



"ROUGH DRAFT"

**UNCONVENTIONAL GAS
RECOVERY PROGRAM**

**INFORMATION FILE
ACCESSION LIST**

OCTOBER, 1981

**Morgantown
United States Department of Energy
Technology
Center**

"ROUGH DRAFT"

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1.0 UGR INFORMATION FILE

1.1 General

The UGR (Unconventional Gas Recovery) Open-File is located at the Morgantown Energy Technology Center (METC) in Morgantown, West Virginia. This publication is primarily a listing, complete with cross-reference indexes, of documents, maps, and well logs concerning UGR that are **ON OPEN-FILE ONLY** at METC. Copies of all documents, maps, and well logs are located in the library at METC for inspection and perusal by interested persons.

Many of the documents, and maps in the METC/EGSP Series, are available at no cost upon request to METC. **All documents and maps that may be obtained at no cost upon request from METC have a star (*) preceding the accession list number in sections 2.5 and 3.5, subject to change without notice.**

The Accession Listings for many other documents and maps note their availability at INGS, KYGS, NTIS, NYGS, OHGS, PAGES, PBC, TRW, WVGS and USGS. A list of addresses for these organizations is given in Section 5.0; costs for given documents and/or maps will be indicated by the organization.

Any questions and/or requests for copies of documents and maps available at METC should be addressed to:

Morgantown Energy Technology Center
U.S. Department of Energy
P.O. Box 880
Morgantown, WV 26505
Att: Information File

Certain Accession List numbers (Sections 2.5 and 3.5) have a letter(s) preceding the number, with the following meanings:

- B** Bibliographies
- C** Contractor Reports—These are monthly, quarterly, semi-annual, or annual reports of progress by contractors for one of the UGR Projects. They are not usually cross-referenced except by the name of the contractor, name of the PI if known, and under "Contractor Report," EGSP, MRCP, and WGSP.

The exception to this rule includes Final Reports under a given DOE contract. These reports are completely cross-referenced.

- L** Logs—A list of the abbreviations used for specific logs as noted in the Accession Listing (Section 2.5) follows in Section 1.2. **Note: All Well Logs Are on Open-File Only.**
- M** Maps—All Accession List numbers in the separate Map Accession List (Section 3.5) are preceded by the letter M.
- S** Symposiums—Tables of contents for all symposiums are appended to this document under Section 4.
- SA** Semi-Annual Reports, EGSP and UGR.

The Subject Index to the General Accession List (Section 2.3) does not contain cross-references to the Map Accession List. However, in a few cases, the Map Subject Index (Section 3.3) does contain references to the General Accession List.

Sections 2 and 3 of this publication are identical in format, with four cross-reference indexes preceding the Accession Lists. The exception is the addition of Section 2.6 which follows the general Accession List. This is a listing of all documents that refer to specific wells (core geology and chemistry, and/or well stimulations and testing) by State, County, and Well Number. The section is subdivided into EGSP, and MRCP/WGSP.

1.2 Log Abbreviations (as used for Well Log Accession List Numbers)

- A** Audio, Experimental Differential Audio
- AMP** Amplitude, Open Hole Amplitude
- BOND** Cement Bond
- C** Caliper
- CCL** Casing Collar Log
- CCL-PR** Casing Collar Log and Perforating Record
- CMS** Circumferential Microsonic, Circumferential Microsonic Likeness
- COMP** Computerized Logs:
 - Com-Processed
 - Com-Pro-Log
 - Coriband (Keroband)
- D** Density Logs:
 - Density Borehole Compensated
 - Formation Density
 - Compensated Formation Density, FDC
 - Compensated Litho Density
- DC** Perforation Depth Control (combination of Gamma Ray and Casing Collar) Depth Correlation Log

DI	Dual Induction, Dual Induction-SFL	NGRS	Natural Gamma Ray Spectroscopy, Three Window Gamma Ray, NGT
DIP	Dipmeter, Continuous Dipmeter	NOISE	Noise
DIR	Directional or Continuous Directional	P	Production Log
DLL	Dual laterolog	S	Sonic: Borehole Compensated Sonic Long Spacing Sonic
3D	Three Dimensional (3D) Velocity	SIB	Wellbore Sibilation Survey, WSS
E	Electric Log, Electrolog	SEISM	Sonic Seismogram
EP	Elastic Properties	SEISV	Seisviewer
FIL	Fracture Identification Log, FIL with Correlation Log	T	Temperature or Differential Temperature
GR	Gamma Ray	TDT	Dual Spacing Thermal Neutron Decay Time, or Thermal Neutron Decay, etc.
HC	Hydrocarbon Analysis	VD	Variable Density, VDL
I	Induction	WAVE	Wave Train Photo, Wave Form
L	Litho, Lithology	WTP	Well Treatment Profile
LL	Laterolog, Guard Log		
MLL	Microlaterolog		
ML	Microlog		
MP	Mechanical Properties		
N	Neutron Logs: Epithermal Neutron Neutron Porosity Epithermal Neutron Porosity Sidewall Neutron Porosity Compensated Neutron, CNL		

