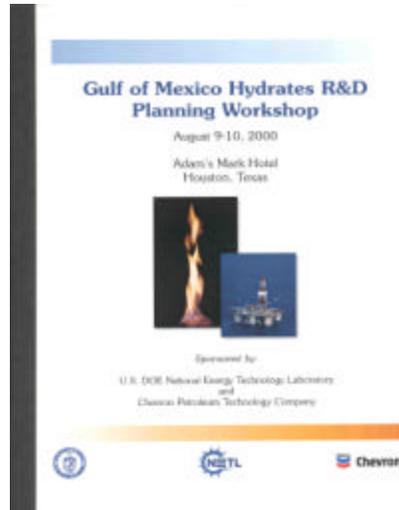


Welcome

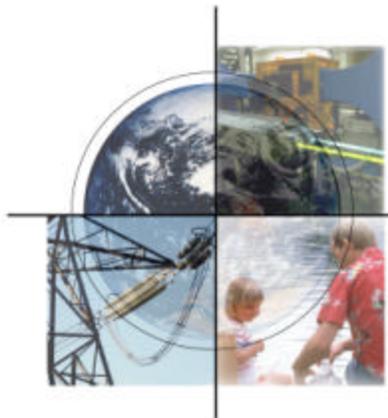


Dr. Leonard Graham
Deputy Associate Director
Strategic Center for Natural Gas
National Energy Technology Laboratory



starrett

The National Energy Technology Laboratory



An Overview





NETL

What We Are

- One of DOE's 15 National Laboratories
- Government Owned and Operated

What We Do

- Shape, fund, and manage extramural RD&D programs
- Conduct on-site science and technology research
- Support policy development and best business practices



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Sites in Pennsylvania and West Virginia



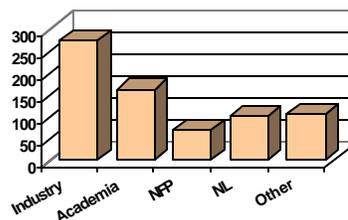
- 68 buildings
- 818,000 square feet
- 24 major on-site research facilities



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An Extensive Portfolio of Projects with External Organizations

- Over 800 research activities in all 50 states and 16 countries
- Total award value of \$7.3 billion
- Research performers include:
 - Private industry
 - Universities/colleges
 - Not-for-profit labs
 - Other DOE national labs
 - Others
- Private sector cost sharing of \$3.9 billion
 - Leverages DOE funding
 - Ensures relevance
 - Mission accomplishment only through commercialization active MOU's and MOA's



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Strategic Center for Natural Gas



Overview





Strategic Center for Natural Gas

“... I am also announcing today that I will establish, within this facility, a new Center for Advanced Natural Gas Studies.”

“We need one place that looks out for the future of natural gas -- from borehole to burnertip. One place that understands the innovations needed to produce tomorrow's gas.”

“In other words, we need a strategic center that looks at the big picture and devises the bold ideas that allow the FULL potential of natural gas to be achieved. And I want that center to be located at this Laboratory.”

*Bill Richardson, Secretary of Energy
December 10, 1999*



idre/11/01

Strategic Center for Natural Gas

Vision:

By 2020, U.S. public is enjoying benefits from an increase in gas use:

- Affordable supply
- Reliable delivery
- Environmental protection



Mission:

Be the focal point for an integrated gas program:

- Spearhead annual DOE-wide gas RD&D planning and program assessment
- Provide science and technology advances through NETL's on-site programs
- Shape, fund, and manage extramural RD&D
- Conduct studies to support policy development



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Strategic Center for Natural Gas



Affordable supply



Reliable delivery

Clean, efficient utilization



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Natural Gas Exploration & Production Significant Activities



- **Technology Areas**
 - Drilling, Completion & Stimulation; Secondary Gas Recovery; Advanced Diagnostics & Imaging Systems; Stripper Wells; and, Methane Hydrates
- **Program goals**
 - Adequate supply of natural gas at a reasonable price
 - Reduced environmental impact and improved safety
- **Status**
 - Rock Island #4 Well drilled in Wyoming with Union Pacific Resources
 - Deep horizontal well (15,000 ft deep with 1,700 ft horizontal) in tight sand
 - Production exceeded expectations (3.2 Bcf in one year)
 - Demonstrated several technologies sponsored by NETL
 - Developing Offshore Program for 2002
 - Methane Hydrates Gulf of Mexico Workshop



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Natural Gas Infrastructure Reliability Significant Activities

- **Includes transmission, distribution & storage**
- **Program goals**
 - Maintain/enhance system reliability
 - Increase gas deliverability
 - Reduce environmental impact
- **Status**
 - Completed Industry Visioning & Roadmapping Workshops
 - Building strong industry collaborations
 - Preparing late-summer competitive solicitation for FY2001 funds
 - Planning FY2001 Lab Call



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Advanced Gas Turbines Significant Activities

- **ATS successfully tested and ready for demonstration**
- **Next Generation Turbine Program initiated**
 - Program plan draft in review
 - Stakeholder Forum held in Washington, DC, on June 6, 2000
- **Selected 16 projects in FY2000 - Next Generation Turbine Program**
 - Seven University Consortium projects in combustion, heat transfer, and materials
 - Two projects for turbine/fuel cell hybrid integration
 - Three revolutionary concepts with Ramgen Power Systems, Clean Energy Systems Inc., and Siemens-Westinghouse/Texas A&M
 - Four projects to define turbine systems for clean, reliable, flexible power



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Fuel Cells Significant Activities

- **Launched SECA (Solid State Energy Conversion Alliance) with public workshop - June 1, 2000**
 - First solicitation being developed for 2001 awards
 - Intellectual property will facilitate utilization of tech-base R&D
- **Start-up of world's first fuel cell-turbine "hybrid"**
 - 250-kW solid oxide FC-GT Hybrid to be demonstrated at NFCRC
 - Related demonstrations: 100-kW unit in Netherlands, 250-kW unit for Ontario Hydro, and 1-MW demonstration with EPA Fort Mead
- **250-kW molten carbonate fuel cell exceeds one year of operation**
 - Related demonstrations: 250-kW units at Mercedes Benz and Los Angeles Department of Water & Power
- **Initiated GESD Focus Area**



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Workshop Purposes

- Discuss industry's perspectives on hydrates R&D needs as related to the Gulf of Mexico
- Review ongoing GOM hydrates research activities
- Identify a course of action for the next two to three years
- Define industry's willingness to participate in these activities



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Expected Outcomes



- **Identify:**
 - The business, regulatory, and technology barriers to meeting the hydrates program goals
 - R&D opportunities to overcome these barriers
 - Collaboration opportunities among industry, government, and academia
- **Develop:**
 - An action plan to outline the future directions of research and development
 - Joint Industry Projects to meet specific data and technology development needs



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As We Move Forward . . .



- **From the federal perspective, we recognize there is extensive knowledge and resources (people, equipment, data) in government, industry, and academia . . .**
- **However, industry participation is critical to achieving the goals of the program.**
- **Thus we look forward to defining a “path forward” driven by industry’s understanding of needs and opportunities.**



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