



NATIONAL ENERGY TECHNOLOGY LABORATORY



Oil and Gas Program Overview

Roy Long, Technology Manager, NETL
URTAC Meeting, September 9, 2010, Sugar Land, TX

Outline

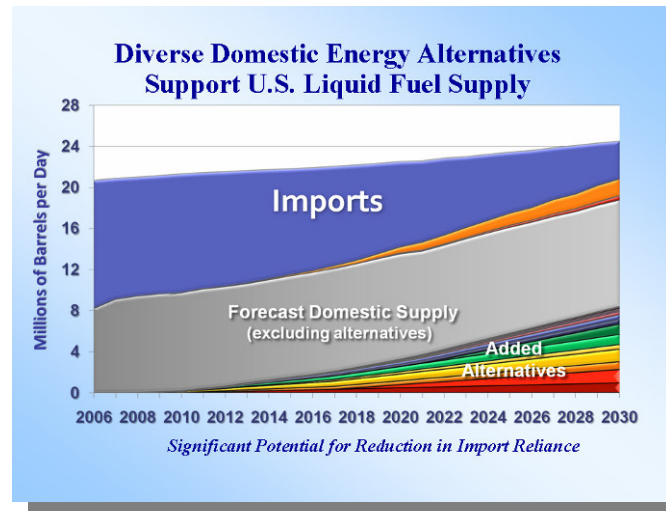
- **Introduction**
- **Traditional O&G Program Overview**
 - O&G Projects Summary
 - Stripper Well Consortium Highlight
- **EPAct 2005, Sec. 999 Program Overview**
 - Consortium Program Overview
 - Key Milestones (Where we have come from)
 - Status
 - Complementary Program
 - Overall Program Accomplishments
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 - 2009 FACA recommendations
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 - Process/Program enhancements
- **Integrated Technology Transfer Program**
 - Structure
 - Publications
 - Knowledge Management Database (KMD)

NETL Applies Basic Science to Technology Development, Demonstration, & Deployment

Onsite Research & Development



Systems, Analyses, & Planning



Extramural Research & Collaboration



Developing the critical science and technology to discover and Commercialize advanced energy systems that efficiently utilize domestic Resources in an environmentally sustainable manner

NETL Natural Gas & Oil R&D Program

Comprehensive R&D Portfolio

*Advancing Technologies Supporting Development of Domestic
Unconventional Resources*



**Unconventional
FE Technologies**

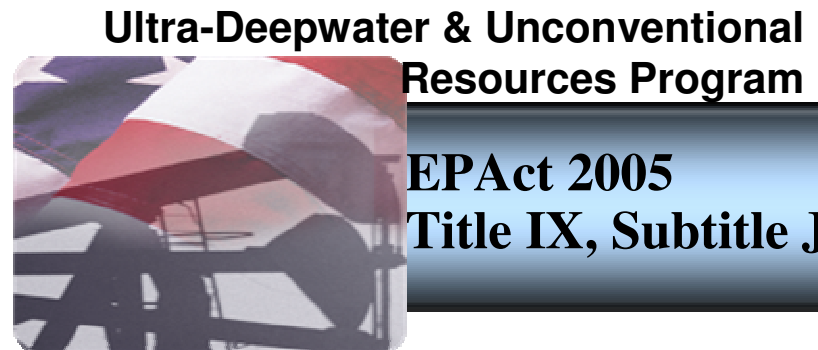
**FOA Closed
7/29/10**



**Methane
Hydrates**



**Environmental
Solutions**



**Ultra-Deepwater & Unconventional
Resources Program**

**EPAct 2005
Title IX, Subtitle J**

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Traditional Program Overview

- 60 Projects (excludes Hydrates and Section 999 projects)
- \$111 MM Total Value (\$78 MM Gov't. Share, \$33 MM Cost-Share)
- Current projects from prior year funding:
 - Fracture Flowback & Produced Water Treatment and Mgmt.
 - Environmental Impact Mitigation
 - Water Resources Management
 - Enhanced Oil Recovery
 - Unconventional Oil Production
 - Increasing Domestic Oil and Gas Production
 - Reservoir Characterization
 - Drilling/Completion/HPHT Downhole Tools
 - Seismic Technology
 - Oil and Gas Infrastructure-Related
 - Technology Transfer

Unconventional FE Technologies FOA

- **Opened: June 4, 2010**
- **Closed: July 29, 2010**
- **Funding Available: \$9,700,000**
- **Topic Areas:**
 - **Advanced Simulation and Visualization**
 - **Next-Generation CO₂-EOR**
- **Anticipated number of awards: 6-11**

Stripper Well Consortium



- Industry-driven consortium est. Oct 2000
- Funded by NETL, NYSERDA, members (75)
- ~100 projects funded
- SWC - \$9.6 million Cost Share - \$7.6 million
- Target: small independents
- Excellent Cooperation amongst members
- Projects: 1 year duration
- Process very Operator friendly

- **Low-cost innovative technology to:**

- Increase production
- Reduce operating costs
- Reduce environmental footprint

www.energy.psu.edu/swc



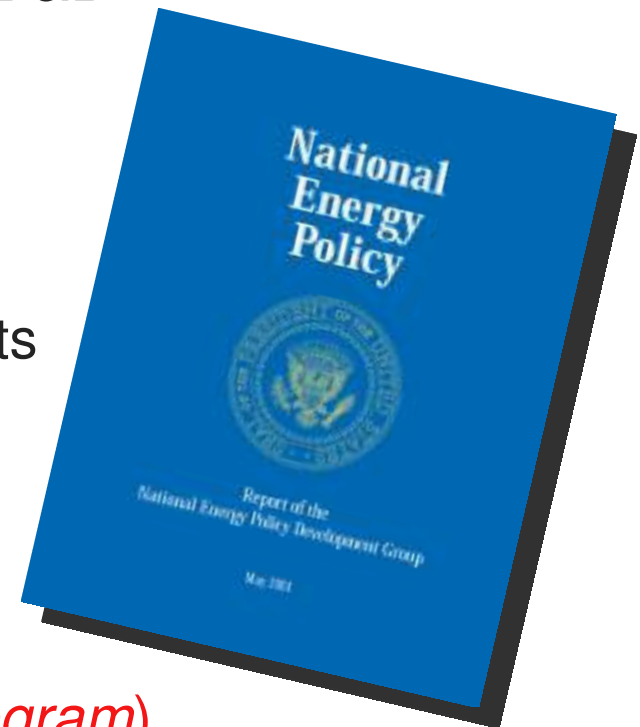
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Energy Policy Act of 2005

