Unconventional Onshore & Small Producer FACA Meeting

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September 11-12, 2008
Alexandria, VA
A Small Organization, A Large Network

Well over 1,000 experts have participated in this process!

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2009 Planning Process – Unconventional Onshore Program

• Build on 2007, 2008 Plans
  – Unconventional Resources Technology Advisory Committee (URTAC)
    • Input to 2007, 2008 plans

• RPSEA Forums
  – Eight held by RPSEA members
  – Late 2007 – May 2008
  – Various basins and resources

• Industry Events
  – Technical conferences, topical meetings
  – RPSEA staff participation

• PAC, TAC Members
  – Engagement in developing 2007 portfolio
2009 Draft Annual Plan – Unconventional Onshore Program

• **Mission & Goal**
  – Unchanged from 2007, 2008
  – Economically viable technologies to allow environmentally acceptable development of unconventional gas resources
    • Gas Shales
    • Tight Sands
    • Coalbed Methane

• **Objectives**
  – **Near Term**
    • Increase production & recovery from established unconventional gas resources, accelerate development of existing & emerging plays
    • Decrease environmental impact of unconventional gas development
    • Integrate project results & deliverables and engage in technology transfer to ensure application of program results
  – **Longer Term**
    • Technologies for high-priority emerging & frontier resources
Unconventional Onshore Themes

- Gas Shales
  - Rock properties/Formation Evaluation
  - Fluid flow and storage
  - Stimulation
  - Water management
- Coalbed Methane
  - Produced water management
- Tight Sands
  - Natural fractures
  - Sweet spots
  - Formation Evaluation
  - Wellbore-reservoir connectivity
  - Surface footprint

Cost Reduction in All Aspects of Operations
Unconventional Onshore Program 2007 Projects

Several specific resources targeted

- New Albany Shale
- Rockies Tight Sands
- Potential Shale Resources in Alabama, Utah

Projects addressing unconventional gas fundamentals

Vision – Use targeted resources as field laboratories for work leading to fundamental understanding of factors controlling unconventional gas production
# 2007 Selected Proposals

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2008 Draft Annual Plan – Onshore Program

- Unconventional Program
  - Emphasize role of technology transfer
  - Highlight importance of environmental signature
  - Emphasize role of individual contractors as contributors to a cooperative, integrated program
  - Focus solicitation(s) to fill portfolio gaps
    - Appalachian region
    - Water management
    - Drilling footprint in tight sands
    - Technology integration & transfer
2008 Draft Annual Plan – Program Balance

Years Five thru Ten

Science Themes

Year Two

-- Grand Challenges --

Careful selection of key enabling and cross-cutting technologies that meet multiple objectives or enable the development of a suite of technologies

Smaller more numerous awards towards the basic end of the research spectrum

Year One

Down-selection, moving to demonstration

Development of "low-hanging fruit" or technologies that provide incremental improvements in E&P economics, etc.

Enhancing Themes
2009 Draft Annual Plan – Onshore Program

• Solicitation Flexibility to Build an Integrated Program
  – Tailor 2009 solicitations to fill gaps in 2007/2008 portfolio
  – Current areas needing additional emphasis
    • Appalachian region
    • Decreasing environmental footprint
    • Water management
    • Complex, multi-zone completions

• 2009 Annual Plan Solicitations
  – Included in “menu” form
  – Issued solicitations will include topics chosen from those specified in the plan, directed toward one of the three targeted resources
  – Choices will be driven by portfolio and results of 2007, 2008 programs.
2009 Draft Annual Plan – Onshore Program Solicitation “Menu”

• Integrated Program Targeting a Specific Resource
  – Build on existing projects
  – May be comprehensive or directed toward specific technology area
  – Topic areas
    • Resource Assessment
    • Exploration Geosciences
    • Basin Analysis and Resource Exploitation
    • Drilling
    • Stimulation and Completion
    • Water Management
    • Reservoir Description and Management
    • Reservoir Engineering
    • Environmental

• Early-Stage Research on Novel Concepts for Unconventional Gas Development
**Field Based Approach**

- **R&D**
  - G&G
  - Drilling
  - Rock Properties
  - Stimulation
  - Reservoir
  - Produced Water
  - Surface Footprint

