLOW IN THOUSANDS OF CUBIC FEET OF GAS PER DAY IMPORTANCE: IMPORTANT TO MOST END USERS COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: FAIR REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	6	YES
36	IPRESS	INITIAL RESERVOIR PRESSURE DESCRIPTION: INITIAL SHUT-IN RESERVOIR PRESSURE, PSI IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: FAIR REGIONAL COVERAGE SOURCE: INDUSTRY	TEXT	5	YES
5	LANDGRID	LOCATION/LAND GRID COORDINATES DESCRIPTION: TOWNSHIP/RANGE, CARTER COORDINATES, LAT/LONG OF CENTER OF POOL/FIELD (FOR GENERAL LOCATION AND PLOTTING) IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	20	YES
12	LITH	LITHOLOGY DESCRIPTION: PRIMARY LITHOLOGY OF RESERVOIR IN POOL/FIELD IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	ENUMERATED	1	YES

FIELD ID	FIELD NAME	FIELD TITLE	LOG SUITE	DATA TYPE	FIELD VALUE (BYTES)	WITHIN SCOPE OF PROJECT
17	LOGS	LIST OF LOGS IN TYPICAL OR USUAL LOGGING SUITE	LOG SUITE DESCRIPTION: IMPORTANT TO MOST END USERS IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS TEXT REPORTED: PROBABLY AVAILABLE AVAILABILITY: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED ACQUISITION: GOOD REGIONAL COVERAGE STATISTICS: PUBLIC RECORDS (SURVEYS) SOURCE:	TEXT	20	YES
24	MARKET	HOW IS GAS PRODUCED BEING COMMERCIALY USED	MARKET FOR PRODUCTION DESCRIPTION: 1 2 3 4 5 IMPORTANCE: BY POOL/FIELD COLLECTED: BY POOL/FIELD AS (NOT DETERMINED) REPORTED: 1 2 3 4 5 AVAILABILITY: 1 2 3 4 5 ACQUISITION: 1 2 3 4 5 STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE SOURCE: 1 2 3 4	UNDEFINED	0	NO
111	MAXPERM	REPORTED MAXIMUM PERMEABILITY (SEE AVERAGE, "AVGPERM", AND MINIMUM, "MINPERM")	MAXIMUM PERMEABILITY DESCRIPTION: VERY IMPORTANT, ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS MAXIMUM REPORTED: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE AVAILABILITY: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES ACQUISITION: FAIR REGIONAL COVERAGE STATISTICS: INDUSTRY SOURCE:	TEXT	6	YES
113	MAXPORC	MAXIMUM OBSERVED POROSITY FROM CORE ANALYSES	MAXIMUM POROSITY DESCRIPTION: VERY IMPORTANT, ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS MAXIMUM REPORTED: 50/50 CHANCE OF AVAILABILITY AVAILABILITY: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES ACQUISITION: GOOD REGIONAL COVERAGE STATISTICS: INDUSTRY SOURCE:	TEXT	5	YES
118	MAXPORL	MAXIMUM OBSERVED POROSITY FROM LOG ANALYSES	MAXIMUM POROSITY DESCRIPTION: VERY IMPORTANT, ESSENTIAL IMPORTANCE: BY WELL COLLECTED: BY POOL/FIELD AS MAXIMUM REPORTED: 50/50 CHANCE OF AVAILABILITY AVAILABILITY: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES ACQUISITION: GOOD REGIONAL COVERAGE STATISTICS: INDUSTRY SOURCE:	TEXT	5	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	MINIMUM PERMEABILITY DESCRIPTION:	MINIMUM PERMEABILITY (SEE AVERAGE PERMEABILITY, "AVGPERM", AND MAXIMUM PERMEABILITY, "MAXPERM")	DATA TYPE (BYTES)	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
112	MINPERM		IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS MINIMUM PROBABLY NOT AVAILABLE OR RARELY AVAILABLE REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES FAIR REGIONAL COVERAGE INDUSTRY	TEXT	5	YES
114	MINPORC		IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS MINIMUM 50/50 CHANCE OF AVAILABILITY REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES GOOD REGIONAL COVERAGE INDUSTRY	TEXT	5	YES
119	MINPORL		IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS MINIMUM 50/50 CHANCE OF AVAILABILITY REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES GOOD REGIONAL COVERAGE INDUSTRY	TEXT	5	YES
120	NCORE		IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS VALUE 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4	TEXT	5	YES
121	NLOGS		IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS VALUE 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4	TEXT	5	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD
SIZE
(BYTES)

DATA TYPE

TEXT

NUMBER OF ABANDONED WELLS
DESCRIPTION:

IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

NUMBER OF PRODUCING WELLS
DESCRIPTION:

IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

ORIGINAL GAS-IN-PLACE
DESCRIPTION:

IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

ORIGINAL GAS RESERVES
DESCRIPTION:

IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

18 NUMWELLS

5

TEXT

5

YES

TEXT

5

YES

TEXT

7

YES

53 OGIP

7

TEXT

7

YES

TEXT

7

YES

TEXT

7

YES

54 OGR

7

TEXT

7

YES

TEXT

7

YES

TEXT

7

YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD SIZE (BYTES) 5
WITHIN SCOPE OF PROJECT NO

FIELD ID FIELD NAME

47 OILGRAV: SPECIFIC GRAVITY OF OIL IN API UNITS

DESCRIPTION: 1 2 3 4 5
IMPORTANCE: BY WELL
COLLECTED: BY POOL/FIELD AS AVERAGE
REPORTED: 1 2 3 4 5
AVAILABILITY: 1 2 3 4 5
ACQUISITION: 1 2 3 4 5
STATISTICS: 1 2 3 4 5 6 REGIONAL COVERAGE
SOURCE: 1 2 3 4

22 OLDESTFM: OLDEST FORMATION PENETRATED BY ANY WELL WITHIN AREA OF
DESCRIPTION: POOL/FIELD (AAPG STRATIGRAPHIC CODE)

IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: AVAILABLE
ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM
STATISTICS: EXCELLENT REGIONAL COVERAGE
SOURCE: PUBLIC RECORDS (SURVEYS)