Title IX, Subtitle J

- **Sec 965 - DOE Traditional Oil and Gas Program**
 - DOE conduct a program of Oil & Gas RD&D
 - E&P; oil shale; environmental
- **Sec 968 - Methane Hydrate Research**
 - DOE-led multi-agency program
 - Resource, safety, environmental impacts
- **Sec 999 - Ultra-deepwater & Unconventional Program**
 - Royalty trust fund (\$50 million/year)
 - Research at NETL (*Complementary program*)
 - Consortium-administered R&D



Key Consortium Program Milestones

- EPA Act 2005 signed Aug 8, 2005
- Program Consortium Solicitation released, Nov. 4, 2005
- RPSEA selected, May 5, 2006
- NETL submitted 2007 Draft Annual Plan (DAP) for review, May 11, 2007
- Received 2007 subcontracting funds, Aug 31, 2007
- RPSEA released first 2007 RFP, Oct 17, 2007
- NETL submitted 2008 DAP for review, Jan 8, 2008
- NETL submitted 2009 DAP for review, Aug 1, 2008
- Received 2008 subcontracting funds, Aug 12, 2008
- RPSEA released first 2008 RFP, Nov 11, 2008
- Received 2009 subcontracting funds, Feb 11, 2009
- RPSEA released first 2009 RFP, Oct 8, 2009
- NETL submitted 2010 DAP for review, Aug 4, 2009
- Received 2010 subcontracting funds, Dec 1, 2009
- RPSEA released first 2010 RFP, Jul 28, 2010
- NETL submitted RPSEA 2011 DAP for review July 14, 2010

Consortium Program Status

Solicitations & Awards

- **2009 selections approved April/May 2010**
 - 11 Ultra-Deepwater projects
 - 11 Unconventional Resources projects
 - 6 Small Producers projects
- **28 2008 selections awarded**
- **6 projects completed as of May 31, 2010**
- **16 additional projects expected to be completed by Sept. 30, 2010**
- **Total of 97 projects expected to be active in 2010 representing a total award of over \$100 million invested in oil and gas research**
- **2010 solicitations : (two on the street, one in review)**
 - **Small Producers:** Opened Jul. 28th, closes Sep. 28th, 2010
 - **Unconventional Resources:** Opened Sep. 2nd , closes Nov. 4th, 2010
 - **Ultra-Deepwater:** TBD, open for 60 days

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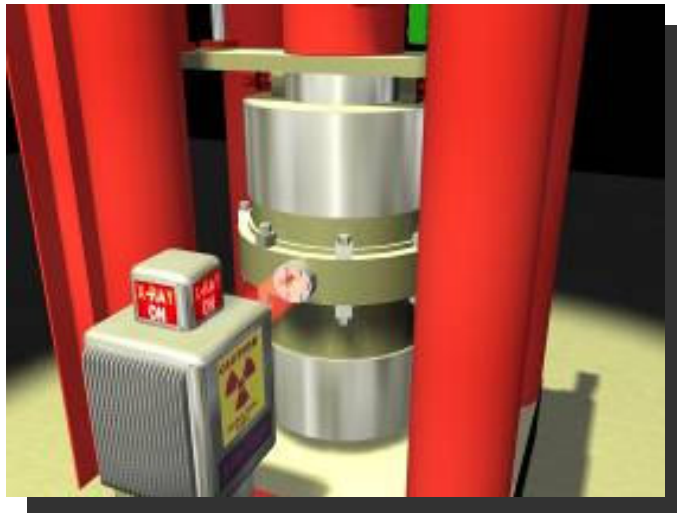
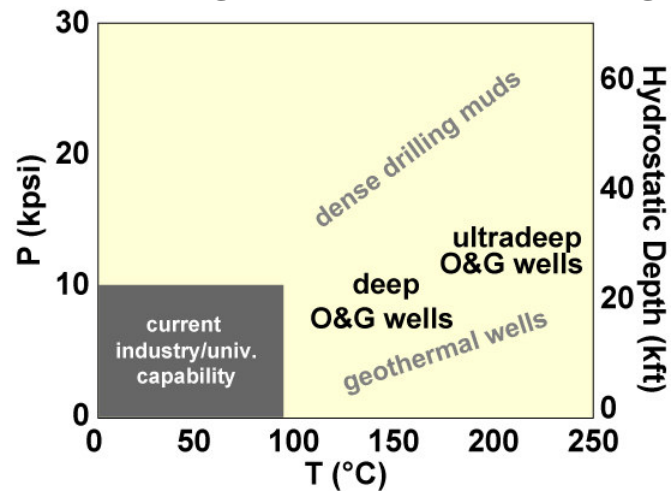
NETL Complementary R&D Program Philosophy

- Conduct unique, high-value research focused on key challenges to domestic fossil resources
- Coordinate with RPSEA and the other program elements
- **Focus:**
 - Fundamental science
 - Long-term research providing basis for next-generation technologies
 - Unbiased environmental science
 - Core competencies
- **Technical areas:**
 - Drilling under extreme conditions
 - Environmental challenges to fossil development
 - Enhanced & unconventional oil recovery
 - Oil & gas resource & technology assessment
- **Annual external reviews**
 - *Merit Review:* Assess scientific and technical quality of projects
 - *Technical Committee Review:* Assess complementary and non-duplicative nature



Drilling under Extreme Conditions

Goal: To provide the first understanding of drilling deep and ultra-deep wells to increase the rate of penetration and reduce drilling time for increased safety while drilling in extreme drilling environments

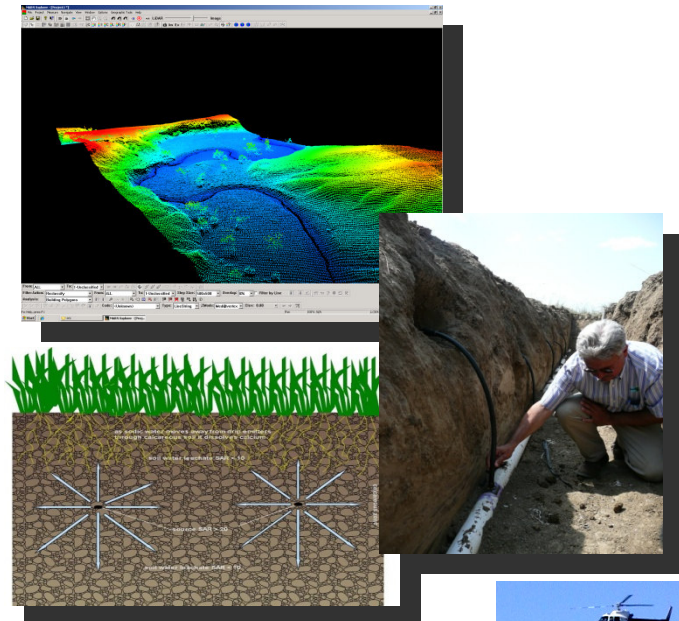


Four Elements to Research Focus


- **Experimental investigation of drilling dynamics**
 - Ultra-deep Drilling Simulator (UDS) and the Extreme Drilling Laboratory
- **Development of predictive models for drilling dynamics**
- **Development of novel nanoparticle-based fluids for improved drilling** ★
- **Improvement of materials behavior/performance in extreme environments**

