



Energy Resources Program

U.S. GEOLOGICAL SURVEY ENERGY RESOURCES PROGRAM NEWSLETTER
SUMMER 2007

Thank you for subscribing to the Energy Resources Program Newsletter. This quarterly newsletter provides you with the latest news, information and products published by the USGS Energy Resources Program. In addition to recent publications, we are continuing to expand the content available through our redesigned website.

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ENERGY SPOTLIGHT:
USGS Circum-Arctic Resource Appraisal

The Energy Spotlight is a new feature that highlights one theme among the ongoing USGS energy resources research efforts. The spotlight summarizes recent accomplishments and provides an overview of current research status and upcoming products. Subsequent newsletters will feature different themes to cover the breadth of the USGS energy resources research portfolio.

USGS Circum-Arctic Resource Appraisal (CARA):

The Arctic is an area of high petroleum resource potential, low data density, high geologic uncertainty and sensitive environmental conditions. A large part of the

remaining global endowment of oil and gas resources is thought to exist in the high northern latitudes of Russia, Norway, Greenland, United States, and Canada. However, the quality, quantity, and distribution of these resources are insufficiently known and understood in many areas.

Only a portion of the Arctic was included in the USGS World Petroleum Assessment 2000. The remaining areas considered to have high resource potential need to be investigated, and previous assessments of Arctic provinces need to be updated in light of new data gathered since 1996, which was the most current data used in the USGS World Petroleum Assessment 2000.

The primary objective of the current USGS effort, conducted in collaboration with several U.S. and international entities, is to produce a new resource appraisal of oil and gas resources of the high northern latitudes. This new appraisal is termed the Circum-Arctic Resource Appraisal (or CARA), the primary emphasis of which is to provide a comprehensive, unbiased probabilistic estimate of potential future additions to conventional oil and gas reserves in the high northern latitudes. An additional and complementary objective is to place these probabilistic estimates within a resource/cost context by means of a full-cycle economic analysis model, thus taking into account exploration and development costs that affect the commercial viability of the resource.

The first results of this effort, a resource assessment of Northeast Greenland Shelf, are planned to be completed during the International Polar Year (IPY) 2007-2008. The IPY will encompass many scientific studies designed to characterize the geologic framework, study natural resources, and improve the understanding of polar change and its effects on Earth's ecosystems and people.

The USGS recently held a kick-off event to highlight its scientific contributions to the IPY effort. View presentations from the kick-off event, including an overview of the USGS CARA: <http://international.usgs.gov/ipy/launch.shtml> . For more information on USGS scientific contributions to the IPY effort, please visit the USGS IPY Fact Sheet at: <http://pubs.usgs.gov/fs/2007/3013/> .

Recent publications in support of the USGS efforts to characterize the geologic framework of the Arctic include:

---Maps Showing Geology, Oil and Gas Fields, and Geologic Provinces of the Arctic:
<http://pubs.usgs.gov/of/1997/ofr-97-470/OF97-470J/>

---Assessment of Undiscovered Oil and Gas Resources of the Mackenzie Delta Province, North America, 2004: <http://pubs.usgs.gov/fs/2006/3002/>

Please visit the following website for future updates of the USGS CARA research:
http://certmapper.cr.usgs.gov/rooms/we/index.jsp?thePage=include_arctic.jsp

GAS HYDRATES:

Stratigraphic Test Well, Milne Point, Alaska North Slope:

The U.S. Department of Energy - BP Exploration (Alaska) - USGS successfully drilled a research well on the North Slope of Alaska to collect samples and information about gas hydrates, a potential unconventional gas energy resource. The target for this test well, located at Milne Point, was gas hydrate within the Sagavanirktok Formation in the Mt. Elbert prospect accumulation. This occurrence had been identified by seismic, well, and reservoir modeling studies during earlier phases of this research program. Drilling crews and research team members collected about 430 ft of core samples from this well. Subsequent data collection and analysis will continue for several months and research findings will be reported thereafter.

For more information, and to read a press release on this drilling effort, please visit the following non-USGS websites:

http://www.netl.doe.gov/technologies/oil-gas/FutureSupply/MethaneHydrates/rd-program/ANSWell/ANSWell_main.html

<http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7028944>

GEOCHEMISTRY AND LABORATORIES:

Performance Audit of the USGS Energy Resources Program Inorganic Geochemistry Laboratory:

An integral component of USGS energy resources research efforts are analyses conducted by the Inorganic Geochemistry Laboratory (IGL) located in Denver, CO. The IGL is responsible for the analysis of major, minor, and trace elements in coal, overburden, water, and related samples from diverse sources not only from U.S. coal regions, but also from around the world. Samples come from projects such as the National Coal Resource Assessment, World Coal Quality Inventory, National Coal Quality Inventory, and various research studies on coal and coal by-products as well as associated studies on environmental and health impacts.

