



the **ENERGY** lab

PROGRAM FACTS

Strategic Center for
Natural Gas & Oil

Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research Program

The Department of Energy's (DOE) Office of Fossil Energy supports research and policy options to ensure clean, reliable, and affordable supplies of oil and natural gas for American consumers. The National Energy Technology Laboratory's (NETL) Strategic Center for Natural Gas and Oil (SCNGO) implements a portfolio of Fossil Energy research & development (R&D) programs aimed at protecting the environment while enhancing domestic oil and gas exploration and production.

Natural gas and crude oil provide two-thirds of our Nation's primary energy supply and will continue to do so for at least the next several decades, as the Nation transitions to a more sustainable energy future. The natural gas resource estimated to exist within the United States is significant, but because this resource is increasingly harder to locate and produce, new technologies are

CONTACTS

John R. Duda

Director

Strategic Center for Natural Gas & Oil

304-285-4217

john.duda@netl.doe.gov

James Ammer

Division Director

Natural Gas & Oil Project Management
Division

304-285-4383

james.ammer@netl.doe.gov

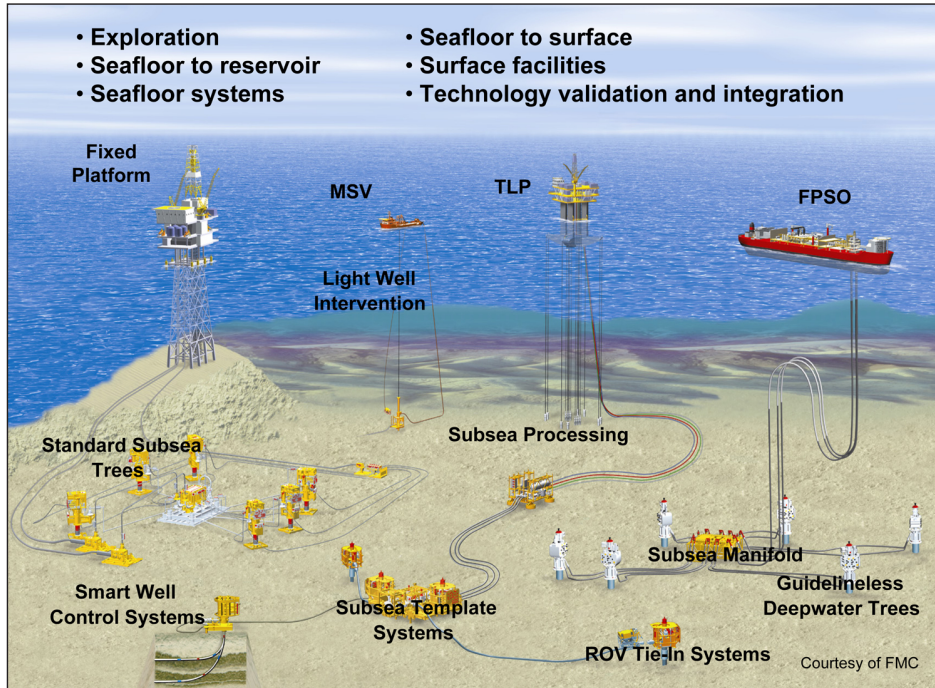
Roy Long

Technology Manager

EPA Act 2005, Section 999

281-494-2520

roy.long@netl.doe.gov



Ultra-deepwater architecture and technology.

NATIONAL ENERGY TECHNOLOGY LABORATORY

Albany, OR • Fairbanks, AK • Morgantown, WV • Pittsburgh, PA • Houston, TX

Website: www.netl.doe.gov

Customer Service: 1-800-553-7681



U.S. DEPARTMENT OF
ENERGY

required to extract it. This is also true for the domestic oil resource, much of which will need to be produced from very deep water, forced from residual pockets left in older reservoirs, or extracted from unconventional deposits, all of which are difficult to develop with existing technology, even at current prices.

In August 2005, President Bush signed the Energy Policy Act of 2005 (EPAAct) into law. Title IX, Subtitle J, Section 999 of EPAAct adds another dimension to the overall NETL/SCNGO oil and gas R&D effort, enhancing opportunities to demonstrate technologies in the field and accelerate their implementation in the marketplace. The *Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Research Program* launched by EPAAct is a public/private partnership valued at \$400 million in total over eight years, that is designed to benefit consumers by developing technologies to increase America's domestic oil and gas production and reduce the Nation's dependency on foreign imports. A portion of the funding is directed towards cost-shared research, while another portion is used by NETL to carry out complementary R&D.