23 PAV: PRODUCING RESERVOIR
DESCRIPTION: PRODUCING RESERVOIR CODE COMPUTED FROM "PNUMBER" USING AAPG
STRATIGRAPHIC CODES (SEE ALSO TRANSLATION IN "FM")

IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: AVAILABLE
ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM
STATISTICS: EXCELLENT REGIONAL COVERAGE
SOURCE: PUBLIC RECORDS (SURVEYS)

39 PDATE: DATE OF PRESENT RESERVOIR PRESSURE
DESCRIPTION: YEAR FOR PRESENT RESERVOIR PRESSURE DATA MEASUREMENT

IMPORTANCE: IMPORTANT TO MOST END USERS
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: 50/50 CHANCE OF AVAILABILITY
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: FAIR REGIONAL COVERAGE
SOURCE: INDUSTRY

0 YES

2 YES

8 YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	NAME OF GEOLOGIC PLAY FOR RESERVOIR WITHIN GIVEN POOL/FIELD (SHOULD THIS BE TEXT OR NUMERIC?)	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
8	PLAY		GEOLOGIC PLAY DESCRIPTION: IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS TEXT AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	30	YES
2	PNUMBER		POOL NUMBER DESCRIPTION: IMPORTANCE: UNIQUE IDENTIFIER FOR EACH POOL: 2 DIGIT STATE, 5 DIGIT STATE ID NO FOR POOL, AND 8 CHARACTER AAPG PAY/RESERVOIR CODE COLLECTED: VERY IMPORTANT, ESSENTIAL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	13	YES
1	POOL		FIELD/POOL NAME DESCRIPTION: IMPORTANCE: NAME OF POOL OR FIELD, USUALLY ASSIGNED BY STATE SURVEY OR REGULATORY BOARD. COLLECTED: VERY IMPORTANT, ESSENTIAL REPORTED: BY POOL/FIELD AVAILABILITY: BY POOL/FIELD AS TEXT ACQUISITION: AVAILABLE STATISTICS: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM SOURCE: EXCELLENT REGIONAL COVERAGE	TEXT	20	YES
32	PORFT		POROSITY-FT DESCRIPTION: IMPORTANCE: POROSITY-THICKNESS PRODUCT USED TO DELINEATE RESERVOIR. USUALLY PRESENTED AS A CONTOUR MAP WITH A SPECIFIED CUTOFF VAULE. COLLECTED: IMPORTANT TO MOST END USERS REPORTED: BY WELL AVAILABILITY: BY POOL/FIELD AS AVERAGE ACQUISITION: 50/50 CHANCE OF AVAILABILITY STATISTICS: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES SOURCE: FAIR REGIONAL COVERAGE	TEXT	5	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
38	PPRESS	PRESENT RESERVOIR PRESSURE DESCRIPTION: PRESENT RESERVOIR PRESSURE. PSI (SEE "IPRESS" FOR COMMENTS) IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL AS AVERAGE REPORTED: BY POOL/FIELD AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: FAIR REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	5	YES
37	PRODEPTH	PRODUCING INTERVAL DEPTH DESCRIPTION: AVERAGE DRILLING DEPTH TO TOP OF PRODUCING INTERVAL IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: PUBLIC RECORDS (SURVEYS)	TEXT	5	YES
50	PRODFROM	PRODUCTION HISTORY START DATE DESCRIPTION: START OF PRODUCTION HISTORY (YEAR) IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: FAIR REGIONAL COVERAGE SOURCE: INDUSTRY	DATE	2	YES
51	PRODTQ	PRODUCTION HISTORY TO DESCRIPTION: FINAL YEAR OF PRODUCTION HISTORY, I.E., LAST AVAILABLE YEAR FOR PRODUCTION DATA IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND STATISTICS: FAIR REGIONAL COVERAGE SOURCE: INDUSTRY	DATE	2	YES
108	PSOURCE	SOURCE OF POROSITY DATA DESCRIPTION: SOURCE OF DATA USED IN AVERAGE POROSITY CALCULATION: C)ORE ANALYSIS, LOG ANALYSIS, OR U)NDIFFERENTIATED AND MIXED SOURCE IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS VALUE AVAILABILITY: 50/50 CHANCE OF AVAILABILITY ACQUISITION: AVAILABLE BUT MUST BE PROCESSED AND DATA ENTERED STATISTICS: FAIR REGIONAL COVERAGE SOURCE: INDUSTRY	ENUMERATED	1	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD
NAME
ID

FIELD
TITLE

FIELD
NAME
ID

DATA TYPE

64 RELPERM

RELATIVE PERMEABILITY (WITH RESPECT TO NATURAL GAS)
DESCRIPTION: RATIO OF EFFECTIVE PERMEABILITY OF A FLUID AT A GIVEN SATURATION TO EFFECTIVE PERMEABILITY OF THAT FLUID AT 100% SATURATION
IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: POOR REGIONAL COVERAGE
SOURCE: INDUSTRY

YES

6

61 RF

TEXT

YES

5

RECOVERY FACTOR
DESCRIPTION: RECOVERY FACTOR EXPRESSED AS A PERCENTAGE
IMPORTANCE: PROBABLY IMPORTANT TO MANY APPLICATIONS
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS AVERAGE
AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: POOR REGIONAL COVERAGE
SOURCE: INDUSTRY

55 RGIP

TEXT
CUBIC FEET

YES

7

REMAINING GAS-IN-PLACE
DESCRIPTION: VOLUME OF REMAINING GAS-IN-PLACE IN MILLIONS OF CUBIC FEET
IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY WELL
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: POOR REGIONAL COVERAGE
SOURCE: INDUSTRY

56 RGIPYR

DATE

YES

2

YEAR FOR REMAINING GAS-IN-PLACE ESTIMATE
DESCRIPTION: VERY IMPORTANT, ESSENTIAL
IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY POOL/FIELD
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: POOR REGIONAL COVERAGE
SOURCE: INDUSTRY