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- 405 "Well Test Package LAA, DOE, Well No. DOE 7, Thurston County, Washington."
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- 042 "Western Washington Coal Region Report, A Study of Early Tertiary Geology, Coal and and the Coalbed Methane Resource in Western Washington."
- 241 "Western Gas Sands Project, Northern Great Plains Province Review."
- 099 "Western Gas Sands Project, Production Histories of the Piceance and Uinta Basins of Colorado and Utah."
- C242 "Western Gas Sands Project, Quarterly Basin Activities Report."
- C216 "Western Gas Sands Project Status Report."
- C500 "Western Gas Sands Project Stimulation Research."
- 479 "Western Gas Sands Project Stratigraphy of the Piceance Basin."
- L152 "Wetzel County, West Virginia, H. Emch & A. Pyles Unit No. 1 Well (Logs)."
- 053 "What are Possible Stratigraphic Controls for Gas Fields in Eastern Black Shale?"
- 041 "Wind River Basin Report, A Study of Late Cretaceous and Early Tertiary Geology, Coal and the Potential Coalbed Methane Resource of the Wind River Basin in Wyoming."
- L086 "Wise County, Virginia, Col. GTC No. 20338 Well (Logs)."
- 284 "World's Evolving Energy System."
- 228 "X-Radiograph Atlas of Lithotypes and Other Structures in the Devonian Shale Sequence of West Virginia and Virginia."
- 516 "X-Ray Radiography of Coal."

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2.0 GENERAL FILES (Continued)

2.5 Accession List

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*001	"Increasing Eastern U.S. Natural Gas Reserves from Gas Bearing Shales." Overbey, William K., MERC, SPE/AIME, SPE 6364, Columbus, OH, November 18-19, 1976, 8 p.	*010 "Large Scale Foam Fracturing in the Devonian Shale—A Field Demonstration in West Virginia." Frohne, K-H., MERC, MERC/TPR-77/2, April 1977, 14 p.
*002	"Devonian Shale Gas." SAI, MERC/SP-77/3, June 1977, 24 p. Revised ed. Jan. 80, 20 p.	*011 "Comparison of Conventional Hydraulic and Water/Nitrogen Foam Fracturing in Two Ohio Devonian Shale Gas Wells." Frohne, K-H., MERC, MERC/TPR-76/1, February 1976, 12 p.
*003	"ERDA Research in Fracturing Technology." Komar, C. A., MERC, SPE/AIME, SPE 6363, Columbus, OH, November 18-19, 1976, 12 p.	*012 "Lithologic Description of Core Material from Nicholas Combs No. 7239 Well, Perry County, Kentucky." Byrer, C. W., and D. B. Trumbo, MERC, MERC/TPR-76/2, May 1976, 22 p.
*004	"Natural Gas from Eastern U.S. Shales." Schrider, Leo A., C. A. Komar, and J. Pasini III, MERC, SPE/AIME, SPE 6841, Denver, CO, October 9-12, 1977, 4 p.	*013 "Lithologic Description of Cored Wells 11940 and 12041 in the Devonian Shale in the Cottageville, West Virginia Area." Byrer, C. W., D. B. Trumbo, and S. J. Rhoades, MERC/TPR-76/7, October 1976, 22 p.
*005	"Some Practical Considerations in X-Radiography." Renton, John J., WVGS, MERC/SP/77-7, December 1977, 30 p.	*014 "Use of Uncorrected X-ray Diffraction Data in Quantitative Analytical Determination." Renton, John J., WVGS, MERC/CR-77/10, October 1977, 20 p.
*B006	"Bibliography of Upper Devonian Shale Sequence." Tripplett, J.C., and D.B. Trumbo, MERC, December 1975, 78 p.	*015 "Exchangeable Cations in the Devonian Shale Sequence." Maynard, J. Barry, and R. Ulmschneider, U. Cin., MERC/CR-77/9, October 1977, 10 p.
*007	"Drilling a Directionally Deviated Well to Stimulate Gas Production from a Marginal Reservoir in Southern West Virginia." Overbey, W. K., Jr., and W. M. Ryan, MERC, MERC/TPR-76/3, no date, 33 p.	B016 "Geology of Argillaceous Sediments, an Annotated and Illustrated Bibliography." Potter, Paul Edwin, J. Barry Maynard, and Wayne A. Pryor, U. Cin., MERC/CR-77/8, June 1977, 134 p. AVAILABLE FROM NTIS.
*S008	"Devonian Shale Production and Potential, Proceedings of the Seventh Appalachian Petroleum Geology Symposium held at Morgantown, W. Va., March 1-4, 1976." Shumaker, R. C., and W. K. Overbey, Jr., Editors, WVGS, WVU, and MERC, MERC/SP-76/2, March 1976, 271 p.	017 "Devonian Shale-Fracturing Fluids Studies." Chenevert, Martin E., Chenevert & Associates, Inc., Final Report, September 9, 1977, 24 p.
*009	"Three Lick Bed: Useful Stratigraphic Marker in Upper Devonian Shale in Eastern Kentucky and Adjacent Areas of Ohio, West Virginia, and Tennessee." Provo, Linda J., Roy C. Kepferle, and Paul Edwin Potter, U. Cin. and USGS, MERC/CR-77-2, no date, 56 p.	*018 "Organic Composition of Devonian Shale from Perry County, Kentucky." Lamey, Steven C., and Edward E. Childers, MERC, MERC/TPR-77/3, December 1977, 26 p.
		*019 "Field and Laboratory Procedures for Oriented Core Analysis of Devonian Shales." Byrer, C. W., and C. A. Komar, MERC, MERC/SP-77/4, August 1977, 15 p.