Funding for the program is prescribed by EPAAct as follows:

- Ultra-deepwater architecture and technology (35% of funds).
- Unconventional natural gas and other petroleum resource exploration and production technology (32.5%).
- The technology challenges of small producers (7.5%).
- Research complementary to the above conducted by NETL (25%).

Cost-Shared Research

EPAAct required the DOE to competitively select and award a contract to a consortium to administer the cost-shared portion of the program comprised of three elements: Ultra-Deepwater, Unconventional Resources, and Small Producers. The Research Partnership to Secure Energy for America (RPSEA), a 501(c)(3) not-for-profit corporation consisting of over 140 member organizations, was the industry consortium selected to administer these three elements. NETL, on behalf of the Secretary of Energy, maintains oversight and review of the contract with RPSEA and the entire R&D program. The companies, universities, and other organizations that receive funds through this program provide cost-share contributions of 20 to 50 percent or more.

The RPSEA contract was initiated in January 2007 and together with NETL/SCNGO produced the first annual plan for the cost-shared portion of the program. A total of 43 projects were selected for award under the 15 solicitations for 2007. Seventeen projects were selected under the Ultra-Deepwater program element, nineteen projects under the Unconventional Resources element, and seven projects under the Small Producers element. Titles and details regarding these project cans be found on the NETL and RPSEA websites.

Annual plans for 2008 and 2009 have been completed and sent to Congress. The solicitations for the Unconventional Resources element and the Small Producers element based on the *2008 Annual Plan* resulted in a total of fifteen projects selected between the two solicitations. Nine projects were selected under the Unconventional Resources element and six projects under the Small Producers element. Eleven solicitations were released under the Ultra-Deepwater element, and selections are expected early Summer 2009.

Solicitations based on the *2009 Annual Plan* are expected to be released late Summer 2009.

Information regarding the solicitations will be available on both the NETL website, <http://www.netl.doe.gov> and the RPSEA website, <http://www.rpsea.org>.

The *2010 Annual Plan* will be reviewed by two Federal advisory committees beginning September 2009. Copies of all annual plans and other reports from the Federal advisory committees are available on the Department of Energy website at http://fossil.energy.gov/programs/oilgas/ultra_and_unconventional.

2008 Ultra-Deepwater Solicitations

(solicitations can be found at <http://www.rpsea.org/en/cms/?43>)

RFP Number	Project Title
DW1202	EOS Improvement for xHPHT
DW1502	Coil Tubing Drilling and Intervention System Using Cost-effective Vessels
DW2101	New Safety Barrier Testing Methods
DW2201	Heavy Viscous Oil PVT
DW2301	Deepwater Riserless Intervention System (RIS)
DW2501	Early Reservoir Appraisal, Utilizing a Well Testing System
DW2502	Modeling and Simulation of Managed Pressure Drilling for Improved Design, Risk Assessment, Training, and Operations
DW2701	Resources to Reserves Development and Acceleration through Appraisal
DW2801	Gulf 3-D Operational Current Model Pilot Project
DW2901	Ultra-Reliable Deepwater Electrical Power Distribution System and Power Components
DW2902	Student Design Projects and Novel Technology Solicitation

2008 Unconventional Resources Selected Projects

(awardee partners can be found at <http://www.netl.doe.gov/technologies/oil-gas/EPAAct2005/projects/index.html>)

Project Title	Primary Awardee
Barnett and Appalachian Shale Water Management and Reuse Technologies	Gas Technology Institute
Novel Gas Isotope Interpretation Tools To Optimize Gas Shale Production	California Institute of Technology
The Environmentally Friendly Drilling Systems Program	Houston Advanced Research Center (HARC)
Pretreatment and Water Management for Frac Water Reuse and Salt Production	GE Global Research
Stratigraphic Controls On Higher-Than-Average Permeability Zones In Tight-Gas Sands, Piceance Basin	Colorado School of Mines
Coupled Flow-Geomechanical-Geophysical-Geochemical (F3G) Analysis of Tight Gas Production	Lawrence Berkeley National Laboratory
Sustaining Fracture Area and Conductivity of Gas Shale Reservoirs for Enhancing Long-Term Production and Recovery	Texas Engineering Experiment Station/ Texas A&M University System
Multiazimuth Seismic Diffraction Imaging for Fracture Characterization in Low-Permeability Gas Formations	The Bureau of Economic Geology, The University of Texas at Austin
Evaluation of Fracture Systems and Stress Fields Within the Marcellus Shale and Utica Shale and Characterization of Associated Water-Disposal Reservoirs: Appalachian Basin	The Bureau of Economic Geology, The University of Texas at Austin

2008 Small Producers Selected Projects

(awardee partners can be found at <http://www.netl.doe.gov/technologies/oil-gas/EPAAct2005/projects/index.html>)