57 RGR

TEXT

YES

7

REMAINING GAS RESERVES
DESCRIPTION: REMAINING GAS RESERVES IN MILLIONS OF CUBIC FEET
IMPORTANCE: VERY IMPORTANT, ESSENTIAL
COLLECTED: BY POOL/FIELD
REPORTED: BY POOL/FIELD AS VALUE
AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
STATISTICS: POOR REGIONAL COVERAGE
SOURCE: INDUSTRY

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

03-01-1993
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FIELD
ID
NAME

58 RGRVR

FIELD
ID
NAME

YEAR FOR REMAINING GAS RESERVES
DESCRIPTION:
IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

BASE YEAR FOR REMAINING RESERVES CALCULATION (SEE RGR)
VERY IMPORTANT, ESSENTIAL
BY POOL/FIELD
AS VALUE
PROBABLY NOT AVAILABLE OR RARELY AVAILABLE
REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES
POOR REGIONAL COVERAGE
INDUSTRY

FIELD
TITLE

DATA TYPE

DATE

YES

FIELD
ID
NAME

WITHIN SCORE
OF PROJECT

5

42 RW

RESISTIVITY OF FORMATION WATERS
DESCRIPTION:
IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

YES

TEXT

5

45 SG

GAS SATURATION
DESCRIPTION:
IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

YES

TEXT

5

21 SPACING

WELL SPACING
DESCRIPTION:
IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

YES

TEXT

3

3 STATE

LOCATION/STATE
DESCRIPTION:
IMPORTANCE:
COLLECTED:
REPORTED:
AVAILABILITY:
ACQUISITION:
STATISTICS:
SOURCE:

YES

COMPUTED

3

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	WHETHER FIELD IS PRODUCING, A)BANDONED, CONVERTED TO GAS STORAGE, ETC.	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCORE OF PROJECT
109	STATUS	FIELD STATUS DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	VERY IMPORTANT, ESSENTIAL BY POOL/FIELD BY POOL/FIELD AS TEXT AVAILABLE EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM EXCELLENT REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)	ENUMERATED	.	YES
46	SW	WATER SATURATION DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	AVERAGE WATER SATURATION IN PERCENT VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS AVERAGE 50/50 CHANCE OF AVAILABILITY CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND FAIR REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)	TEXT	5	YES
35	TEMP	RESERVOIR TEMPERATURE DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	INITIAL RESERVOIR TEMPERATURE (FAHRENHEIT) VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS VALUE 50/50 CHANCE OF AVAILABILITY CAN PROBABLY BE CALCULATED, ESTIMATED, OR FOUND FAIR REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)	TEXT	5	YES
7	TOPRES	DEPTH TO TOP OF RESERVOIR DESCRIPTION: IMPORTANCE: COLLECTED: REPORTED: AVAILABILITY: ACQUISITION: STATISTICS: SOURCE:	AVERAGE DEPTH TO TOP OF RESEVOIR IN POOL/FIELD (REDUNDANT, SEE "PRODEPTH") VERY IMPORTANT, ESSENTIAL BY WELL BY POOL/FIELD AS AVERAGE AVAILABLE EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM EXCELLENT REGIONAL COVERAGE PUBLIC RECORDS (SURVEYS)	TEXT	5	YES

ATLAS OF MAJOR APPALACHIAN GAS PLAYS
DATA COLLECTION: DEFINITION AND SURVEY

FIELD ID	FIELD NAME	FIELD TITLE	TRAP TYPE DESCRIPTION:	TYPE OF TRAPPING MECHANISM IN POOL/FIELD (I.E., STRUCTURAL, STRATIGRAPHIC, F)RACTURING, PINCHOUT, ETC.)	DATA TYPE	FIELD SIZE (BYTES)	WITHIN SCOPE OF PROJECT
11	TRAPTYPE		TRAP TYPE DESCRIPTION: IMPORTANCE: VERY IMPORTANT, ESSENTIAL COLLECTED: BY POOL/FIELD REPORTED: BY POOL/FIELD AS (NOT DETERMINED) AVAILABILITY: PROBABLY AVAILABLE ACQUISITION: EASILY ACQUIRED, ALREADY IN ELECTRONIC FORM STATISTICS: EXCELLENT REGIONAL COVERAGE SOURCE: LITERATURE		ENUMERATED	.	YES
116	VPERM		VERTICAL PERMEABILITY DESCRIPTION: AVERAGE VERTICAL PERMEABILITY IMPORTANCE: IMPORTANT TO MOST END USERS COLLECTED: BY WELL REPORTED: BY POOL/FIELD AS AVERAGE AVAILABILITY: PROBABLY NOT AVAILABLE OR RARELY AVAILABLE ACQUISITION: REPRESENTATIVE VALUES MAY BE ACQUIRED IN A FEW CASES STATISTICS: POOR REGIONAL COVERAGE SOURCE: INDUSTRY		TEXT	6	YES

APPENDIX 2

KENTUCKY GEOLOGICAL SURVEY

STRATIGRAPHIC CODE

KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250 JCK	315 W	300 C	160 E	250 PRCH	315 KV	300 KV	160 KV				

000	Unknown or unassigned	*	*	*	*	*	*	*	*				
100CNZN	Cenozoic Era	*	*	*	*								
110QTRN	Quaternary System	*	*	*	*								
111ALVM	Alluvium	*	*	*	*								
112PLSC	Pleistocene Series	*	*	*	*								
112GCDP	Glacial deposits	*	*	*	*								
112LOSS	Loess	*	*	*	*								
112CNTL	Continental deposits	*	*	*	*								
112HGLV	High Level Fluvial Deposits	*	*	*	*					*		112HGLV	
112LFTT	Lafayette Gravel	*	*	*	*					*		112CNTL	
												112HGLV	
120TRTR	Tertiary System	*	*	*	*								
1230LGC	Oligocene Series	*	*	*	*								
123JCKS	Jackson Fm	*	*	*	*						124JCKS		
124EOCN	Eocene Series	*	*	*	*								
124CLBN	Claborn Fm	*	*	*	*								
124CBWX	Claborn and Wilcox Fms Undif	*	*	*	*								
124WLCX	Wilcox Fm	*	*	*	*								
125PLOC	Paleocene Series	*	*	*	*								
125PRCK	Porters Creek Clay	*	*	*	*								
125CLTN	Clayton Fm	*	*	*	*								
125CLMCU	Clayton and McNairy Fms Undif	*	*	*	*								

KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

CODE	NAME	BASIN				JCK PRCH	BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250	315	300	160		W	C	E	KY				
321AMES	Ames Ls Mbr, Conemaugh Fm													
321PTOK	Patoka Fm, McLeansboro Gp		*											
321MDSV	Madisonville Ls Mbr, Sturgis Fm		*									325MDSV	321WFKL	
321SLBR	Shelburn Fm, McLeansboro Gp		*											
321WFKL	West Franklin Ls Mbr, Shelburn Fm		*										321MDSV	IN MCLEANSBORO GROUP
321BRCK	Brush Creek Ls Mbr, Conemaugh Fm									*				
321AVRK	Anvil Rock Ss Mbr, Sturgis Fm		*									325AVRK		
321PROV	Providence Ls Mbr, Selburn Fm		*									325PROV		IN MCLEANSBORO GROUP
324PNLVM	Pennsylvanian, Middle Part		*							*				
324WEIR	Weir Ss		*							*		325WEIR	324TRDT	
324BRLE	Breathitt & Lee Fms Undif			*					*					
324BRTT	Breathitt Fm		*	*					*			328BRTT	324CBDL	ALSO CORRELATIVE TO CBDL & TRDT
324CBDL	Carbondale Fm		*									325CBDL	324BRTT	
324SPGC	Springfield Coal Bed, Carbondale Fm		*											WESTERN KENTUCKY NO. 9
324SEBR	Sebre Ss Mbr, Carbondale Fm		*							*		325SBRE		
324VNPR	Vanport Ls Mbr, Breathitt Fm		*											
324DVIS	Davis Coal Bed, Carbondale Fm		*							*				
324SNFK	Stoney Fork Mbr, Breathitt Fm		*							*				
324MGFN	Magoffin Mbr, Breathitt Fm		*							*				
324RCCK	Raccoon Creek Gp		*											
324TRDT	Tradewater Fm		*										324TRDT	INCLUDES TRADEWATER AND CASEYVILLE COMBINED
324TRCV	Tradewater-Caseyville Fms Undif		*									320TRCV	324RCCK	
324CRLW	Curlew Ls Mbr, Tradewater Fm		*											
324GRGR	Granger Ss		*							*		325GRGR	324TRDT	
324KCKK	Kendrick Sh Mbr, Breathitt Fm		*						*					
324TRDTA	Tradewater "A"		*							*			324TRDT	

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KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		JCK 250	PRCH 315	W 300	KY C	JCK 250	PRCH 315	W 300	KY E				
324EKFK	Elkins Fork Sh, Breathitt Fm									*	326FINN	324TRDT	
324FINN	Finnie Ss		*							*			
324LDCK	Lead Creek Ls Mbr, Tradewater Fm		*							*			
324TRDTB	Tradewater "B"		*							*		324TRDT	
324BELL	Bell Coal Bed, Tradewater Fm		*							*			
324CBCK	Campbell Creek Ls, Breathitt Fm		*							*			
324NIGR	Niagara Sand		*							*	325NIGR	324TRDT	
324TRDTC	Tradewater "C"		*							*		324TRDT	
324BTSI	Betsie Sh Mbr, Breathitt Fm		*							*			
324TRDTD	Tradewater "D"		*							*		324TRDT	
324YLCK	Yellow Creek Ss, Breathitt Fm		*							*			

327PNLVL	Pennsylvanian, Lower Part		*							*			
327LEE	Lee Fm		*							*	328LEE	327CSVL	
327CSVL	Caseyville Fm		*							*	328CSVL	327LEE	
327CRBN	Corbin Ss Mbr, Lee Fm		*							*	328CRBN		
327SALT1	1st Salt Sd									*	328SALT1	327LEE	
327BEVR	Beaver Sd									*	328BEVR	327LEE	
327PNDS	Pounds Ss Mbr, Caseyville Fm		*							*	328SALT	327LEE	
327SALT	Salt Sd		*							*	328SALT	327CSVL	
327IHLU	Upper Biehl Ss		*							*		327LEE	
327WGES	Wages									*			
327SALT2	2nd Salt Sd									*	328SALT2	327LEE	
327BSPR	Bee Spring Ss Mbr, Caseyville Fm		*							*	328BSPR		
327EPRS	Epperson Sand									*		327LEE	
327HRTN	Horton									*	328HRTN	327LEE	
327LVGS	Livingston Cong Mbr, Lee Fm									*			
327BIHL	Lower Biehl Ss		*							*		327CSVL	
327NESE	Naese Ss Mbr, Lee Fm									*			
327RCKC	Rockcastle Ss Mbr, Lee Fm									*	329RCKC		

KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

April 27, 1992
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CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250 JCK	315 W	300 C	160 E	250 PRCH	315 KV	300 KV	160 KV				
327SALT3	3rd Salt Sd												
327BTRK	Battery Rock Ss Mbr, Caseyville Fm		*							*	328SALT3 328BTRK	327LEE	
327BRCK	Bee Rock Ss Mbr, Lee Fm									*			
327HNSL	Hensley Mbr, Lee Fm									*		327LEE	
327JONS	Jones Sand									*	328PIKE	327LEE	
327PIKE	Pike Sd									*			
327KNOX	Knox Sd									*	328KNOX 328KYRK	327LEE	
327KYRK	Kyrock Cong Mbr, Caseyville Fm		*							*			
327MDLB	Middlesboro Mbr, Lee Fm									*			
327WMBG	Williamsburg Sd									*	329WMBG	327LEE	
327DKRG	Dark Ridge Mbr, Lee Fm									*			
327WRCK	White Rocks Ss Mbr, Lee Fm									*			
327CDLL	Chadwell Mbr, Lee Fm									*			
330MSSP	Mississippian System	*	*	*	*					*			
332MSSPU	Mississippian, Upper Part	*	*	*	*					*			
332CSTRU	Chester (Kinkaïd thru Tar Springs)	*	*	*	*					*			USED WHERE FORMATION AT TOTAL DEPTH IS UNCERTAIN
332GVCC	Grove Church Sh	*	*	*	*					*			
332BFLW	Buffalo Wallow Fm	*	*	*	*					*	332BFFW		KINKAID LS TO TOP OF TAR SPRINGS SS
332KNKD	Kinkaïd Ls	*	*	*	*					*			KINKAID LS TO TOP OF GLEN DEAN LS
332LHFD	Leitchfield Fm	*	*	*	*					*			
332PNGT	Pennington Fm	*	*	*	*					*			
332RVCF	Ravenclyff Sd	*	*	*	*					*		332PNGT	
332MAXN	Maxon Sd	*	*	*	*					*		332PNGT	
332BRDL	Bradley Sd	*	*	*	*					*		332PNGT	
332DGON	Degonia Ss	*	*	*	*					*			
332DGPL	Degonia/Clore/Palestine Undif	*	*	*	*					*			

KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250 JCK PRCH	315 W KY	300 C KY	160 E KY	250 JCK PRCH	315 W KY	300 C KY	160 E KY				
332CLOR	Clore Ls	*											
332LTSG	Little Stone Gap Mbr. Pennington Fm		*										
332PLSN	Palestine Ss	*											
332CPMN	Chapman Sd (Stephens Sd)	*								*		332MNRD	
332MNRD	Menard Ls	*											
332WLBG	Waltersburg Ss	*											
332STGP	Stony Gap Mbr. Pennington Fm		*										
332VINN	Vienna Ls	*											
332CTCV	Carter Caves Ss	*											
332TSPG	Tar Springs Ss	*											
332LTLM	Little Lime	*								*		332NWMNU	SHALE SEPARATING LITTLE LIME AND BIG LIME
332PCCV	Pencil Cave	*								*			
332BNGR	Bangor Ls			*						*		332GLND 332NWMN	USED WHERE FORMATION AT TOTAL DEPTH IS UNCERTAIN
332BIGL	Big Lime	*								*			
332CSTRM	Chester (Glen Dean thru Big Clifty)	*								*		332BNGR	
332GLND	Glen Dean Ls	*									331NWMN 333SLDE		
332NWMN	Newman Ls	*								*			
332SLDE	Slade Fm	*								*			
332NWMNU	Upper Part of Newman Ls	*								*			
332CVBR	Cave Branch Bed, Slade Fm	*								*		332SMPL	BASE OF UPPER PART OF SLADE FORMATION
332HDBG	Hardinsburg Ss	*								*		332HRSL 332HDBG 332HDBG	
332HRSL	Hartselle Fm	*								*			
332JONS	Jones Sd	*								*			
332GLCD	Golconda Fm	*											
332HNEY	Haney Ls Mbr, Golconda Fm	*											
332MNGL	Monteagle Ls	*		*							331MNGL		
332KDDR	Kidder Ls Mbr. Monteagle Ls	*								*			
332BGCF	Big Clifty Ss Mbr, Golconda Fm	*								*		332BGCF	
332JCKS	Jackson Sd	*								*			

KENTUCKY GEOLOGICAL SURVEY
PETROLEUM AND STRATIGRAPHY SECTION
REVISED STRATIGRAPHIC CODE

CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250 JCK	315 W	300 C	160 E	250 JCK	315 W	300 C	160 E				
332BRLW	Barlow Ls												
332BECE	Beech Creek Ls Mbr. Golconda Fm									*		332BECE	
332CSTRL	Chester (Beech Ck thru Renault)									*			USED WHERE FORMATION AT TOTAL DEPTH IS UNCERTAIN
332GRKN	Girkin Fm												EQUALS BECE, ELWR, REVL, SMPL, BVBD, MRTN, & POLI INCLUSIVE
332CPRS	Cypress Ss												
332ELWR	Elwren Ss											332ELWR 332CPRS	
332PCEK	Paint Creek Gp												
332REVL	Reelsville Ls												
332PCEKU	Upper Paint Creek Ls									*		332REVL	
332PCEKS	Paint Creek Sand									*		332SMPL	
332SMPL	Sample Ss												
332BVBD	Beaver Bend Ls												
332PCEKL	Lower Paint Creek									*		332BVBD	INCLUDES BEAVER BEND LS, MOORETOWN FM & PAOLI LS UNDIFF
332PLBB	Paoli Ls to Beaver Bend Ls Undif												
332BNST	Benoist									*		332BTHL	
332BTHL	Bethel Ss												
332MRTN	Mooretown Fm												
332MRTNS	Sandstone Mbr. Mooretown Fm												
332RNLT	Lower Renault									*		332RNLT	
332POLI	Paoli Ls												
332RNLT	Renault Ls									*		333MRMC	INCLUDES RNLT AND SGVV
332RLSL	Renault Ls to St. Louis Ls Undif									*	330RLSL	333MRMC	INCLUDES RNLT, SGVV, AND STLS UNDIF
332RLWW	Renault Ls to Warsaw Ls Undif									*	330RLWW	333MRMC	
333MSSPM	Mississippian, Middle Part									*			
333SGVV	Ste. Genevieve Ls											333SGVV	
333SGVVM	Ste. Genevieve Ls Mbr. Monteagle Ls									*			
333SGVVM	Ste. Genevieve Ls Mbr. Newman Ls									*		333SGVV	

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		250 JCK	315 W	300 C	160 E	250 PRCH	315 KY	300 KY	160 KY				
333LVIS	Levias Ls Mbr., Ste. Genevieve Ls	*											
333AXVS	Aux Vases Mbr., Ste. Genevieve Ls	*										333RCLR	
333RCLR	Rosiclare Ss Mbr., Ste. Genevieve Ls	*										333AXVS	
333FRDN	Fredonia Ls Mbr., Ste. Genevieve	*											
333OHAR	O'Hara Lime	*								*		333SGVV	
333MCLK	McClosky Ls	*								*		333SGVV	
333MCLKA	McClosky "A"	*								*		333SGVV	
333MCLKB	McClosky "B"	*								*		333SGVV	
333MCLKC	McClosky "C"	*								*		333SGVV	
333STLS	St. Louis Ls	*											
333STLSN	St. Louis Ls Mbr., Newman Ls	*										333STLS	
333RNFO	Renfro Mbr., Slade Fm										337RNFO		
333SALMA	Salem 'A' zone	*								*		333SALM	
333SALM	Salem Ls	*											
333SLWW	Salem/Warsaw Undifferentiated	*								*			
333SLFP	Salem/Warsaw/Fort Payne Undif	*								*			
333SALMB	Salem 'B' zone	*								*		333SALM	
333SMRT	Somerset Sh												
333HDBG	Harrodsburg Ls												
333WRSW	Warsaw Fm	*											
333SCCH	Science Hill Ss Mbr., Warsaw Fm												
337MSSPL	Mississippian, Lower Part	*								*			
337BRDN	Borden Fm												
337INJN	Injun Sd	*								*	338INJN	337BRDN	
337KENR	Keener	*								*	333KENR	337BRDN	
337SBBL	Misc sands below the Big Lime	*								*		337BRDN	