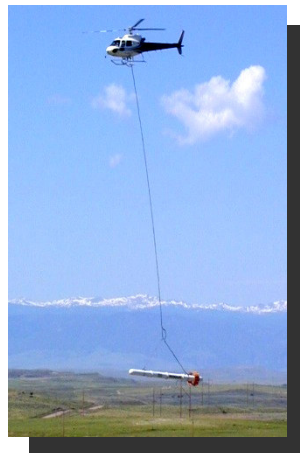
Environmental Impacts of Oil/Gas

Goal: To develop an improved, science-based understanding that leads to solutions for potential environmental challenges to oil/gas production



Major Elements to Research Focus

- Evaluation of strategies for effective and environmentally sound disposition of produced waters 
- Fundamental inorganic and organic geochemistry of reservoir fluids—including natural background vs. production
- More accurate assessment of air-quality impacts by detailed measurement and improved computational representations

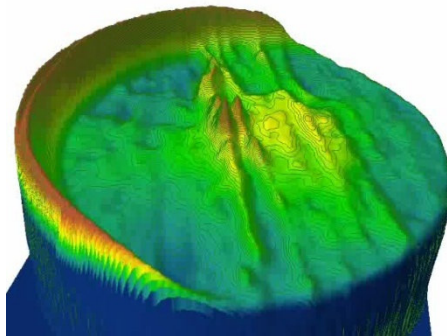
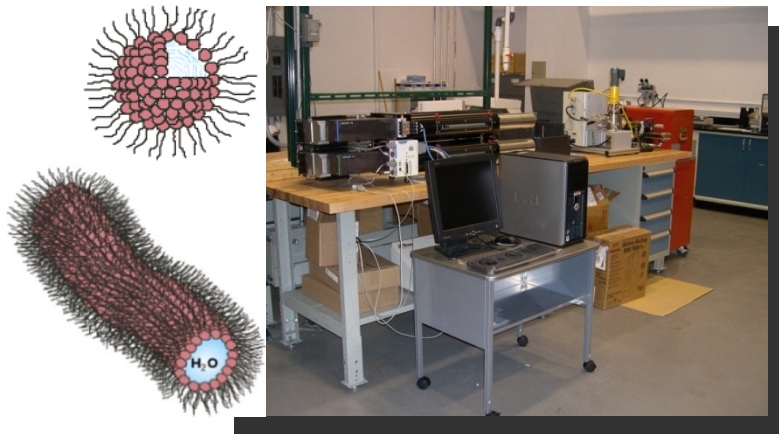


Unconventional Oil & Enhanced Oil Recovery

Goal: To enable broader utilization of domestic fossil resources through improved efficiency and lowered environmental impact

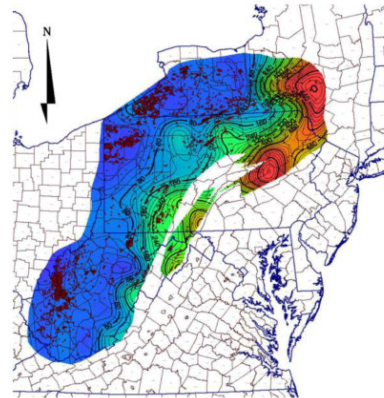
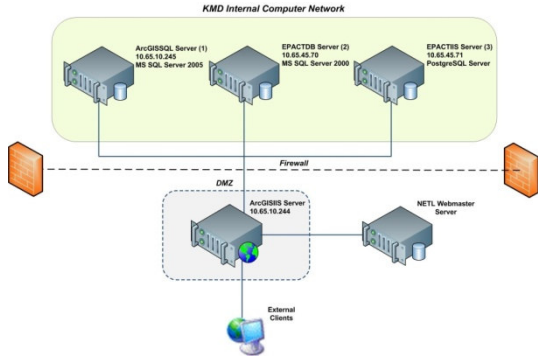
Elements to Research Focus

- **CO₂-enhanced oil recovery: Improved flow control by increasing CO₂ viscosity (tailored surfactants)**
- **Oil production in fractured media: Improve accuracy/reliability of predicting primary–tertiary oil recovery in shale**
- **Equations of state for CO₂-brine-hydrocarbon at elevated PT** ★
- **Catalog experience/knowledge from oil-shale and tar-sand activities**



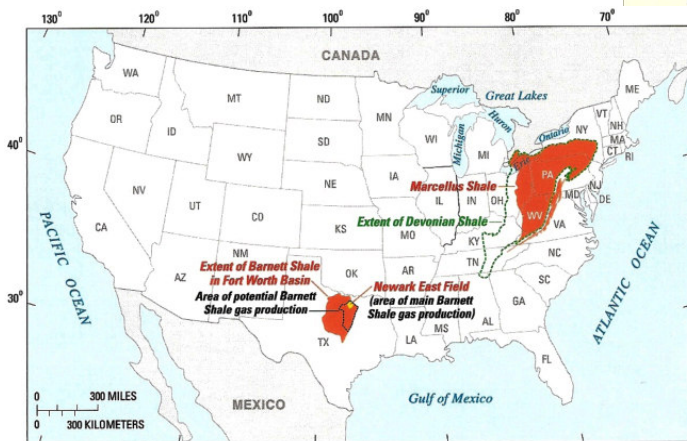
Resource Assessment

Goal: To enable better assessment of fossil resources by collection, management, and integration of high-resolution geospatial data



Elements to Research Focus

- Knowledge management database development
- Unconventional Oil and Gas Resource and Reserve Assessment ★



the ENERGY lab

NETL

A Comparative Study of the Mississippian Barnett Shale, Fort Worth Basin, and Devonian Marcellus Shale, Appalachian Basin

NATIONAL ENERGY TECHNOLOGY LABORATORY U.S. DEPARTMENT OF ENERGY

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Overall Program Accomplishments

Overall:

- 4 Annual Plans completed (maturing program)
- First Benefits Assessment Peer Review completed May 12, 2010 in support of Royalty Assessment

Program Consortium:

- **34 solicitations released**
- **100 projects selected; 70 projects awarded**
 - 42 Ultra-Deepwater projects (29 awarded, 4 completed)
 - 39 Unconventional Resources projects (28 awarded, 1 completed)
 - 19 Small Producers projects (13 awarded, 1 completed)

Complementary:

- **Development of 4 “evolving” focus areas**
 - Drilling under extreme conditions
 - Environmental impacts of oil/gas productions
 - Unconventional oil and enhanced oil recovery
 - Resource assessment; geospatial data management
- **Established Knowledge Management Database**
- **Completed Review of Program Benefits Assessment**