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*020	"A Borehole Gravity Survey to Determine Density Variations in the Devonian Shale Sequence of Lincoln County, West Virginia." Schmoker, James W., USGS, MERC/CR-77/7, May 1977, 15 p.	029	"Stratigraphy of the Upper Devonian-Lower Mississippian Shale Sequence in the Eastern Kentucky Outcrop Belts." Swager, Dennis Ray, Thesis submitted to Frank R. Ettensohn, U. KY, 1978, 116 p.
*021	"Petrography of Selected Devonian Shale Core Samples from the CGTC 20403 and CGSC 11940 Wells, Lincoln and Jackson Counties, West Virginia." Larese, Richard E., and Milton T. Heald, WVGS and WVU, Dept. of Geol. & Geog., MERC/CR-77/6, no date, 27 p.	030	"In Situ Stress Determination in the Devonian Shale (Ira McCoy 20402) Within the Rome Basin." Brechtel, C. E., A. S. Abou-Sayed, Terra Tek, Inc., and R. J. Clifton, Brown University, TR76-36, July 1976, 45 p.
*022	"Subsurface Stratigraphy and Gas Production of the Devonian Shales in West Virginia." Patchen, Douglas G., WVGS, MERC/CR-77/5, March 1977, 35 p.	031	"DOE-METC Gas Well Testing Service Contract No. EW-78-C-21-8096, Well Test Analysis for Pacific States Gas and Oil Company L. Bonnet No. 1 Well." Gruy Federal, Inc., 2 Vols., December 6, 1978, 111 p.
*023	"Prediction of Fracture Extent by Stimulation of Gas Well Pressure and Production Behavior." Sawyer, W. K., J. C. Mercer, and K-H. Frohne, MERC, MERC/TPR-76/8, October, 1976, 20 p.	*032	"Environmental Impact Assessment for the Proposed MERC-1 Gas Well to be Drilled at the Morgantown Energy Research Center, Morgantown, West Virginia." DOE/MERC, January 1978, 59 p.
*024	"Lithologic Description of Core Material from Glen Gery No. 5-745 Well, Rose Township, Carroll County, Ohio." Byrer, C. W., and S. J. Rhoades, MERC, MERC/TPR-76/6, October 1976, 20 p.	033	"Test Prognosis for Pacific States Gas and Oil Company Well, Gilmer County, West Virginia." Gruy Federal, Inc., February 1979, 10 p.
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*026	"Fractographic Logging for Determination of Pre-Core and Core-Induced Fractures -- Nicholas Combs No. 7239 Well, Hazard, Kentucky." Kulander, Byron R., Stuart L. Dean, and Christopher C. Barton, MERC, MERC/CR-77/3, January 1977, 44 p.	035	"Mountain State Geology." Erwin, Robert B., WVGS, December 1977, 59 p.
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109	"Ostracode Biostratigraphy in the Bottom 395 Feet of CGTC Well No. 20403, Lincoln County, West Virginia." Warshauer, Steven M., WVGS, July 25, 1978, 11 p.	117	"Evaluation of Devonian Shale Potential in West Virginia." Tetra Tech, Inc., DOE/METC-120, No date, 95 p. AVAILABLE FROM NTIS.
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115	"DOE-METC Gas Well Testing Service, Contract No. EW-78-C-21-8096, Well Test Analysis for C. Sokevitz No. 1 (EGSP PA. No. 5), Lawrence County, Pennsylvania." Gruy Federal, Inc., March 16, 1981, 33 p.	123	"Lineaments and Ground-Water Quality as Exploration Tools for Ground Water and Gas in the Cottageville Area of Western West Virginia." Jones, D. Scott, and Henry W. Rauch, WVU, Dept. of Geol. & Geog., 1978, 9 p.
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127	"Organic Composition of Devonian Shale Cores from Wells No. 11940 and No. 12041, Cottageville, Jackson County, West Virginia." Lamey, Steven C., Stephanie J. Bialobok, and Edward E. Childers, USDOE/MERC, MERC/TPR-78/2, May 1978, 26 p. AVAILABLE FROM NTIS.	136	"Quantitative Phase Analysis of Devonian Shales by Computer Controlled X-Ray Diffraction of Spray Dried Samples." Smith, Steven T., Robert L. Snyder, and W. E. Brownell, NYS College of Ceramics, 1978, 11 p.
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462	"Final Report, Turbodrill Testing Project Phase I and Phase II." TRW Energy Systems Group, July 1980 and August 1980, 84 p. and 82 p.	471	"Stratigraphy of the Devonian Chattanooga and Ohio Shales and Equivalents in the Appalachian Basin: An Example of Long-Range Subsurface Correlation Using Gamma-Ray Logs." Roen, John B., USGS, DOE/METC/10866-21, 1980, 26 p. AVAILABLE FROM NTIS.
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L481	"Hocking County, Ohio, Columbus & Frank- lin Co. Metro Park No. 12188 Well (Logs)." Col. GTC, 1980: D, DI, N.	491	"The Chattanooga Shale (Devonian and Mis- sissippian) from the Tennessee Division of Geology-U.S. Department of Energy Cored Drill Holes Number 1 and 2, Claiborne Coun- ty, Tennessee." Roen, John B., Robert C. Milici, Roy C. Kepferle, and Laure G. Wal- lace, USGS, METC/CR-80/1, January 1980, 11 p.
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2.0 GENERAL FILES (Continued)