A performance audit of the IGL was conducted between August, 2003 and October, 2005. The goals were to ensure that a high level of analytical performance was maintained and to identify any areas that could be enhanced. The audit found that the

IGL performance for trace element analyses ranked within the top two among the laboratories compared. Several recommendations to enhance performance on major and minor elemental parameters were made and implemented, and demonstrated performance improvements as a result of the recommended changes were documented.

For more information on the IGL performance audit findings, please visit the USGS Open-File Report located at: <http://pubs.usgs.gov/of/2007/1136/>

HEAVY OIL AND NATURAL BITUMEN:

Heavy Oil and Natural Bitumen Resources in Geological Basins of the World:

Heavy oil and natural bitumen are unique because of their high viscosity (resistance to flow) and high density (low API gravity). Almost all heavy oil and natural bitumen resources are alteration products of crude oil. Total global resources of heavy oil in known accumulations are 3,396 billion barrels of original oil in place, of which 30 billion barrels are included as prospective additional oil – that is, the amount of resource in an unmeasured section or portion of a known deposit believed to be present as a result of inference from geological and(or) geophysical study. The total global natural bitumen resource in known accumulations amounts to 5,505 billion barrels of original oil in place, which includes 993 billion barrels as prospective additional oil. These resources are distributed in 192 basins containing heavy oil and 89 basins with natural bitumen. Access this USGS Open-File Report at: <http://pubs.usgs.gov/of/2007/1084/>

For more information on U.S. natural bitumen resources, please visit the recent National Oil and Gas Assessment fact sheet on this topic: <http://pubs.usgs.gov/fs/2006/3133/>

HUMAN HEALTH AND ENVIRONMENT:

Second National Conference on USGS Health-Related Research:

The USGS recently convened its Second National Conference on USGS Health-Related Research, February 27-March 1, 2007, in Reston, VA. The conference hosted more than 200 attendees. For the latest on USGS energy resources research related to human health issues, please visit: <http://energy.usgs.gov/healthenviron.html>, or, for an overview of all USGS human health-related research, please visit: <http://health.usgs.gov/> .

NATIONAL OIL AND GAS ASSESSMENT:

Undiscovered Gas Resources in the Upper Cretaceous Tuscaloosa and Woodbine Formations, Western Gulf Province of the Gulf Coast Region, Louisiana and Texas:

Using a geology-based assessment methodology, the USGS estimated a mean of 20.8 trillion cubic feet of undiscovered natural gas [F95 value of 9.8 TCFG; F5 value of 35.4 TCFG], and a mean of 0.60 billion barrels of undiscovered natural gas liquids [F95 value of 0.25 BBNGL; F5 value of 1.11 BBNGL] in the Western Gulf Province of the Gulf Coast Region, Louisiana and Texas. See the new fact sheet available at:

<http://pubs.usgs.gov/fs/2006/3146/>

Sacramento Basin Province of California:

The USGS recently completed a new assessment of undiscovered natural gas resources of the Sacramento Basin Province of California. Using a geology-based assessment methodology, mean estimates of undiscovered, technically recoverable resources are 534 billion cubic feet of natural gas [F95 value of 139 BCFG; F5 value of 1,067 BCFG] and 323 thousand barrels of natural gas liquids [F95 value of 52 MBNGL; F5 value of 770 MBNGL] in the province. Additional undiscovered oil accumulations larger than 0.5 million barrels are considered unlikely. See the new fact sheet available at:

<http://pubs.usgs.gov/fs/2007/3014/>

!!NEW CD-ROM!!

Geologic Assessment of Undiscovered Oil and Gas Resources of the Black Warrior Basin Province, Alabama and Mississippi:

This CD-ROM contains reports synthesizing information in support of the recent USGS assessments of the undiscovered oil and gas resources of the Black Warrior Basin Province in northeastern Mississippi and northwestern Alabama. The CD-ROM reports are available online at the following website: <http://pubs.usgs.gov/dds/dds-069/dds-069-i/> The assessment fact sheet, released in 2003, is available at: <http://pubs.usgs.gov/fs/fs-038-03/> . For hard copy CD-ROM requests, please send an email to:

eteamdisks@usgs.gov

!!NEW CD-ROM!!

Petroleum Systems and Assessment of Undiscovered Oil and Gas in the Raton Basin–Sierra Grande Uplift Province, Colorado and New Mexico—USGS Province 41:

This CD-ROM contains reports synthesizing information in support of the recent USGS assessments of the undiscovered oil and gas resources of the Raton Basin–Sierra Grande

Uplift Province, Colorado and New Mexico. The CD-ROM reports are available online at the following website: <http://pubs.usgs.gov/dds/dds-069/dds-069-n/>
The assessment fact sheet, released in 2005, is available at: <http://pubs.usgs.gov/fs/2005/3027/>. For hard copy CD-ROM requests, please send an email to: eteamdsk@usgs.gov

Barnett Shale:

The April 2007 issue of the AAPG Bulletin is a themed issue focusing on research studies of the Barnett Shale. Ronald J. Hill (USGS) and Daniel M. Jarvie (Humble Geochemical Services) are co-editors of this special issue, which contains several manuscripts authored by USGS scientists. For more information on this publication, including a table of contents, please visit the AAPG website: <http://www.aapg.org/>