FACA 2009 Recommendation Areas

UDAC

- Program Scope (**Int'l Collaboration - HQ**)
- Process (**Time to award & Comp.Pgm. Integration**)
- R&D Program Focus (**ES&H**)
- Societal Impact (**Env. Impact**)
- Program Progress & Value (**Tech. Transfer**)

URTAC

- Policy (**HQ issues**)
- Near Term Impacts (**Early successes & Metrics**)
- Research Focus (**Environmental**)
- **Technology Transfer**

Program Communication

- **NETL-RPSEA Face-to-Face Meetings (plus daily discussion)**
 - Selection Meeting – 6/8/06
 - Formal Negotiations – 11/6/06
 - Kick-off Meeting – 1/25/07
 - Program Consortium Systems Approval discussions – 8/16/07
 - Subcontracting/Cost Price Discussions - 6/17/08
 - Process Improvements – 4/28/08 & 10/7-8/08
 - Purchasing System Review – 3/10-12/09 & 4/27-29/10
- **Quarterly UDW PAC-TAC and EFD Meetings**
- **Annual Plan development meetings**
- **R&D Project review meetings (Annually)**
- **NETL/RPSEA Bi-weekly meetings – Houston Office**

Process / Program Enhancements

Process

- RFP and Subcontract templates developed
- Streamlined proposal submission process
- Hold Contracting Process Overview Meeting prior to solicitation release
- Use secure FTP site to distribute proposals to reviewers
- Streamlined Subcontract Approval Process
- Blanket waiver received for Intellectual Property
- Annual Plan Schedule developed for optimal program continuity, i.e., minimal delays in funding

Program

- Houston Area Office opened (April, 2009)
- Benefits methodology developed and results peer reviewed
- Solicitations address GAO recommendation to verify projects would not be done without government funding
- NETL's technology transfer program inclusive of Section 999 – Comprehensive Tech Transfer Program
 - Technology Transfer Program synergistic with benefits assessment

2009 Recommendations: Key Response Indicators

- **Environmental**

- Increased Focus on RPSEA Environmental Advisory Group (EAG) lead by Houston Adv. Research Center (HARC)
- Award of Environmentally Friendly Drilling System
- FY10 UNC RFP environmental focus and UDW redirection

- **Tech Transfer**

- Establishment of NETL Integrated Technology Transfer Program
- Development and debut of Knowledge Management Database (KMD at www.netl.doe.gov/kmd)

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NETL Integrated Technology Transfer Program Structure

	Program Consortium	NETL	Contractors	DOE-HQ	
Information to be Delivered	Project Reports	Complementary program	Interim and final reports		
	Project Data Sets	Complementary program	Spreadsheets, GIS, other		
	Project Software		Models and online tools		
	Presentations/papers	Program and project level	Program and project level	Project level	High Level Program
	Program Information	RFPs, deliverables, metrics, feedback	Program updates, benefit assessments		Program activity, FAC reports, mandated info.
Delivery Vehicle	Project websites		Selected projects have websites		
	Program websites	RPSEA site with links	KMD Portal on NETL site with links	Pages on DOE site	
	Publications	Newsletter, articles in trade press	Newsletter, Techlines, articles in trade press	Technical papers, articles	Press releases, Techlines
	Forums/Workshops	Forums/Workshops	PTTC Workshops		
	Public meetings	SPE papers, other technical meetings	SPE papers, other technical meetings	SPE papers, other technical meetings	

2009 Technology Transfer Program Publications Currently Available



E&P Focus

Spring 2009

Oil & Natural Gas Program News

NETL

Dear E&P Focus Readers:

I would like to welcome our past and new readers to the Spring 2009 issue of E&P Focus, one of a number of outreach publications that the Department of Energy's (DOE) National Energy Technology Laboratory (NETL) publishes to keep oil and natural gas industry stakeholders informed about the research under way at the Department. It has had the highest circulation in the issue, and even more momentum is being gained as research activities progress in three main areas under the "oil and natural gas: replication and production" banner. For news dealing specifically with the Methane Hydrate Program, I refer you to the free in the quarterly newsletter available on the NETL Web site at <http://www.netl.doe.gov/tech/technology-soil-gas/FutureSupply/MethaneHydrateNewsletter/index.cfm>.


First of all, the appropriated funds program of extramural oil and natural gas research continues to advance. A very successful solicitation was carried out in 2008 with 16 awards being made for research projects targeting recovery of oil in unconventional reservoirs (e.g., the Bakken shale), enhanced oil recovery, and Alaskan North Slope heavy oil recovery and addressing environmental issues related to oil and natural gas production. The total value for all of the selected projects represents more than \$24 million with \$17.5 million DOE funding and \$7 million cost share from research partners.

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the ENERGY lab



the ENERGY lab
Where energy challenges converge and energy solutions emerge

Site Map

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Technologies
Oil and Natural Gas Supply

Oil and natural gas are the lifeblood of our economy, accounting for more than 60 percent of the energy consumed in the United States. To meet projected demand, our Nation has a vital interest in ensuring that competitively-priced domestic natural gas and oil remain part of the U.S. energy portfolio for decades to come. [Read More.](#)

Announcements

New Online Database of Oil and Natural Gas Research Results Now Available
The U.S. Department of Energy plans to introduce a new, user-friendly online repository of oil and natural gas research results at the Society of Petroleum Engineers' Annual Technical Conference and Exhibition, to be held in New Orleans, La., October 4-7, 2009. By providing easy access to the results of nearly four decades of research supported by the Office of Fossil Energy's Oil and Natural Gas Program, the knowledge management database could ultimately help boost recovery of the nation's oil and gas resources. [Access the KMD.](#)

CONTACT NETL

NETL: Oil and Natural ...



OIL & GAS JOURNAL



RPSEA Resource

March/April 2009 Volume 5, Number 5

Online Bimonthly RPSEA Member Newsletter

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Join RPSEA in the Clean Technology Consortium & Big 2009
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NicheNet Share Database
NicheNet-Scholarship Program Recipients Spotlight
2008 Unconventional Resources and Small Producer Project Selections Announced
Small Producer Project Highlights
Unconventional Resources Project Highlights
Ultra-Deepwater Project Highlights
Calendar of Events

President's Perspective

While we have been going on at RPSEA, I'd like to highlight just a few events. First is the selection of our 2008 Unconventional Resources and Small Producer projects. The quantity and quality of the proposals made for a grand challenge for our Program Advisory Committee (PAC) and Research Advisory Group (RAG) selection committees. There are 15 highly innovative projects, chosen from a total of 92 proposals, essentially by collection efforts of respective public-private partnerships. And, with both rounds of our 2008 ultra-deepwater proposals now complete and that selection process well underway, we'll have more selections to announce soon.