2.6 *Well Logs and Well Reports by State, County, and Well Number*

2.6.1 EGSP (Core Geology & Chemistry; Stimulations & Testing; includes all different numbers for the same well)

Note: well logs are listed first if available for any given well.

Illinois

Effingham County, Lancaster No. 1-D (EGSP No. IL-1; Mound No. I-1; Battelle No. T-1)L082, C050, 131, 176, 234, 273, 408
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 Tazewell County, MAK No. 1 (EGSP No. IL-3; Mound No. I-3; Battelle No. N-2)L084, C050, 131, 176, 190, 273, 408, 446
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 Youngstown, YST No. 18.....023

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 Indiana County, Glen McCall No. 5 (EGSP No. PA-4)L302, 351
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		M10	"Geological Lineament Map: 1°x2° Danville Quadrangle, Indiana and Illinois." Wier, C. E., et al, INGS, 1978, 1 map (microfiche).
*M01	"Preliminary Stratigraphic Cross Section showing Radioactive Zones in the Devonian Black Shales in the Eastern Part of the Appalachian Basin." West, Mareta, USGS, Chart OC-86, 1978, 2 maps.	M11	"Geological Lineament Map: 1°x2° Indianapolis Quadrangle, Indiana and Illinois, and Part of the 1°x2° Cincinnati Quadrangle, Indiana." Wier, C. E., et al, INGS, 1978, 1 map (microfiche).
M02	"Middle Huron Shale Member of Ohio Shale, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).	M12	"Lower Huron Shale Member of Ohio Shale, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).
M03	"Geological Lineament Map: 1°x2° Vincennes Quadrangle, Indiana and Illinois, and Part of the 1°x2° Louisville Quadrangle, Indiana." Wier, C. E., et al, INGS, 1978, 1 map (microfiche).	M13	"Cleveland Shale Member of Ohio Shale, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).
*M04	"Preliminary Stratigraphic Cross Section Showing Radioactive Zones in the Devonian Black Shales in Southeastern Ohio and West Central West Virginia." Wallace, Laure G., John B. Roen, and Wallace deWitt, Jr., USGS, Chart OC-83, 1977, 1 map.	M14	"Gas and Oil Shows in the Ohio Shale in Eastern Ohio." Gearheart, Linda C., and Charles R. Grapes II, OHGS, March 1977, 2 maps (microfiche).
*M05	"Preliminary Stratigraphic Cross Section Showing Radioactive Zones in the Devonian Black Shales in the Western Part of the Appalachian Basin." Wallace, Laure G., John B. Roen, and Wallace deWitt, Jr., USGS, Chart OC-80, 1977, 2 maps.	*M15	"Preliminary Stratigraphic Cross Section Showing Radioactive Zones in the Devonian Black Shales in the Southern Part of the Appalachian Basin." Kepferle, Roy C., Edward N. Wilson, and Frank R. Ettensohn, USGS, Chart OC-85, 1978, 1 map.
M06	"Showing Wells Producing from Ohio Shale in Eastern Ohio, Including Sandstones and Siltstones within the Ohio Shale."* Janssens, A., OHGS, April 1975, 1 map (microfiche).	M16	"Three Lick Bed Member of Ohio Shale, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).
M07	"Upper Huron Shale Member of Ohio Shale, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).	M17	"East-West Cross Sections, North and South of Rough Creek Fault System." Schwalb, Howard, and Ronald Norris, U. KY and KYGS, METC/EGSP Series 900, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS.
M08	"Structural Contour Map (Top of Ohio Shale)." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).	*M18	"Preliminary Stratigraphic Cross Section (B ₁ -B ₄) Showing Radioactive Black Shale Zones and Sandstones in the Middle and Upper Devonian, Western Pennsylvania." Piotrowski, R. G., and S. A. Krajewski, PAGES, METC/EGSP Series 7, 1977, 2 maps.
*M09	"Preliminary Stratigraphic Cross Section Showing Radioactive Zones: The Devonian Black Shales in the Central Part of the Appalachian Basin." Roen, John B., Laure G. Wallace, and Wallace deWitt, Jr., USGS, Chart OC-87, 1977, 2 maps.	M19	"Cottageville Gas Field." Nuckols, E. B., WVU, no date, 1 map (microfiche).