UNOIF SAND PAY\$ IN BORDEN
INCLUDING INJUN, KEENER, ETC.

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		250 JCK PRCH	315 W KY	300 C KY	160 E KY	250 JCK PRCH	315 W KY	300 C KY	160 E KY				
337WVRL	Waverly Series				*				*		338WVRL	337BRDN	
337FTPN	Fort Payne Fm	*	*	*	*				*		338FTPN		
337CRDR	Corder				*				*		338CRDR	337FTPN	
337FTPNS	Fort Payne Stray				*				*		338FTPNS	337FTPN	
337KNFL	Knifley Ss Mbr, Fort Payne Fm				*				*				
337MLDH	Muldrough Mbr, Borden Fm		*	*	*				*		338MLDH	337FTPN	
337FLKB	Floyds Knob Bed, Borden Fm			*	*				*		338FLKB		
337GRGR	Grainger Fm				*				*		338GRGR		
337HLCW	Holtscilaw Sits Mbr, Borden Fm		*	*	*				*		338HLCW		
337NADA	Nada Mbr, Borden Fm			*	*				*		338NADA		
337WLDE	Wildie Mbr, Borden Fm			*	*				*		338WLDE		
337HLGP	Halls Gap Mbr, Borden Fm			*	*				*		338HLGP		
337CWBL	Cowbell Mbr, Borden Fm				*				*		338CWBL		
337NNCY	Nancy Mbr, Borden Fm			*	*				*		338NNCY		
337BEVR	Beaver Ls			*	*				*		338BEVR	337FTPN	
337FRMR	Farmers Sits Mbr, Borden Fm			*	*				*		338FRMR		
337WEIRS	Stray Weir			*	*				*		338WEIRS	337FRMR	
337WEIR	Weir Sd			*	*				*		338WEIR	337FRMR	
337WEIR1	1st Weir			*	*				*		338WEIR1	337FRMR	
337WEIR2	2nd Weir			*	*				*		338WEIR2	337FRMR	
337WEIR3	3rd Weir			*	*				*		338WEIR3	337FRMR	
337KNWD	Kenwood Sits Mbr, Borden Fm		*	*	*				*		338KNWD		
337NPVC	New Providence Sh		*	*	*				*				
337NPVCB	New Providence Sh Mbr, Borden Fm		*	*	*				*			337NPVC	
337NPVCF	New Providence Sh Mbr, Ft Payne Fm		*	*	*				*			337NPVC	
339RCKF	Rockford Ls		*		*				*				
339SNBR	Sunbury Sh				*				*				
339BREA	Berea Ss				*				*				
339BRBD	Berea Ss and Bedford Sh Undif			*	*				*				

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CODE	NAME	BASIN				BASIN				BASIN	E	DRILL	OLD	CORRELATES	COMMENTS
		250	315	300	160	JCK	W	KY	C						
		PRCH	KY	KY	KY							TERM	CODE	WITH	
339BDFD	Bedford Sh														
339HNBL	Hannibal Sh		*												
340DVNN	Devonian System	*	*	*	*										
340BBSI	Berea/Black Shale Interval Combined									*	*	*		339BBREA	INCLUDES BERE, BEDFORD, AND OHIO SHALE
341DVNUU	Devonian, Upper Part	*	*	*	*										
341CHAT	Chattanooga Sh														
341CLVD	Cleveland Mbr, Ohio Sh														
341GRCK	Grassy Creek Mbr, New Albany Sh	*	*												
341NALB	New Albany Sh	*	*												
341OHIO	Ohio Sh														
341TLBD	Three Lick Bed, Ohio Sh														
341HURN	Huron Mbr, Ohio Sh														
341SLMR	Selmier Mbr, New Albany Sh		*										341SDCK		
341HURNU	Upper Huron Mbr, Ohio Sh	*	*										341UHRN		
341HURNM	Middle Huron Mbr, Ohio Sh												341MHRN		
341HURNL	Lower Huron Mbr, Ohio Sh												341LHRN		
341OLNG	Olentangy Mbr, Ohio Sh														
341BLCR	Blocher Mbr, New Albany Sh	*	*									*			DETRITAL ZONE BELOW NEW ALBANY SH
341HRDN	Hardin Ss											*			DETRITAL ZONE BELOW NEW ALBANY SHALE
341KNBL	Knob Lick Sd														
341RNST	Rhinestreet Mbr, Ohio Sh														
344DVNNM	Devonian, Middle Part		*	*	*										
344CORN	"Corniferous"											*			MISC PRODUCING CARBONATE INTERVALS BELOW THE DEVONIAN SHALES

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		250 JCK PRCH	315 W KY	300 C KY	160 E KY	250 JCK PRCH	315 W KY	300 C KY	160 E KY				

344CORN1	1st Corniferous			*	*			*	*	*		344CORN	USED WHERE ORISKANY IS MISSING
344BOYL	Boyle Dol			*	*			*	*	*		344SLBG	
344ONDG	Onondaga Ls			*	*			*	*	*			
344OGHG	Onondaga/Helderberg Undif			*	*			*	*	*			
344SLBG	Sellersburg Ls		*	*	*			*	*	*			
344BCHD	Beechwood Ls Mbr, Sellersburg Ls		*	*	*			*	*	*		344BOYL	
344SVCK	Silver Creek Ls Mbr, Sellersburg Ls		*	*	*			*	*	*			
344CORN2	2nd Corniferous			*	*			*	*	*		344CORN	
344CORN3	3rd Corniferous			*	*			*	*	*		344CORN	
344CHCL	Chert and Clay	*								*		344JFVL	
344GDTR	Grand Tower Ls	*								*		344JFVL	
344JFVL	Jeffersonville Ls		*	*	*			*	*	*		344GDTR	
344DCK	Dutch Creek Ss		*										