Second in the state of activities we have coming up including OCTC 2009 and Clean Tech 2009. Our "Informed Organization" status at OCTC on May 6 is something we're especially proud of. And, our three evening panels at Clean Tech 2009 on May 5 will provide RPSEA and member organizations the opportunity to have a frank discussion on the important role of natural gas in our nation's energy portfolio. On this subject, one of the opportunities I've been able to participate in as an advisory board member is a comprehensive policy study on natural gas. It's a 10-month, bipartisan, bipartisan of Technology (NETL). This two-year, multi-phase study, which started in the fall of 2008, will provide federal policymakers with information on natural gas similar to the previous widely acclaimed NETL studies on nuclear power and coal.

One of the enlightening events I've attended recently was the R&D Developing Unconventional Gas (DUG) Conference in Fort Worth, where I was able to give a presentation to almost 700 attendees on the state of the RPSEA research and development program. The magnitude and breadth of the developments efforts presented by multiple operators in gas shale across the country is truly extraordinary and will require our continued collective process improvement to drive down cost, increase efficiency and minimize footprint.

Finally, we just completed our first full-scale review of the progress of our 2007 Unconventional Resources projects. Each principal investigator (PI) gave an overview of their progress and project status to all the other PIs and industry advisors from our PAC a total of about 50 folks for two full days. The results were impressive, and the dialogue was good and frank to ensure these projects stay on track and deliver the necessary outcomes. Our regular quarterly DUG Technical Advisory Committee (TAC) meetings perform a similar role and encourage you to attend on a regular basis to stay in touch with all these continuous program management activities. RPSEA recently met with our partners at NETL for the first time to discuss analysis review of our 2007 portfolio to ensure our public funding is producing results.

Despite the continuing challenges the industry faces, we are pushing ahead with your strong support in advancing technology to maintain the value of our abundant domestic resources.

Neil Long
President

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GULF OF MEXICO

Lower Tertiary focal point of RPSEA R&D initiatives

Jim Hodson
Contributing Editor

In the Gulf of Mexico by the end of the year, there will be more than 200 wells under construction. The 2009 program is being funded by the U.S. Department of Energy's (DOE) Office of Fossil Energy's Oil and Natural Gas Program. Research and development projects are being funded by the U.S. Department of Energy's (DOE) Office of Fossil Energy's Oil and Natural Gas Program. The DOE's Office of Fossil Energy's Oil and Natural Gas Program is funding research and development projects in the Gulf of Mexico. The DOE's Office of Fossil Energy's Oil and Natural Gas Program is funding research and development projects in the Gulf of Mexico.

Business benefits for independents

Many see RPSEA as the leader for 20 years with over \$2 billion already in federal contracts with the industry. Independent operators are looking for ways to improve their operations. The U.S. Energy Report stated that 60% of the independent operators are looking for ways to improve their operations. The U.S. Energy Report stated that 60% of the independent operators are looking for ways to improve their operations.

Origin in DeepStar

Many see the diversity of the RPSEA's unconventionals research as a key to its success. The RPSEA's unconventionals research is a key to its success. The RPSEA's unconventionals research is a key to its success.

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E&P

SUBSEA OPERA



KMD: What is it?

FE's First
"One Stop Shopping"
for all Current and
Historical DOE Oil &
Gas R&D

More than 30,000
records and reports
of R&D in upstream
oil and gas

And rich geo-spatial
visualizations
showing the "size of
the prize"

The screenshot shows the NETL website header with the logo and tagline "the ENERGY lab Where energy challenges converge and energy solutions emerge". A navigation menu on the left lists: ABOUT NETL, KEY ISSUES & MANDATES, RESEARCH, TECHNOLOGIES, ENERGY ANALYSIS, SOLICITATIONS & BUSINESS, EDUCATION, NEWSROOM, and CONTACT NETL. The main content area is titled "Knowledge Management Database (KMD) Portal" and contains a large KMD logo and several database descriptions:

- Document Database:** This search function allows the user to search all documents (e.g., final reports) from past and current R&D projects. This database includes oil and gas documents from the CD/DVD library, the NETL Internet site, the NETL Project Management Information System (ProMIS), the Tulsa Project Office, and links to hardcopy documents currently available from the NETL library. Links to relevant offsite documents from the Office of Science and Technical Information (OSTI) are also included. The search is conducted by author or key-word search of titles and document abstracts.
- CD/DVD Database:** This search function allows the user to search all of the CDs and DVDs of oil and gas research reports compiled from past R&D programs as well as currently available documents from the NETL Internet site (i.e. SCNGO and Section 999, etc.). The user can download individual reports or order an entire CD or DVD.
- Section 999 Database:** This search function allows the user to search only project summaries related to the Energy Policy Act of 2005, Title IX, Subtitle J, Section 999 R&D program. Each of these project summaries, which are updated regularly, contains links to all of the research products related to that specific project.
- Section 999 Tech Transfer Index:** A variety of technology transfer products (reports, publications, presentations, etc.) will be produced for each of the individual research projects during and after the research performance period. This index allows the user to quickly see what tech transfer is planned (or has already occurred), and then links to the product of interest. The data is updated regularly.
- Data Visualization:** This search function allows the user to access a variety of spatial data related to the research projects found in the databases listed above. These GIS datasets include information gleaned from USGS, MMS, EIA and EPCA data sets, as well as data produced by individual project performers. 180



Information Included in Searches: Overview

Search five data repositories individually:

- 1. The NETL Document Database**
 - Current/ongoing DOE sponsored R&D
 - Archival Files (All Prior DOE Oil & Gas R&D)
- 2. The CD/DVD Database**
- 3. The Section 999 Database**
- 4. The Section 999 Tech Transfer Index**
 - Current and future products from research
- 5. The NETL Visualization Database**

Or, search combinations in a single search



Information Included in Searches: Continued

1. Document Database – a “Large Search” Option

- All Prior DOE Oil & Gas R&D
- **Content from:**
 - NETL Web site
 - NETL CD/DVD Database
 - NETL Library – hardcopies
 - Tulsa Project Office
 - Laramie Project Office,
 - OSTI Archives
- **Currently provides links to +13,000 files**



Information Included in Searches: Continued

2. CD/DVD Database

- “Google” type search of 45 published disks
- Search for individual reports within CD/DVD’s
- Currently provides links to more than +15,000 files



Information Included in Searches: Continued

- 3. Use EAct 2995 Section 999 Database – Use links to RPSEA project summaries**



Information Included in Searches: Continued

4. Section 999 Tech Transfer Index - *Spreadsheet of project products (reports, publications, presentations, etc.)*

- **Searchable by Program, Project or Performer**
- **Future project and Program level activities in spreadsheet calendar**
- **Spreadsheet can be downloaded**