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*M20	"Preliminary Stratigraphic Cross Section Showing Radioactive Zones in the Devonian Black Shales in Eastern Ohio and West Central Pennsylvania." Roen, John B., Laure G. Wallace, and Wallace deWitt, Jr., USGS, Chart OC-82, 1977, 1 map.	John L., and Nancy R. Hasenmueller, INGS, METC/EGSP Series 800, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.
M21	"Preliminary Regional Structure Map of the Base of the Huron Member of the Ohio Shale (top of the Olentangy Shale)." Majchszak, Frank L., OHGS, August 1977, 1 map (microfiche).	M30 "Map of Indiana Showing Thickness of the New Albany Shale (Devonian and Mississippian) and Equivalent Strata." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 805, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.
M22	"Ohio, Olentangy, and Marcellus (?) Shales, Isopach Map." Provo, Linda J., U. Cin., 1976, 1 map (microfiche).	M31 "Map Showing Structure on Top of New Albany Shale (Devonian and Mississippian) and Equivalent Strata in Indiana." Bassett, John L., and Nancy R. Hasenmueller, INGS, METC/EGSP Series 801, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.
*M23	"Drilling Depth Map to the top of the Middle Devonian Onondaga Group." Piotrowski, R. G., and S. A. Krajewski, PAGS, METC/EGSP Series 10, 1977, 3 maps.	M32 "Map of Indiana Showing Locations and Numbers of Study Wells and Locations of Cross Sections." Bassett, John L., and Nancy Hasenmueller, INGS, February 1978, 1 map (microfiche).
*M24	"Gas Show and Production Map from Middle and Upper Devonian Organic Rich Shales in Western and Northern Pennsylvania." Piotrowski, R. G., and S. A. Krajewski, PAGS, METC/EGSP Series 11, 1977, 2 maps.	M33 "Map of Indiana Showing Reported Oil and Gas Shows From New Albany Shale." Bassett, John L., and Nancy R. Hasenmueller, INGS, METC/EGSP Series 803, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.
M25	"Preliminary Structure Map on Base of Huron Shale, Contour Interval 500 feet." WVGS, 1978, 1 map (xerox).	M34 "Preliminary Regional Structure Map of the Base of a Radioactive Shale Unit within the Olentangy Shale (Approximate Equivalent of the Rhinestreet Shale Member of the West Falls Group of New York State)." Majchszak, Frank L., OHGS, November 1977, 1 map (microfiche).
M26	"Preliminary Isopach Map of Lower Huron Shale, Contour Interval 50 feet." WVGS, 1978, 1 map (xerox).	M35 "Structure and Isopach Map of the New Albany—Chattanooga—Ohio Shale (Devonian and Mississippian) in Kentucky: Western Sheet." Schwalb, Howard R., and Paul Edwin Potter, KYGS, Series X, 1978, 1 map. AVAILABLE FROM KYGS.
M27	"Preliminary Isopach Map of Upper Huron Shale, Contour Interval 25 feet." WVGS, 1978, 1 map (xerox).	M36 "Thickness of the Radioactive Shale Facies of the Lower Huron Member of the Ohio Shale." Majchszak, Frank L., OHGS, August 1977, 1 map (microfiche).
M28	"Map of Indiana Showing Reported Oil and Gas Shows from the 100 feet of Strata Overlying New Albany Shale." Bassett, John L., and Nancy R. Hasenmueller, INGS, METC/EGSP Series 802, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.	M37 "Thickness of the Radioactive Shale Facies of the Upper Huron Member of the Ohio Shale." Majchszak, Frank L., OHGS, November 1977, 1 map (microfiche).
M29	"Map Showing Structure on Base of New Albany Shale (Devonian and Mississippian) and Equivalent Strata in Indiana." Bassett,	

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M38	"Thickness of a Radioactive Shale Unit within the Upper Olentangy Shale (Approximate Equivalent of the Rhinestreet Shale Member of the West Falls Group of New York State)." Majchszak, Frank L., OHGS, August 1977, 1 map (microfiche).
*M39	"Stratigraphic Cross Section (A) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 14, 1981, 1 map.
*M40	"Stratigraphic Cross Section (B) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 15, 1981, 1 map.
*M41	"Stratigraphic Cross Section (C) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/ETSP Series 16, 1981, 1 map.
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*M45	"Stratigraphic Cross Section (G) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 20, 1981, 1 map.
*M46	"Stratigraphic Cross Section (H) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 21, 1981, 1 map.
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*M48	"Stratigraphic Cross Section (J) of the Upper Devonian Perrysburg and Java Formations and Their Equivalents, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 23, 1981, 1 map.
*M49	"Isopach Map of Perrysburg Formation-Huron Shale Interval, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 24, 1980, 1 map.
*M50	"Net Feet of Radioactive Shale in Perrysburg Formation and Huron Shale (Dunkirk Facies), Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 25, 1980, 1 map.
*M51	"Structure Contours on the Base of the Perrysburg Formation and Huron Shale (Dunkirk Facies), Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 26, 1980, 1 map.
*M52	"Isopach Map of Java Formation, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 27, 1980, 1 map.
*M53	"Net Feet of Radioactive Shale in the Java Formation (Pipe Creek Facies), Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 28, 1980, 1 map.
*M54	"Structure Contours on Base of Java Formation, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 29, 1980, 1 map.
*M55	"Lithofacies Map of Combined Perrysburg-Huron and Java Intervals, Northwestern Pennsylvania." Harper, J.A., and K.D. Abel, PAGES, METC/EGSP Series 30, 1981, 1 map.

