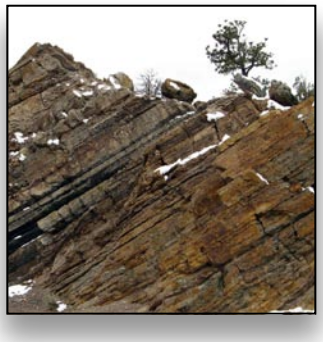

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U.S. Geological Survey
Digital Data Series DDS–69–P

National Assessment of Oil and Gas Project:

Petroleum Systems and Assessment of Undiscovered Oil and Gas in the Denver Basin Province, Colorado, Kansas, Nebraska, South Dakota, and Wyoming—USGS Province 39

Compiled by Debra K. Higley

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Introduction

The purpose of the U.S. Geological Survey's (USGS) National Oil and Gas Assessment is to develop geologically based hypotheses regarding the potential for additions to oil and gas reserves in priority areas of the United States. The USGS recently completed an assessment of undiscovered oil and gas resources of the Denver Basin Province (USGS Province 39), Colorado, Kansas, Nebraska, South Dakota, and Wyoming. Petroleum is produced in the province from sandstone, shale, and limestone reservoirs that range from Pennsylvanian to Upper Cretaceous in age.

This assessment is based on geologic principles and uses the total petroleum system concept. The geologic elements of a total petroleum system include hydrocarbon source rocks (source rock maturation, hydrocarbon generation and migration), reservoir rocks (sequence stratigraphy and petrophysical properties), and hydrocarbon traps (trap formation and timing). The USGS used this geologic framework to define seven total petroleum systems and twelve assessment units. Nine of these assessment units were quantitatively assessed for undiscovered oil and gas resources. Gas was not assessed for two coal bed methane assessment units due to lack of information and limited potential;

oil resources were not assessed for the Fractured Pierre Shale Assessment Unit due to its mature development status.

Contact Information

This volume is one of a series of products resulting from the National Oil and Gas Assessment project of the U.S. Geological Survey. Inquiries about this CD-ROM or the project should be addressed to:

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Using This CD

The descriptive and interpretive text chapters of this volume are in PDF format. Use Acrobat Reader 7.0 (installer for Mac and Windows provided on this CD-ROM) to access and bring up these chapters.

Contained on this CD-ROM are tabular data and graphical images in support of the assessment. The chapter text PDF contains links to the data and images. Data-table files are presented as tab-delimited text files (.tab files), usable in spreadsheet and database software. Graphical and summary-table files are presented as portable document format files (.pdf files).

GIS information is presented in the Spatial folder and its subdirectories that contain the spatial data, documentation, and export files. The Spatial folder also contains the ArcGIS project (prov39.mxd), the ArcReader project (prov39.pmf), and a description of the GIS project in both .htm and .pdf formats.

The Spatial/Doc folder contains metadata for the Denver Basin Province spatial data in .htm format. The Spatial/Export folder contains Arc/Info export files (.e00). The Spatial/Images folder contains images used in both the GIS projects and the Metadata documents. The Spatial/Shape folder contains ArcView/ArcGIS shapefiles used in the two GIS projects

GIS Projects—Getting Started

Denver Basin Province GIS Project Display Options

There are several display options available to view spatial data contained on this CD-ROM:

ArcMap

A customized ArcMap project has been included (DDS69P/SPATIAL/prov39.mxd) to facilitate the display of the data. This project is included on the CD-ROM under the assumption that a large portion of viewers will have access to ArcMap software. While not necessary to view the data, it is expected that the use of this project will lend more functionality to the data.

The ArcMap project utilizes relative path names, which is an option when saving the file. To open the project, start ArcMap and navigate to the file location on this CD-ROM (SPATIAL/prov39.mxd).