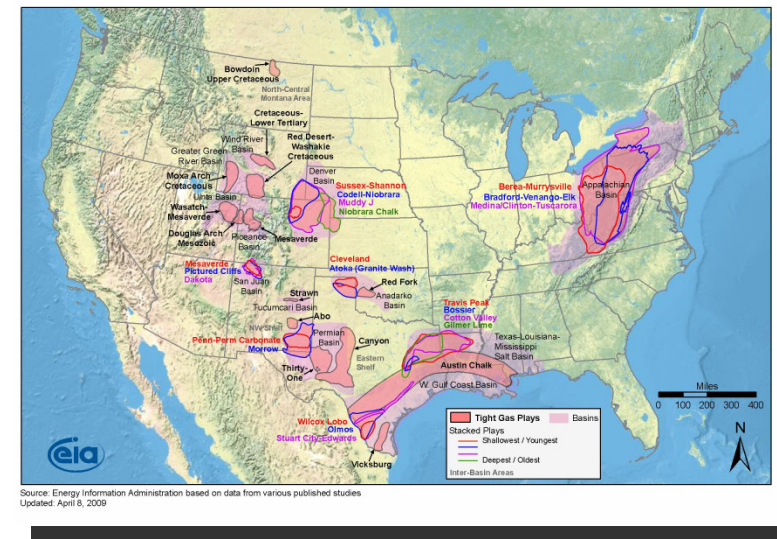


Information Included in Searches: Continued

5. Visualization Database

- A compilation of maps, visualizations and data that is available under the Oil and Gas program
 - Utilize readily available GIS shape files from USGS, MMS, EIA, EPCA Phase III study and others
 - Captures Exploration, Resources, Reserves, and Production using government compliance reporting sources

Major Tight Gas Plays, Lower 48 States

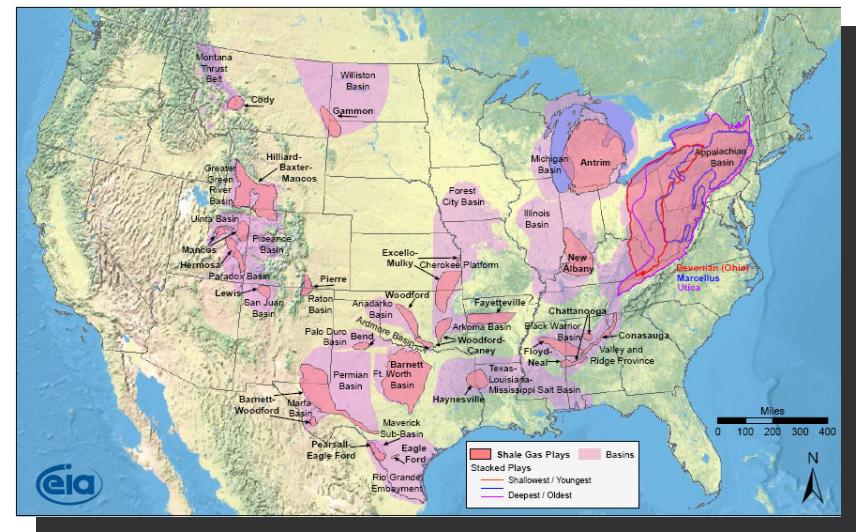




Information Included in Searches: Continued

5. Visualization Database (continued)

- **Future focus: development of value-added products:**
 - Incorporate commercial data from Ventyx (Velocity Suite), ARI (Big Oil Field Database), Nehring Associates (Significant Oil and Gas Fields of the United States Database), and others
 - Capture additional Web map services





How Do I Use the KMD?

First - Enter at the Portal Page:

www.netl.doe.gov/kmd



KMD Portal Page

The screenshot shows the NETL website header with the logo and tagline "the ENERGY lab Where energy challenges converge and energy solutions emerge". A navigation menu on the left lists: ABOUT NETL, KEY ISSUES & MANDATES, RESEARCH, TECHNOLOGIES, ENERGY ANALYSIS, SOLICITATIONS & BUSINESS, EDUCATION, NEWSROOM, and CONTACT NETL. The main content area is titled "Knowledge Management Database (KMD) Portal" and contains several database descriptions:

- Document Database:** This search function allows the user to search all documents (e.g., final reports) from past and current R&D projects. This database includes oil and gas documents from the CD/DVD library, the NETL Internet site, the NETL Project Management Information System (ProMIS), the Tulsa Project Office, and links to hardcopy documents currently available from the NETL library. Links to relevant offsite documents from the Office of Science and Technical Information (OSTI) are also included. The search is conducted by author or keyword search of titles and document abstracts.
- CD/DVD Database:** This search function allows the user to search all of the CDs and DVDs of oil and gas research reports compiled from past R&D programs as well as currently available documents from the NETL Internet site (i.e. SCNGO and Section 999, etc.). The user can download individual reports or order an entire CD or DVD.
- Section 999 Database:** This search function allows the user to search only project summaries related to the Energy Policy Act of 2005, Title IX, Subtitle J, Section 999 R&D program. Each of these project summaries, which are updated regularly, contains links to all of the research products related to that specific project.
- Section 999 Tech Transfer Index:** A variety of technology transfer products (reports, publications, presentations, etc.) will be produced for each of the individual research projects during and after the research performance period. This index allows the user to quickly see what tech transfer is planned (or has already occurred), and then links to the product of interest. The data is updated regularly.
- Data Visualization:** This search function allows the user to access a variety of spatial data related to the research projects found in the databases listed above. These GIS datasets include information gleaned from USGS, MMS, EIA and EPCA data sets, as well as data produced by individual project performers.180

The bottom of the screenshot shows the Department of Energy logo and a "GO" button.



How Do I Use the KMD?

- **Searching the Document Database:**
 - Example Search: a search that combines several of the databases by key word for R&D on “produced water”



KMD Portal Page

Click on the "Document Database" Icon

Site Map GO>

the **ENERGY** lab
Where energy challenges converge and energy solutions emerge

ABOUT NETL
KEY ISSUES & MANDATES
RESEARCH
TECHNOLOGIES
ENERGY ANALYSIS
SOLICITATIONS & BUSINESS
EDUCATION
NEWSROOM
CONTACT NETL

Knowledge Management Database (KMD) Portal

This portal provides four options for searching the variety of documents and data that NETL-managed oil and gas research has produced. The database of material includes R&D carried out under both historical and ongoing DOE oil and gas R&D programs funded through Congressional appropriations, as well as work that is currently underway as part of the Energy Policy Act of 2005, Title IX, Subtitle J, Section 999 R&D program.

Document Database: This search function allows the user to search all documents (e.g., final reports) from past and current R&D projects. This database includes oil and gas documents from the CD/DVD library, the NETL Internet site, the NETL Project Management Information System (ProMIS), the Tulsa Project Office, and links to hardcopy documents currently available from the NETL library. Links to relevant offsite documents from the Office of Science and Technical Information (OSTI) are also included. The search is conducted by author or keyword search of titles and document abstracts.