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M57	"Stratigraphic Cross Sections Showing Members of the New Albany Shale (Devonian and Mississippian in Indiana)." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 816, 1980, 1 map. AVAILABLE FROM NTIS AND INGS.	*M67 "Borehole Geophysical-Log Correlation Network for the Devonian Shales in Eastern Ohio: Stratigraphic Cross Section F-F'." Majchszak, Frank L., OHGS, METC/EGSP Series 309, 1980, 3 maps.
M59	"North-South Cross Section, West Side of Area (Kentucky)." Schwalb, Howard, and Ronald Norris, U. KY and KYGS, METC/EGSP Series 901, 1980, 2 maps. AVAILABLE FROM NTIS AND KYGS.	M68 "Landsat Lineaments in Parts of West Virginia, Kentucky, Ohio, and Virginia." Colton, George W., USGS, 1 map (microfiche) and 3 p. notes.
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*M62	"Borehole Geophysical-Log Correlation Network for the Devonian Shales in Eastern Ohio: Stratigraphic Cross Section A-A'." Majchszak, Frank L., OHGS, METC/EGSP Series 304, 1980, 3 maps.	*M71 "Preliminary Stratigraphic Cross Section (A ₂ -D ₂) Showing Radioactive Black Shale Zones and Sandstones in the Middle and Upper Devonian, Western Pennsylvania." Piotrowski, R. G., and S. A. Krajewski, PAGES, METC/EGSP Series No. 3, 1977, 2 maps.
*M63	"Borehole Geophysical-Log Correlation Network for the Devonian Shales in Eastern Ohio: Stratigraphic Cross Section B-B'." Majchszak, Frank L., OHGS, METC/EGSP Series 305, 1980, 3 maps.	*M72 "Preliminary Stratigraphic Cross Section (A ₁ -D ₁) Showing Radioactive Black Shale Zones and Sandstones in the Middle and Upper Devonian, Western Pennsylvania." Piotrowski, R. G., and S. A. Krajewski, PAGES, METC/EGSP Series 4, 1977, 2 maps.
*M64	"Borehole Geophysical-Log Correlation Network for the Devonian Shales in Eastern Ohio: Stratigraphic Cross Section C-C'." Majchszak, Frank L., OHGS, METC/EGSP Series 306, 1980, 3 maps.	*M73 "Preliminary Stratigraphic Cross Section (C ₄ -D ₄) Showing Radioactive Black Shale Zones and Sandstones in the Middle and Upper Devonian, Western Pennsylvania." Piotrowski, R. G., and S. A. Krajewski, PAGES, METC/EGSP Series 5, 1977, 2 maps.
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M78	"Map of Indiana Showing Reported Oil and Gas Shows From Middle Devonian Carbonate Rocks." Bassett, John L., and Nancy R. Hasenmueller, INGS, METC/EGSP Series 804, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.	M86 "Isopach Map of Black Shale in The West Falls Formation." Kamakaris, D.G., and A.M. VanTyne, NYGS, METC/EGSP Series 107, 1980, 1 map. AVAILABLE FROM NTIS AND NYGS.
*M79	"Structure Contour Map on Top of the Middle Devonian Onondaga Group in Western and Northern Pennsylvania." Harper, J. A., and R. G. Piotrowski, PAGES, METC/EGSP Series 12, 1979, 3 maps.	M87 "Isopach Map of Black Shale in the Sonyea Group." Kamakaris, D.G., and A.M. VanTyne, NYGS, METC/EGSP Series 108, 1980, 1 map. AVAILABLE FROM NITS AND NYGS.
M80	"Maps of Northern Indiana Showing Thickness of the Sunbury, Ellsworth, and Antrim Shales (New Albany Shale Equivalents)." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 806, 1979, 1 map. AVAILABLE FROM NTIS AND INGS.	M88 "Isopach Map of Black Shale in the Genesee Group." Kamakaris, D.G., and A.M. VanTyne, NYGS, METC/EGSP Series 109, 1980, 1 map. AVAILABLE FROM NTIS AND NYGS.
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		*M90 "Maps Showing Location of Stratigraphic Cross Sections and Cored Drill Holes Used in the Study of the Devonian Black Shales in the Appalachian Basin." Roen, J.B., L.G. Wallace, R.C. Kepferle, P.E. Potter, and W.A. Pryor, USGS, METC/EGSP Series 1400, 1980, 2 maps.