347DVNUL	Devonian, Lower Part	*		*	*			*	*				
347CCEK	Clear Creek Fm		*	*	*			*	*		344ORSK		
347ORSK	Oriskany Ss		*	*	*			*	*				
347BKBN	Backbone Ls		*		*				*				
347HDBG	Helderberg Ls		*		*				*				
347GRKB	Grassy Knob Ls	*	*	*	*								
347FLGP	Flat Gap Ls		*										
347ROSS	Ross Fm			*	*			*	*				USED MOSTLY IN BOWLING GREEN CONS POOL AREA OF WARREN CO

350SLRN	Silurian System	*	*	*	*			*	*				

351SLRNU	Silurian, Upper Part	*	*	*	*			*	*				
351BILY	Bailey Ls	*	*	*	*			*	*		352BILY		
351SALN	Salina Fm		*	*	*			*	*		352SALN		
351DCTR	Decatur Ls		*	*	*			*	*		352DCTR		

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		250 JCK PRCH	315 W KV	300 C KV	160 E KV								
355SLRNM	Silurian, Middle Part	*	*	*	*	*							
355BRPT	Brownspert Fm		*	*	*	*							
355LVLV	Lobelville Ls Mbr, Brownspert Fm												
355MSPG	Moccasin Springs Fm	*	*	*	*	*						355BRPT	CORRELATIVE TO BROWNSPORT AND DIXON INCLUSIVE
355B0B	Bob Ls Mbr, Brownspert Fm					*							
355BCRV	Beech River Ls Mbr, Brownspert Fm					*							
355DIXN	Dixon Ls					*							
355LEGO	Lego Ls		*	*	*	*						355LSVL	
355LCKP	Lockport Dol					*							
355LSVL	Louisville Ls		*	*	*	*						355LEGO	
355SCLR	St. Claire Ls	*	*	*	*	*						355LSVL	CORRELATIVE TO LOUISVILLE, WALDRON, AND LAUREL INCLUSIVE
355WLDR	Waldron Sh		*	*	*	*							
355BGSX	Big Six Sd					*			*			355KEFR	
355BSHR	Bisher Dol					*			*			355KEFR	
355KEFR	Keefer Ss					*			*			355BSHR	
355LAUR	Laurel Dol		*	*	*	*							
357SLRNL	Silurian, Lower Part	*	*	*	*	*							
357CLNT	Clinton Sh					*			*			357CB0C	
357CB0C	Crab Orchard Fm					*			*			357RHLL	
357OSGD	Osgood Fm		*	*	*	*							
357RHLL	Rose Hill					*						357CB0C	
357CLNTS	Clinton Sd					*			*			357CB0C	
357BRSF	Brassfield Dol					*							
357SXCK	Sexton Creek Ls	*	*	*	*	*						357SXCK	
357TCRR	Tuscarora Ss					*						357BRSF	

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		250 JCK	315 W	300 C	160 E	250 PRCH	315 KY	300 KY	160 KY				
3600DVC	Ordovician System	*	*	*	*								
3610DVCU	Ordovician, Upper Part	*	*	*	*								
361CMBD	Cumberland Fm		*	*	*						362CMBD	361DRKS	CORRELATIVE TO DRKS, JUNT, ALCK, BLFK, & GRLK INCLUSIVE
361DRKS	Drakes Fm		*	*	*							361JUNT 361DRKS	
361JUNT	Junjata Fm		*	*	*								
361MQKT	Maquoketa Sh	*	*	*	*						362MQKT		
361PCVL	Preachersville Mbr, Drakes Fm				*								
361SLUD	Saluda Mbr, Drakes Fm			*	*								
361SUTC	Sequatchie Fm			*	*							361JUNT	CORRELATIVE TO JUNT & DRKS
361BRDS	Bardstown Mbr, Drakes Fm			*	*								
361RLDN	Rowland Mbr, Drakes Fm			*	*								
361ALCK	Ashlock Fm		*	*	*							361CMBD	CORRELATIVE TO CMBD, LPRS, & GRLK INCLUSIVE
361BLFK	Bullfork Fm			*	*							361CMBD	CORRELATIVE TO CMBD, REBA, & TRRL INCLUSIVE
361MRBG	Martinsburg Fm			*	*							361BLFK	CORRELATIVE TO BLFK, CRLK, FRVW, CLFR, & KOPE INCLUSIVE
361REBA	Reba Mbr, Ashlock Fm			*	*							361MRBG	
361RDVL	Reedsville Fm			*	*								
361SNST	Sunset Mbr, Ashlock Fm			*	*								
361TRRL	Terrill Mbr, Ashlock Fm			*	*								
361GRLK	Grant Lake Ls			*	*							361CMBD	CORRELATIVE TO CMBD, REBA, AND TRRL
361SGCK	Stingy Creek Mbr, Ashlock Fm			*	*								
361GLBR	Gilbert Mbr, Ashlock Fm			*	*								
361TATE	Tate Mbr, Ashlock Fm			*	*								
361CLCK	Calloway Creek Ls		*	*	*							361FRVW	
361FRVW	Fairview Fm		*	*	*						362FRVW 362LPRS	361CLCK 361SGCK	CORRELATIVE TO SGCK, GLBR, TATE, FRVW, CLCK
361LPRS	Leipers Ls		*	*	*								

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CODE	NAME	BASIN				BASIN				DRILL TERM	OLD CODE	CORRELATES WITH	COMMENTS
		250 JCK	315 W	300 C	160 E	250 PRCH	315 KY	300 KY	160 KY				
361CLKO	Clays Ferry & Kope Fms Undif												
361CTVS	Catheys Fm											361CLFR	
361CLFR	Clays Ferry Fm		*		*							361KOPE	
361GRRD	Garrard Ss				*						362GRRD		
361GRNV	Granville				*				*		365GRNV	361CLFR	
361KOPE	Kope Fm				*							361CLFR	
361PPLS	Point Pleasant Tongue, Clays Ferry				*								