WORLD PETROLEUM ASSESSMENT:

World Petroleum Assessment Updates:

The USGS has added a new feature to highlight its recent World Petroleum Assessment (WPA) research efforts. The main objective of the USGS WPA Project is to assess the potential for undiscovered oil and natural gas resources of the world, exclusive of the United States. The last comprehensive USGS WPA was completed in 2000, and since 2000, the USGS has assessed several more priority basins. Updated summary tables are available for all the USGS WPA 2000 regions, and summary maps (in pdf format) are available for the South America region. These updates reflect new information from WPA research efforts thru December 2006. Check out the WPA resource assessment updates at the following link:
http://energy.cr.usgs.gov/oilgas/wep/assessment_updates.html

When combined with the assessment updates from the USGS National Oil and Gas Assessment (NOGA updates available at: http://energy.cr.usgs.gov/oilgas/noga/ass_updates.html), the WPA and NOGA update results provide a current overview of the understanding regarding domestic and foreign endowments of undiscovered, technically recoverable petroleum resources.

An Evaluation of the USGS World Petroleum Assessment 2000—Supporting Data:

In June 2000, the USGS published the results of a world petroleum assessment, exclusive of the United States. The assessment included the volumes of undiscovered crude oil and natural gas estimated to have the potential to be added to reserves in a

30-year time frame (to 2025). Klett and others (2005) compared the actual additions to reserves as reported from January 1996 to December 2003 with those estimates, apportioned to the 1996–2003 period. The present report (1) provides tabular data, not included in the 2005 report by Klett and others, that support the graphical displays, and (2) briefly summarizes the interpretations and conclusions presented in the 2005 report. This new Open-File Report is available at: <http://pubs.usgs.gov/of/2007/1021/>

ADDITIONAL RECENT PUBLICATIONS:

U.S. Geological Survey Data Series 181

Piceance Creek Basin, Colorado, Oil Shale Geodatabase
Mercier, T.J.

<http://pubs.usgs.gov/ds/2006/181/>

U.S. Geological Survey Open-File Report 2006-1283

A Workshop Investigating the Potential for the Application of Decision Analysis Principles and Processes to Geoenvironmental Situations: Selenium in West Virginia
By James L. Coleman, Jr., Ione L. Taylor, Tim Nieman, and Karen Jenni

<http://pubs.usgs.gov/of/2006/1283/>

U.S. Geological Survey Open-File Report 2007-1003

In search of a Silurian Total Petroleum System in the Appalachian basin of New York, Ohio, Pennsylvania, and West Virginia

By Robert T. Ryder, Christopher S. Swezey, Michael H. Trippi, Erika E. Lentz, K. Lee Avary, John A. Harper, William M. Kappel, and Ronald G. Rea

<http://pubs.usgs.gov/of/2007/1003/>

U.S. Geological Survey Open-File Report 2007-1090

Selenium Concentrations in Middle Pennsylvanian Coal-Bearing Strata in the Central Appalachian Basin

By Sandra G. Neuzil, Frank T. Dulong, C. Blaine Cecil, Nick Fedorko, John J. Renton, and D. K. Bhumbla

<http://pubs.usgs.gov/of/2007/1090/>

CUSTOMER SATISFACTION SURVEY – USGS ENERGY RESOURCES PROGRAM WEBSITES:

USGS Energy Resources Program Website Customer Satisfaction Survey:

The USGS is in the process of conducting a survey to evaluate customer satisfaction with respect to the revised Energy Resources Program (ERP) websites. The ERP has made a

concerted effort to streamline websites to enhance product, information, and data delivery to customers. This effort was undertaken to better assist customers in efficiently searching for and obtaining USGS energy-related data and products. The new streamlined websites were unveiled approximately one year ago.

Customers who have both signed up for the ERP newsletter and indicated their willingness to participate in an email-based survey may be contacted to provide feedback. The USGS values its customers, and the advice you provide will help us improve our science products and their delivery. **If you are among those contacted by the survey administrator, please take the time to complete the survey and provide your comments!** Your responses will be anonymous. No one outside the survey administrator will know if you responded, and your name will never be attached to your responses.

OTHER USGS NEWS:

Facing Tomorrow's Challenges—U.S. Geological Survey Science in the Decade 2007–2017:

In order for the USGS to respond to evolving national and global priorities, it must periodically reflect on, and optimize, its strategic directions. This report is the first comprehensive science strategy since the early 1990s to critically examine major USGS science goals and priorities. The development of this science strategy comes at a time of global trends and rapidly evolving societal needs that pose important natural-science challenges. Responding to these national priorities and global trends requires a science strategy that not only builds on existing USGS strengths and partnerships but also demands the innovation made possible by integrating the full range and depth of USGS capabilities. Access this USGS Circular at: <http://pubs.usgs.gov/circ/2007/1309/>