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M92	"Stratigraphic Sections From Well Logs and Outcrops of Cretaceous and Paleocene Rocks, Northern Great Plains, Montana." Rice, Dudley D., USGS, Chart OC-71, 1976, 3 maps. AVAILABLE FROM USGS.	M99	"Outgassing Data Summary Report - EGSP." SAI, April 1980, 2 maps (plates).
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M95	"Stratigraphic Diagrams With Electric Logs of Upper Cretaceous Rocks, Powder River Basin, Natrona, Campbell, and Weston Counties, Wyoming." Merewether, E.A., and W.A. Cobban, USGS and Matson, R.M., and W.J. Magathan, Petroleum Exploration Inc., USGS, Map OC-74, no date, 1 map. AVAILABLE FROM USGS.	*M102	"Net Thickness of the Radioactive Shale Facies in the Huron and Chagrin Members of the Ohio Shale." Majchszak, Frank L., and Mitchell Honeycutt, OHGS, METC/EGSP Series 301, 1980, 2 maps.
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M109	"Cross Section A-A' of Upper Cretaceous and Lower Tertiary Rocks, Northern Piceance Creek Basin, Colorado. Johnson, Ronald C., USGS, MF-1129A, 1979, 2 maps. AVAILABLE FROM USGS.	M118 "Isopach of Radioactive Shale in the Perryburg Formation." Van Tyne, A.M., D.G. Kamakaris, and S. Corbo. NYGS, METC/EGSP Series 125, 1980, 1 map. AVAILABLE FROM NTIS AND NYGS.
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*M115	"Structure Contour Map on the Base of the Cleveland Shale Member (Unit 1) of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series. 514, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS.	M124 "Isopach Map of the Cleveland Shale Member (Unit 1) of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 522, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS.
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| M129 | "Isopach Map of the Three Lick Bed (Unit 2) of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 521, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. | M138 | "Map of Indiana Showing Thickness of the Clegg Creek-Camp Run-Morgan Trail Members (Undifferentiated) of the New Albany Shale (Devonian and Mississippian)." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 809, 1980, 1 map. AVAILABLE FROM NTIS AND INGS. |
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| M131 | "Isopach Map of the Upper Olenangy Shale (Unit 6) in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 517, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. | *M140 | "Structure Contour Map on the Base of the Java Formation/Olentangy Shale (Unit 6) in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 509, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. |
| M132 | "Isopach Map of West Falls Formation." Van Tyne, A.M., D.G. Kamakaris, and S. Corbo. NYGS, METC/EGSP Series 118, 1980, 1 map. AVAILABLE FROM NTIS AND NYGS. | M141 | "Structure Contour Map on the Base of the Lower Huron Shale Member (Unit 5) of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 510, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. |
| M133 | "Map of Indiana Showing Locations of Selected Wells that Penetrate New Albany Shale (Devonian and Mississippian) and Equivalent Strata." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 815, 1980, 1 map. AVAILABLE FROM NTIS AND INGS. | M142 | "Structure Contour Map on the Base of the Middle Huron Shale Member (Unit 4) of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 511, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. |
| M134 | "Map of Indiana Showing Structure on Top of Silurian Rocks." Hasenmueller, N.R., and J.L. Bassett, INGS, METC/EGSP Series 811, 1980, 1 map. AVAILABLE FROM NTIS AND INGS. | M143 | "Structure Contour Map on the Base of the Ohio Shale in Eastern Kentucky." Dillman, S.B., and F.R. Ettensohn, U. KY Research Group, METC/EGSP Series 507, 1980, 1 map. AVAILABLE FROM NTIS AND KYGS. |
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5.0 CONTRACTORS

5.1 Eastern Gas Shales Project

Contract Number	Contractor	Principal Investigator
DE-AC21-78MC08199	Cliffs Minerals, Inc. 1460 Union Commerce Building Cleveland, OH 44115	216/241-2356
DE-AC21-78MC08385	Columbia Gas System Service Corp. 1600 Dublin Road Columbus, OH 43215	614/486-3681
DE-AC21-78MC08339 DE-AC21-79MC12697	Donohue, Anstey, and Morrill 8 Arlington Street Boston, MA 02127	617/267-7600
DE-AC21-79MC11843	E.I. Dupont DeNemours and Company 1007 Market Street Wilmington, DE 19898	302/774-3781
DE-AC05-77ET12137	Environmental Research Institute of Michigan P.O. Box 618 (ERIM) Ann Arbor, MI 48107	313/994-1200
DE-AC21-78MC08096	Gruy Federal, Inc. 2500 Tanglewild—Suite 150 Houston, TX 77063	713/785-9200
DE-AC05-78MC08382	Gruy Federal, Inc. 2500 Tanglewild, Suite 150 Houston, TX 77063	713/785-9200
DE-AC21-76MC05204	Indiana Geological Survey Department of Natural Resource 611 North Walnut Drive Bloomington, IN 47401	812/337-2862
DE-AS05-76MC05197	Juniata College Department of Chemistry Huntingdon, PA 16652	814/643-4310
DE-AC21-79MC12010	University of Maryland Department of Mechanical Engineering College Park, MD 20742	301/454-2411
DE-AC21-78MC08387 DE-AC21-78MC12537	Mitchell Energy Corporation 3900 One Shell Plaza Houston, TX 77002	713/224-4522
DE-AC04-76DP00053	Mound Facility Monsanto Research Corp. Miamisburg, OH 45342	513/866-7444