365ODVCM	Ordovician, Middle Part	*	*		*								
365KMCK	Kimmswick Ls	*	*		*							365LXTN	
365LXTN	Lexington Ls				*							365KMCK	
365SBRK	Sunnybrook				*				*			365LXTN	
365TLGD	Tanglewood Ls Mbr, Lexington Ls				*								
365TRNT	Trenton Ls		*		*				*			365LXTN	
365MLBG	Millersburg Mbr, Lexington Ls				*								
365DVLH	Devils Hollow Mbr, Lexington Ls				*								
365SLPW	Sulphur Well Mbr, Lexington Ls				*								
365BRNN	Brannon Mbr, Lexington Ls				*								
365PRVL	Perryville Ls Mbr, Lexington Ls				*								
365GRIR	Grier Ls Mbr, Lexington Ls				*								
365LOGN	Logana Mbr, Lexington Ls				*								
365CDVL	Curdsville Ls Mbr, Lexington Ls				*								
365SBRKL	Lower Sunnybrook				*				*			365LXTN	
365HGBG	High Bridge Gp				*				*			365MCAV	CORRELATIVE TO MCAV, TYRN. PCAV, ORGN, NLSN & PLTN INCLUSIVE

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		250 JCK PRCH	315 W KY	300 C KY	160 E KY	250 JCK PRCH	315 W KY	300 C KY	160 E KY				
365MCAV	Mud Cave Bentonite, High Bridge Gp			*	*			*	*	*			
365PLTN	Plattin Ls	*	*									365HG8G	
365STRV	Stones River			*	*			*	*	*		365HG8G	
365TYRN	Tyrone Ls, High Bridge Gp			*	*			*	*	*			
365PCAV	Pencil Cave Bentonite, High Bridge	*	*	*	*			*	*	*			
365ORGN	Oregon Fm, High Bridge Gp			*				*					
365NLSN	Camp Nelson Ls, High Bridge Gp			*	*			*	*	*		365MRFB	
365MRFB	Murfreesboro			*	*			*	*	*		365HG8G	
365PCNC	Pecatonica Ls	*	*									365HG8G	
365JCHM	Joachim Fm	*	*	*				*				365HG8G	
365DTCN	Dutchtown Fm	*	*					*	*	*		365WLCK	
365WLCK	Wells Creek Fm			*	*			*	*	*		365DTCN	
365STPR	St. Peter Ss	*	*	*	*			*	*	*			
365EVRN	Everton Fm	*	*	*				*					
3680DVCL	Ordovician, Lower Part	*	*	*	*			*	*	*			
368KNOX	Knox Gp	*	*	*	*			*	*	*			INCLUDES KNOXU (ORD) AND KNOXL (CMBR)
368KNOXU	Knox Gp, Upper Part	*	*	*	*			*	*	*		368BKMN	
368BKMN	Beekmantown Dol, Upper Part Knox Gp			*	*			*	*	*		368KNOXU	
368CTTR	Cotter Dol, Upper Part Knox Gp	*	*					*	*	*			
368JFRC	Jefferson City Dol, Upper Part Knox	*	*	*	*			*	*	*			
368RBDX	Roubidoux Fm, Upper Part Knox Gp	*	*	*	*			*	*	*			
368GSCD	Gasconade Dol, Upper Part Knox Gp	*	*	*	*			*	*	*			

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		250 JCK	315 W	300 C	160 E	250 JCK	315 W	300 C	160 E				
368GNTR 368RSRN	Gunter Ss, Upper Part Knox Gp Rose Run Rd, Upper Part Knox Gp	*	*	*	*	*	*	*	*				
370CMBR	Cambrian System	*	*	*	*	*	*	*	*				
372CMBRU	Cambrian, Upper Part	*	*	*	*	*	*	*	*				
372KNOXL	Knox Gp, Lower Part	*	*	*	*	*	*	*	*		372KNOX	372CPRG	
372CPRG	Copper Ridge Dol, Lower Part Knox	*	*	*	*	*	*	*	*				
372EMNC	Eminence Dol, Lower Part Knox Gp	*	*	*	*	*	*	*	*				
372PTSI	Potosi Dol, Lower Part Knox Gp	*	*	*	*	*	*	*	*				
372ELVN	Elvins Fm, Lower Part Knox Gp	*	*	*	*	*	*	*	*				
375CMBRL	Cambrian, Lower Part	*	*	*	*	*	*	*	*				
375ECLR	Eau Claire Fm	*	*	*	*	*	*	*	*		372ECLR	375CNSG	EQUIVALENT TO CNSG AND ROME INCLUSIVE
375CNSG	Conasauga Gp	*	*	*	*	*	*	*	*		372CNSG		
375MDVL	Maynardsville Ls, Conasauga Gp	*	*	*	*	*	*	*	*		372MDVL		
375NCCK	Nolichucky Sh, Conasauga Gp	*	*	*	*	*	*	*	*		372NCCK		
375ROME	Rome Fm	*	*	*	*	*	*	*	*				
375MTSM	Mt. Simon Ss	*	*	*	*	*	*	*	*		372MTSM		
375SHDY	Shady Dol	*	*	*	*	*	*	*	*				
375TMSN	Tomstown Dol	*	*	*	*	*	*	*	*		378TMSN	375TMSN 375SHDY	
375BASL	"Basal Sand"	*	*	*	*	*	*	*	*		378BASL		

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		250 JCK	315 W	300 C	160 E	250 JCK	315 W	300 C	160 E	250 JCK	315 W	300 C	160 E		
		PRCH	KY	KY	KY	PRCH	KY	KY	KY	PRCH	KY	KY	KY		

400PCMB	Precambrian Era	*	*	*	*	*	*	*	*						
400BSLT	Basalt	*	*	*	*	*	*	*	*						
400MDLR	Middle Run Fm														
400BSMN	PreCambrian Crystalline Basement	*	*	*	*	*	*	*	*						

**DATE
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12 / 10 / 93

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