CD/DVD Database: This search function allows the user to search all of the CDs and DVDs of oil and gas research reports compiled from past R&D programs as well as currently available documents from the NETL Internet site (i.e. SCNGO and Section 999, etc.). The user can download individual reports or order an entire CD or DVD.

Section 999 Database: This search function allows the user to search only project summaries related to the Energy Policy Act of 2005, Title IX, Subtitle J, Section 999 R&D program. Each of these project summaries, which are updated regularly, contains links to all of the research products related to that specific project.

Section 999 Tech Transfer Index: A variety of technology transfer products (reports, publications, presentations, etc.) will be produced for each of the individual research projects during and after the research performance period. This index allows the user to quickly see what tech transfer is planned (or has already occurred), and then links to the product of interest. The data is updated regularly.

Data Visualization: This search function allows the user to access a variety of spatial data related to the research projects found in the databases listed above. These GIS datasets include information gleaned from USGS, MMS, EIA and EPCA data sets, as well as data produced by individual project performers.180



KMD Search Page

After the Document Database Search page comes up, type in "Produced Water"

Search the KMD Document Database

Search the KMD Document Database

NETL the ENERGY lab
Where energy challenges converge and energy solutions emerge

Site Map GO

KMD Portal > Document Database

Search the KMD Document Database

This search function allows the user to search all documents (e.g., final reports) from past and current R&D projects. This includes reports from the Office of Research and Development and those available via the Office of Science and Technical Information database. The search is conducted by author or key-word search of titles and document abstracts. See our [Instructions](#) for additional information.

Keywords or Subject of Interest: **Produced water** And

AUTHOR:

Sort results most recent first

USA.GOV | U.S. DEPARTMENT OF ENERGY | DOE OFFICE OF FOSSIL ENERGY
DOE OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY | OFFICE OF ELECTRICITY DELIVERY & ENERGY RELIABILITY
Disclaimer | Privacy Policy | Web Policies | FOIA/Privacy Act | Employees Only

<http://www.netl.doe.gov/KMD/FormattedSearchDemo.aspx>[4/26/2010 10:01:29 AM]



KMD Search Results Page

See results and note number of entries returned

Search the KMD Document Database

Search the KMD Document Database

This search function allows the user to search all documents (e.g., final reports) from past and current R&D projects. This includes reports from the Office of Research and Development and those available via the Office of Science and Technical Information database. The search is conducted by author or key-word search of titles and document abstracts. See our [instructions](#) for additional information.

Keywords or Subject of Interest:

AUTHOR:

Sort results most recent first

[Search](#) [Reset](#)

[Next >>](#) Showing Items 1 to 10 of 311

Title: [Novel Fouling-Reducing Coatings for Ultrafiltration Nanofiltration, and Reverse Osmosis Membranes](#)(301665 bytes)

Author (Publisher): Dr. Benny D. Freeman

Abstract: Polymeric membranes could potentially be the most flexible and viable long-term strategy for treatment of produced water from oil and gas production. However, widespread use of membranes, including reverse osmosis (RO) membranes, for produced water purification is hindered due to fouling caused by the impurities present in the water. Fouling of RO membranes is likely caused by surface properties including roughness, hydrophilicity, and charge, so surface modification is the most widely considered approach to improve the fouling properties of current RO membranes. This project focuses on the two main approaches to surface modification, coating and grafting. Hydrophilic coating and grafting materials based on poly(ethylene glycol) (PEG) are applied to commercial RO membranes manufactured by Dow FilmTec and GE. Crossflow filtration experiments are used to determine the fouling resistance of modified membranes, and compare

<http://www.netl.doe.gov/KMD/formattedsearchdemo.aspx?s=1&pubtitle=produced water&selAndOr=0&sortDir=0> (1 of 8)4/26/2010 2:39:15 PM



Or, Search Only the CD/DVD Database by Keyword

Note same Key Word search format as before

Note that all CD/DVD's are listed On the first page – they can be:

- 1) Ordered
- 2) Downloaded in their entirety
- 3) Searched for individual papers or reports

the ENERGY lab
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Site Map GO>

NETL

[ABOUT NETL](#)
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[RESEARCH](#)
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[ENERGY ANALYSIS](#)
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[NEWSROOM](#)
[CONTACT NETL](#)

KMD Portal > CD DVD Database

Search the KMD CD/DVD Database

This search function allows the user to search all of the CDs and DVDs of oil and gas research reports compiled from past R&D programs as well as currently available documents from the NETL Internet site (i.e. SCNGO and Section 999, etc.). The user can download individual reports or review an entire CD or DVD. See our [instructions](#) for additional information.

The user can download the complete CD/DVD via zip files, or use the interactive webpages to review the content online. Users can also request mailed copies of the media using the [request form on the Shopping Cart](#).

Major Oil Plays in Utah and Vicinity
Title: Major Oil Plays in Utah and Vicinity
Info: A portfolio of oil plays in Utah, as well as neighboring Colorado and Wyoming, compiled by the Utah Geologic Survey with funding from NETL. The portfolio contains comprehensive maps that provide data useful to organizations involved in petroleum exploration and production. The data includes geologic settings, outcrop analogs, land-use issues, and best-development practices for each oil-producing area within the three states.
Date: 5/1/2009 [PDF Size: 66.7MB](#) | [ZIP Size: 91.8MB](#)

Focused Oil Technology Programs Archive, Version 1.0
Title: Focused Oil Technology Programs Archive, Version 1.0
Info: The Focused Oil Technology Programs archive includes the Native American Program, Independent Producers Program, PUMP Program, PRIME Program, and Technology Transfer Program.
Date: 3/1/2009 [HTML](#) | [ZIP Size: 1.69GB](#)




You Can, of Course, Search DOE's Section 999 Program Document Database Only Using Key Words

Search the KMD CD/DVD Database

The screenshot shows the NETL website interface. At the top, there is a navigation bar with the NETL logo and the text "the ENERGY lab" and "Where energy challenges converge and energy solutions emerge". A "Site Map" link and a "GO" button are also visible. On the left side, there is a vertical menu with the following items: ABOUT NETL, KEY ISSUES & MANDATES, RESEARCH, TECHNOLOGIES, ENERGY ANALYSIS, SOLICITATIONS & BUSINESS, EDUCATION, NEWSROOM, and CONTACT NETL. Below the menu is the U.S. Department of Energy logo. The main content area is titled "KMD Portal > Section 999 Database" and "Search the KMD Section 999 Database". It contains a paragraph explaining the search function: "This search function allows the user to search only project summaries related to the Energy Policy Act of 2005, Title IX, Subtitle J, Section 999 R&D program. Each of these project summaries, which are updated regularly, contains links to all of the research products related to that specific project. See our [instructions](#) for additional information." Below this text is a search input field and a "Search Section 999 Database" button. A "Knowledge Management Database" logo is also present on the right side of the main content area. At the bottom of the page, there is a footer with the following text: "USA.GOV | U.S. DEPARTMENT OF ENERGY | DOE OFFICE OF FOSSIL ENERGY | DOE OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY | OFFICE OF ELECTRICITY DELIVERY & ENERGY RELIABILITY | Disclaimer | Privacy Policy | Web Policies | FOIA/Privacy Act | Employees Only".