5.0 CONTRACTORS (Continued)

5.1 Eastern Gas Shales Project (Continued)

Contract Number	Contractor	Principal Investigator
DE-AS05-76MC05200	Ohio Geological Survey Fountain Square Columbus, OH 43224	614/466-5344
DE-AC21-79MC10514	Ohio State University 155 Woodruff Avenue Columbus, OH 43210	614/422-2731
DE-AT21-78MC08216	Science Applications, Inc. Chestnut Ridge Professional Building Morgantown, WV 26505	304/599-9696
DE-AC21-79MC11577 DE-AC21-79MC11597	SRI International 333 Ravenswood Avenue Menlo Park, CA 94025	415/326-6200
DE-AC21-79MC11047 DE-AC21-80MC12093	Terra Tek, Inc. University Research Park 420 Wakara Way Salt Lake City, UT 84108	801/582-2220
DE-AC21-78MC10389	Tetra Tech, Inc. 1911 North Fort Myer Drive Arlington, VA 22209	713/629-9280
	Tetra Tech, Inc. 6660 Doubletree Avenue Columbus, OH 43229	614/885-4179
DE-AC21-78MC08386	Thurlow Weed & Associates, Inc. 1765 Edgemont Drive Columbus, OH 43229	614/488-4471
DE-AI21-79MC10516	U. S. Geological Survey Mail Stop 955 National Center Building Reston, VA 22092	703/860-6635
DE-AC21-79MC010515	J. T. Waggoner 13207 Autumn Drive Silver Spring, MD 20904	301/384-8869
DE-AC21076MC05199	West Virginia Geological and Economic Survey P.O. Box 879 Morgantown, WV 26505	304/292-6331
DE-AC21-76MC05194	West Virginia University Department of Geology and Geography Morgantown, WV 26506	304/293-5603

5.0 CONTRACTORS (Continued)

5.1 Eastern Gas Shales Project (Continued)

Contract Number	Contractor	Principal Investigator
DE-AT21-78MC11284	West Virginia University Engineering Sciences 509 Engineering Sciences Building Morgantown, WV 26506	304/293-3780

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5.0 CONTRACTORS (Continued)**5.2 Methane Recovery from Coalbeds Project**

Contract Number	Contractor	Principal Investigator
EW-78-G-21-8377	Colorado Geological Survey Department of Natural Resources 715 State Centennial Building 1313 Sherman Street Denver, CO 80203	FTS-234-3131 303/839-2611
EW-78-C-21-8392	Ingersoll-Rand Res., Inc. P.O. Box 301 Princeton, NJ 08540	FTS-483-2000 609/921-9103
EW-78-C-21-8352	Intercomp, Inc. Resource Development and Engineering, Inc. 1201 Dairy Ashford Suite 200 Houston, TX 77079	FTS-527-4011 713/497-8400
EY-78-C-21-8384	Intercomp, Inc. (Taiga) Resource Development and Engineering, Inc. 1201 Dairy Ashford Suite 200 Houston, TX 77079	FTS-527-4011 713/497-8400
EY-77-C-21-8093	Maurer Engineering, Inc. 10301 N.W. Freeway Suite 202 Houston, TX 77092	FTS-527-4011 713/683-8227
EW-78-C-21-8380	Maurer Engineering, Inc. 10301 N.W. Freeway Suite 202 Houston, TX 77092	FTS-527-4011 713/683-2227
EY-78-C-21-8217	Mountain Fuel Res., Inc. 36 South State Street Suite 1540 Salt Lake City, UT 84111	FTS-588-5500 801/364-0740
EW-78-C-21-8089	TRW, Systems & Energy Energy Systems Planning Division 7600 Colshire Drive McLean, VA 22101	FTS-202-893-2000 Ext. 2214
EW-78-C-21-8399	Union Carbide Corp. Tarrytown Technical Center Old Saw Mill River Road Tarrytown, NY 10591	

5.0 CONTRACTORS (Continued)

5.2 Methane Recovery from Coalbeds Project (Continued)

Contract Number	Contractor	Principal Investigator
EY-77-C-21-8098	Westinghouse Electric Advanced Energy Systems Division Box 10864 Pittsburgh, PA 15236	FTS-727-0111 Ext. 5437
EW-78-C-21-8332	Westinghouse Electric Advanced Energy Systems Division Box 10864 Pittsburgh, PA 15236	FTS-727-0111 Ext. 5437/5117

5.0 CONTRACTORS (Continued)

5.3 Western Gas Sands Project

Contract Number	Contractor	Principal Investigator
EY-76-C-08-0623	CER Corporation P.O. Box 15090 Las Vegas, NV 89114	702/735-7136
DE-AC08-79-BG-01569	CER Corporation P.O. Box 15090 Las Vegas, NV 89114	702/735-7136
EY-77-C-08-1514	Colorado Interstate Gas Company P.O. Box 1087 Colorado Springs, CO 80944	303/473-2300
EY-76-C-08-0681	Gas Producing Enterprises, Inc. P.O. Box 749 Denver, CO 80201	
EF-78-C-08-1547	Mitchell Energy Corporation 3100 One Shell Plaza Houston, TX 77002	713/224-6226
EY-76-C-08-0678	Mobil Research and Development Corp. P.O. Box 900 Dallas, TX 75221	214/333-6259
EY-76-C-08-0677	Rio Blanco Natural Gas Company 200 Western Federal Savings 718 17th Street Denver, CO 80202	303/292-1350
	Sandia Laboratories P.O. Box 5800 Albuquerque, NM 87185	505/844-2302

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