ArcReader

If ArcMap software is not available, the ArcMap project has been converted to an ArcReader project (SPATIAL/prov39.pmf). ArcReader is free software provided by ESRI. The ArcReader project maintains most of the functionality present in the ArcMap project. To open the ArcReader project, download the ArcReader software from ESRI; start ArcReader and navigate to the ArcReader .pmf file on this CD-ROM. This freeware may be downloaded from www.esri.com or follow the link below:
Arcreader can be downloaded for Windows from ESRI's website http://www.esri.com/software/arcgis/arcreader/download.html

Other

The spatial data are also provided in the ESRI Shapefile format (SPATIAL/Shape folder) or as ArcInfo 8.3 Export files (see SPATIAL/Export folder), should the user need to view the data in ArcInfo or a non-ESRI application.

Included within the OF88_527 folder are data files and associated documentation from U.S. Geological Survey Open-File Report 88-527, "Core Porosity, Permeability, and Vitrinite Reflectance Data from the Lower Cretaceous J Sandstone in 141 Denver Basin Coreholes." Data documentation within Pordata.doc is for the individual files of core porosity, permeability, and vitrinite reflectance, and associated files; original formats were space-delimited .Dat files. The files have also been saved as comma-delimited (.csv) and as Microsoft Excel (.xls) formats that include identification numbers from the Pordata.doc file. Statistical information for the porosity and permeability data is located within the Jsandsto.Dat file, which is also saved in Excel and comma-delimited formats. This file also contains identification numbers and longitude-latitude locations of the wells.

Contents of This CD-ROM

When the CD-ROM is opened, the following folders appear on the screen:
ACROBAT—contains installer for Acrobat Reader 7.0.
OPEN_FIRST—from OPEN_FIRST.pdf in this folder, navigate to the ReadMe file, an executive summary, pages of chapter titles, and the GIS data and metadata.
READ_ME—you can access the ReadMe file from this folder also.
REPORTS—listing of, and links to, the chapters, plus the tabular data.
SPATIAL—folder containing files for the GIS data and metadata.
OF88_527—Documentation and files associated with core porosity, permeability, and vitrinite reflectance data for 141 wells across the Denver Basin. Folders contain files in the original *.Dat space-delimited (DAT) format, and in comma delimited (CSV), and Microsoft Excel (XLS) formats.

There are several routes to the information in this volume.

System Requirements

MAC OS X
Adobe Reader 7

- Power PC G3, G4, G5 processor
- Mac OS X v.10.2.8 or 10.3
- 128 MB of RAM
- 80 MB of available hard disk space (110 MB required for the full version)
- 800 x 600 screen resolution

WINDOWS
Adobe Reader 7.0 MS Windows

- Intel Pentium-class processor or equivalent
- Windows XP Professional or Home Edition with SP1 or SP2, or Tablet

PC Edition

- Microsoft Windows 2000 with Service Pack 2 (SP2)
- 128 MB of RAM
- 90 MB of available hard-disk space for the full version
- 800 x 600 monitor resolution

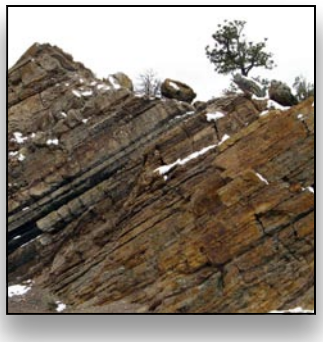
Requirements for ArcReader 9.2 for Windows:

- 1.5 GHz Intel Pentium or Intel Zeon Processors or equivalent
- Windows XP Home and Professional Editions
- 256 MB RAM Minimum, 512 MB recommended
- 410 MB disk space

Requirements for ArcView 8.x for Windows:

- 450 MHz Pentium or equivalent minimum, 800 MHz recommended
- Microsoft Windows NT 4.0 with Service Pack 6a or Windows 2000 or Windows XP Home and Professional Editions
- 128 MB RAM, 256 Recommended

Note: Installers for Acrobat Reader 7.0 for Macintosh and Windows platforms are provided on this CD-ROM.



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