Project Title	Awardee
Field Demonstration Of Alkaline Surfactant Polymer Floods In Mature Oil Reservoirs Brookshire Dome, Texas	Layline Petroleum 1, LLC
Mini-Waterflood: A New Cost Effective Approach to Extend the Economic Life of Small, Mature Oil Reservoirs	New Mexico Institute of Mining and Technology
Electrical Power Generation from Produced Water: Field Demonstration of Ways to Reduce Operating Costs of Small Producers	Gulf Coast Green Energy
Evaluation and Modeling of Stratigraphic Control on the Distribution of Hydrothermal Dolomite Reservoir away from Major Fault Planes	Western Michigan University
Development Strategies for Maximizing East Texas Oil Field Production	The Bureau of Economic Geology, The University of Texas at Austin
Application to Improved Oil Recovery for Small Producers Commercial Exploitation and the Origin of Residual Oil Zones: Developing a Case History in the Permian Basin of New Mexico and West Texas	University of Texas of the Permian Basin

Complementary Research

The Complementary R&D Program is being carried out by NETL's Office of Research and Development. The four principal areas of focus are:

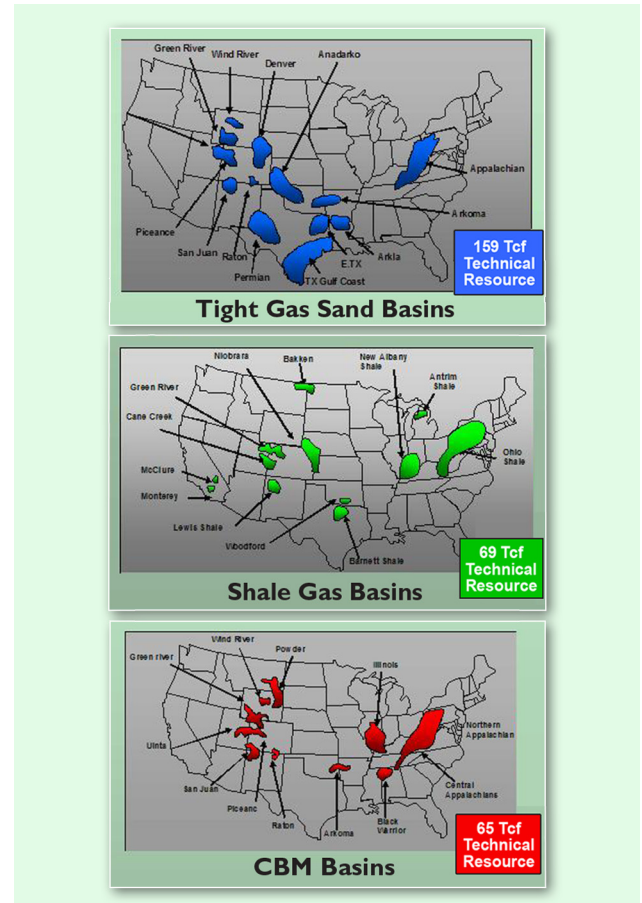
- Drilling Under Extreme Conditions
- Environmental Impacts of Oil and Natural Gas Development
- Enhanced and Unconventional Oil Recovery
- Resource Assessment

Another activity is identifying and quantifying the benefits that are expected to accrue as a result of the entire Section 999H program and performing analyses in support of program planning.

The Drilling Under Extreme Conditions project area will focus on activities related to the Ultra-deep Single Cutter Drilling Simulator (UDS) with the goal of improving the economic viability of drilling for and producing from domestic deep (greater than 15,000 ft true vertical depth (TVD)) and ultra-deep (greater than 25,000 ft TVD) oil and natural gas resources.

The Environmental Impacts project area includes research that will inventory airshed contaminants attributable to oil and gas activities using sensors mounted on unmanned aircraft to monitor contaminant plumes from oil and gas operations. This will permit 3-D measurement of contaminants within the dispersion plume and will provide a basis for air quality models that better represent the effect of contaminants from widely dispersed oil and gas sources.

Activities in the Enhanced and Unconventional Oil Recovery area include the development of new technologies that improve upon current oil extraction processes, while the Resource Assessment area will include activities to perform a detailed assessment of the Marcellus Shale in the Appalachian Basin utilizing high resolution analytical reservoir characterization techniques. The project will integrate higher resolution instrumentation to evaluate the molecular distribution of components in the shale. The results will be used to help determine the mechanisms of gas storage and movement through the matrix and fractures of the shale to the well bore which will lead to more accurate reservoir modeling.



Unconventional natural gas and other petroleum resource exploration and production technology.