- **Unconventional Gas Basin**
  - Tight Gas, Shale Gas, CBM

- **Major FE**
  - R&D Farmout
  - Multiple Wells
  - “Invasive” R&D

- **P. Partner Well**
  - Coring
  - Logging
  - Stimulation
  - Data

- **Field Based R&D Producer Partner Wells Major Field Experiments**

- **Technology Dissemination**
  - Sequenced Workshops/Seminars

*Goals to be Developed with Deliverables*
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Integrated Program

Field Based Projects

Technical Projects
2009 Draft Annual Plan – Small Producer Program

• Mission & Goals
  – Unchanged from 2007, 2008
  – Increase supply from mature resources
    • Reduce cost
    • Increase efficiency
    • Improve safety
    • Minimize environmental impact

• Objectives
  – Near Term
    • Improve water management & optimize water use
    • Improve oil & gas recovery in mature fields, extending economic life
    • Reduce field operating costs
  – Longer Term
    • Apply developed technologies to new basins/areas and develop new technologies to address the same objectives
Small Producer Program - 2007 Projects

- Seven projects addressing concerns of small producers operating mature assets
  - Produced water treatment
  - Enhanced oil recovery (3)
  - Environmental impact (2)
  - Improve recovery and sweep efficiency
- Projects each involve a consortium of researchers and small producers
- Small Producer Research Advisory Group (RAG) actively involved
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2007 Small Producer Project Selections

- Near Miscible CO2 Application to Improved Oil Recovery
- Enhancing Oil Recovery from Mature Reservoirs Using Radial-Jetted Laterals and High-Volume Progressive Cavity Pumps
- Seismic Stimulation to Enhance Oil Recovery
- Preformed Particle Gel for Conformance Control
- Reducing Impacts of New Pit
- Cost-Effective Treatment of Produced Water Using Co-Produced Energy Sources
- Field Site Testing of Low Impact Oil Field Access Roads: Reducing the Footprint in Desert Ecosystems

Locations:
- U. of Kansas
- Texas A&M
- U. of Missouri
- LBNL
- NMT
- U. of Kansas (LBNL, NMT, Texas A&M, U. of Missouri)
2008 Draft Annual Plan – Onshore Small Producer Program

- Slight Revisions to 2007 Plan
- Small Producer Program
  - Emphasize role of technology transfer
  - Clarify technology transfer aspects of program
  - Maintain advancing technology for mature fields focus
2009 Draft Annual Plan – Small Producer Program

- Awards to be made to Consortia
  - Small producers or organized for the benefit of small producers
  - Small producer: ≤ 1000 BOEPD

- 2009 Annual Plan Solicitations
  - Theme: Advancing Technology for Mature Fields
  - Path to initial application is critical
  - Complement 2007, 2008 project selections
2009 Draft Annual Plan – Small Producer Program

• Technology Challenges
  – Water management
  – Improve recovery/extend economic life of reservoirs
  – Reduce field operating costs and decrease environmental impact
  – Well monitoring and reservoir modeling to allow efficient field operations
  – Improved methods for well completions and recompletions
  – Field tests of emerging technology
  – Well and field data management
  – Capture and reuse of waste products to reduce costs or increase recovery
  – Leverage existing wellbores and surface footprint to maximize recovery

• Other topics addressing the program theme of Advancing Technology for Mature Fields are welcome
2009 Draft Annual Plan – Onshore Program

• Small Producer Program
  – Evolutionary changes anticipated
  – Learn from experience

• Unconventional Program
  – Begin to form integrated program from individual projects
  – Identify and target program gaps
  – Move toward larger-scale coordination of projects to focus on specific resources
Technology Transfer Plans

2.5% Set-aside for Tech Transfer in each subcontract

- 1.5% Project Level
  - Preparing publications
  - Participating in conferences & workshops

- 1% Program Level
  - Support activities that impact multiple projects
  - Regional workshops, conferences
  - Topical conference
  - Directed publications
  - Newsletter
  - Website/Database creation & maintenance (Knowledge Database)
  - Technical support
  - Other novel approaches?
Questions?