The Section 999 Technology Transfer Index can be Searched by Program, Projects or Performer



Section 999 Technology Transfer Index

71 Total Projects
13 Small Producer Projects
0 Performer Projects

Program Element

Small Producer

PROGRAM ELEMENT

PROJECTS

PERFORMER

Field Site Testing of Low Impact Oil Field Access Roads: Reducing the Environmental Footprint in Desert Ecosystems

Performed Particle Gel for Conformance Control

Near Miscible CO2 Application to Improve Oil Recovery for Small Producers

Enhancing Oil Recovery from Mature Reservoirs Using Radial-jettted Laterals and High-volume Progressive Cavity Pumps

PROJECT SUMMARY

Program Element	Performer
Small Producer	Texas Engineering Experiment Station (TEES)

Project Title

Field Site Testing of Low Impact Oil Field Access Roads: Reducing the Environmental Footprint in Desert Ecosystems

Contacts		Planned Year	Start Date	End Date
PI	David Burnett	2007	09/03/08	09/02/10
NETL	Chandra Nautiyal	Project Cost	Federal Cost	Cost Share
CONSORTIUM	Martha Cather	\$444,839	\$284,839	\$160,000

Contract # 07123-01

Open Project Factcheet/Information

Open All Outreach Activities

This application allows the user to filter for RPSEA projects by NAME, PERFORMER or PROGRAM ELEMENT. The information displayed shows the research summaries and outreach activities with hyperlinks to open supporting documents.

OUTREACH ACTIVITIES

Month-Year	Type	Abstract
Jun-2009	Presentation	This Disappearing Roads Competition
	Presentation	Reducing Impacts of Oil & Gas Development on Rangelands
	Presentation	Team Challenge: Environmentally Friendly Drilling Using Low
Mar-2009	Report	Technology Assessment Report

Click on Outreach Activity to view record details

Month-Year	Document Type	Status	Open Record
Mar-2009	Report	Complete	<input type="button" value="Open Record"/>

Abstract

Technology Assessment Report

Author	Organization
David Burnett	Texas A&M University

Forum

The Section 999 Technology Transfer Index Can Also be Downloaded in its Entirety

Project				Activity			
Area	Contract Number	Project Title (Linked to Summary)	Project Details	Month-Year	Type	Abstract	Activity Details
Unconventional	07122-07	Novel Concepts for Unconventional Gas Development in Shales, Tight Sands and Coalbeds	Performer: Carter Technology PI: Ernest Carter Project Cost: \$114,600 Federal Cost: \$91,680 Cost Share: \$22,920 Start Date: Jul-2008	2/19/2009	Report	Novel Concepts for Unconventional Gas Development of Gas Shales, Tight Sands and Coalbeds - Final Report	Forum: Author: Ernest E. Carter Organization: Carter Technologies Co Status: Complete
Unconventional	07122-09	Application Of Natural Gas Composition To Modeling Communication Within And Filling Of Large Tight-Gas-Sand Reservoirs, Rocky Mountains	Performer: Colorado School of Mines PI: Harris Project Cost: \$1,016,417 Federal Cost: \$670,417 Cos. Share: \$346,000 Start Date: Aug-2008	1/1/2009	Document	Application of Natural Gas Composition to Modeling Communication within and Filling of Large Tight-Gas Reservoirs	Forum: Author: Organization: Colorado School of Mines Status: Complete
				4/6/2010	Presentation	Application of Natural Gas Composition to Modeling Communication within and Filling of Large Tight-Gas Reservoirs	Forum: RPSEA Unconventional Gas Conference 2010 Author: Nicholas B. Harris Organization: Colorado School of Mines Status: Complete
Unconventional	07122-12	An integrated Framework for the Treatment and Management of Produced Water	Performer: Colorado School of Mines PI: Jorg Drewes Project Cost: \$4,017,085 Federal Cost: \$1,560,393 Cost Share: \$2,456,692 Start Date: Sep-2008	10/16/2008	Document	Technology Status Assessment	Forum: Author: Organization: Colorado School of Mines Status: Complete
				11/1/2009	Document	Technical Assessment of Produced Water Treatment Technologies - 1st Edition	Forum: Author: Organization: Colorado School of Mines Status: Complete
Unconventional	07122-14	Comprehensive Investigation of the Biogeochemical Factors Enhancing Microbially Generated Methane in Coal Beds	Performer: Colorado School of Mines PI: Junk Munakata-Marr Project Cost: \$1,246,740 Federal Cost: \$864,333 Cost Share: \$382,407 Start Date: Sep-2008 End Date: Sep-2010		Document	Comprehensive Investigation of Factors Enhancing Microbially Generated Coal Bed Methane - Research Highlights	Forum: Author: Organization: Colorado School of Mines Status: Complete

Links to Detailed Project Summaries

Links to Project Technical Abstracts



Online Ordering via Electronic Shopping Cart

Last But Not Least -

- The KMD provides the **USER** access to the **CD/DVD** collection. Some are on-line interactive and all have been **ZIPPED** for immediate download to your computer
- If you do not wish to, or cannot, download them, an electronic shopping cart is available for you to obtain, **free of charge**, disks of any of the CD/DVD's

The screenshot shows the NETL website interface. At the top, there is a logo for 'the ENERGY lab' with the tagline 'Where energy challenges converge and energy solutions emerge'. Below the logo is a navigation menu with links for ABOUT NETL, KEY ISSUES & MANDATES, RESEARCH, TECHNOLOGIES, ENERGY ANALYSIS, SOLICITATIONS & BUSINESS, EDUCATION, NEWSROOM, and CONTACT NETL. The main content area is titled 'KMD Portal > CD DVD Database' and features a search bar with the text 'Search the KMD CD/DVD Database'. Below the search bar, there is a description of the search function and a search button. A red circle highlights a line of text: 'Users can also request mailed copies of the media using the [request form on the Shopping Cart](#).' Below this, there are two entries for CD/DVDs. The first entry is titled 'Major Oil Plays in Utah and Vicinity' and includes a thumbnail image of a CD/DVD. The second entry is titled 'Focused Oil Technology Programs Archive, Version 1.0' and also includes a thumbnail image of a CD/DVD.



Acknowledgements

KMD Project Team Members

National Energy Technology Laboratory

Roy Long, Technology Manager Ultra-Deep

Water

Gary Covatch, SCNGO, Sec.999 Contract COR

Virginia Weyland, SCNGO Project Manager

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Elizabeth Warman

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Questions

