

THE ENVIRONMENTALLY FRIENDLY DRILLING SYSTEMS PROGRAM

EFD Program Phase 1

2005-2009 Accomplishments

1. Technology Assessment Reports on current practices.
2. An engineering design and mathematical model to incorporate disparate low impact technology into one optimal EFD system for developing resources
3. Integration of a modular, light weight, top drive casing drilling rig into a low impact drilling system design
4. Establishment of a waste management system at the rig site for mud pit cleanup, desalination, and for water re-use at the rig site.
5. Establishment of a program to supply alternate power for rigs
6. A survey report on the Impact of O&G Activities on Environmentally Sensitive Environments.
7. Establishment of a "Disappearing Roads" competition for engineering students across the U.S (to encourage innovative collaborative problem solving).
8. Development of public survey instruments to support introduction of new EFD programs into the community
9. Established partnership among landowners, operators, service companies and environmental organizations to review and discuss low impact technologies.
10. Development of an EFD scorecard methodology to measure tradeoffs between oil and gas activities and environmental / societal issues.

The goal of the EFD Program is to further advance the knowledge and development of environmentally friendly oil and gas activities with the objective of identifying, developing and demonstrating low-impact technologies/systems that can be used in environmentally sensitive areas that are currently off-limits. The program enables a dialogue between the energy industry, environmental organizations and appropriate government agencies and legislators.

The program is dedicated to the development and integration of low-impact technology and systems for unconventional natural gas resources. To reduce the environmental footprint of operations, the program will incorporate new methods in (1) logistics (site access), (2) rig/site area, (3) alternative power options, and (4) waste management. The program is a partnership of the Houston Advanced Research Center, Texas A&M University, Sam Houston State University, University of Arkansas, the University of Colorado, West Virginia University and TerraPlatforms, L.L.C.

The program provides a comprehensive technology transfer effort that includes outreach to industry, NGO's, government officials and the general public. In addition, a scorecard system is being developed to recognize those companies who employ the most applicable technologies and systems that minimize the environmental tradeoffs of oil and gas operations in sensitive ecosystems.



www.efdsystems.com

Publications

Phase 2: 2009 – present

1. Haut, R.C., Burnett, D., Williams, T., Theodori, G.: "Balancing Environmental Tradeoffs Associated with Low Impact Drilling Systems to Produce Unconventional Natural Gas Resources," paper CSUG/SPE-1337430-PP presented at the Canadian Unconventional Resources & International Petroleum Conference, Calgary, Alberta, Canada, 19-21 October 2010.
2. Haut, R.C., Bergan, J.F., Judy, J., and Price, L.: "Living in Harmony – Gas Production and the Attwater's Prairie Chicken," paper SPE-133652-PP presented at the SPE Annual Technical Conference and Exhibition, Florence, Italy, 19-22 September 2010.
3. Veil, J.A., Puder, M.G, Bruno, M., and Fleming, C.: "Regulatory Considerations," chapter in Society of Petroleum Engineers Monograph Vol 24, Solids Injection of Exploration and Production Wastes, N. Nagel and J. McLennan, eds., September 2010.
4. Produced Water Volume Estimates and Management Practices," manuscript accepted September 21, 2010 for publication in upcoming issue of SPE Production and Operations.
5. Veil, J.A., Clark, C.E.: "Produced Water Volume Estimates and Management Practices," manuscript accepted September 21, 2010 for publication in upcoming issue of SPE Production and Operations.
6. Pickett, A.: "Technologies, Methods Reflect Industry Quest to Reduce Drilling Footprint," American Oil & Gas Reporter, July 2010, pp. 71-81.
7. Haut, R.C. and Fischer, M.W.: "Cooperative Efforts Lead to Safer Operations," Hart's E&P, January 2010, pp. 32-33.
8. Redden, J.: "Drilling Advances: Is Green Drilling on the Horizon?" World Oil, December 2009, Vol. 230 No. 12.
9. "Environmentally Friendly Drilling Program to Reduce Impact of Operations on Ecosystems," NETL E&P Focus, Winter 2009 Oil & Natural Gas Program Newsletter.
10. Haut, R.C. and Dishaw, R.: "Shoulder/Thread Verifier System Uses Thermal Imaging to Detect Potential Connection Problems," Drilling Contractor, November/December 2009, pp. 68-73.
11. Clark, M. and Hotby, Q.: "Prevention Technology Can Help Drilling, Service Rigs to Minimize Environmental Footprint at the Source," Drilling Contractor, November/December 2009, pp. 74-79.
12. Mutz, K. and Haut, R.: "Best Practices Database Reduces Impact of Drilling, Production," April, 2010.
13. Theodori, Gene L., Mona E. Avalos, David B. Burnett, and John A. Veil. (forthcoming). "Public Perception of Desalinated Water from Oil and Gas Field Operations: A Replication" Journal of Rural Social Sciences.
14. Theodori, Gene L. and Douglas Jackson-Smith. 2010 (September). "Public Perception of the Oil and Gas Industry: The Good, the Bad, and the Ugly," paper SPE-134253 presented at the 2010 Society of Petroleum Engineers Annual Technical Conference and Exhibition. Florence, Italy.
15. Theodori, Gene L. 2009. "Paradoxical Perceptions of Problems Associated with Unconventional Natural Gas Development." Southern Rural Sociology 24(3): 97-117.
16. Theodori, Gene L., Brooklynn J. Wynveen, William E. Fox, and David B. Burnett. 2009. "Public Perception of Desalinated Water from Oil and Gas Field Operations: Data from Texas." Society and Natural Resources 22(7): 674-685.
17. Anderson, Brooklynn J. and Gene L. Theodori. 2009. "Local Leaders' Perceptions of Energy Development in the Barnett Shale." Southern Rural Sociology 24(1): 113-129. Yu O.K., Medina-Cetina Z, Briaud J.L. and Burnet D. (2009), "Towards a Probabilistic Selection of Environmentally Friendly Drilling Systems," 16th International Petroleum and Biofuels Conference, Houston TX, 3-5 November.
18. Al-Yami A.S., Schubert J., Medina-Cetina Z. and Yu O-Y, (2010), "Members Drilling Expert System for the Optimal Design and Execution of Successful Cementing Practices," Proceedings of the IADC/SPE Asia Pacific Drilling Technology Conference and Exhibition, Ho Chi Minh City, Vietnam, 1–3 November 2010.
19. Yu O.K., Medina-Cetina Z. and Briaud J.L. (2011), "Towards an Uncertainty-Based Design of Foundations for Onshore Oil and Gas Environmentally Friendly Drilling (EFD) Systems," Proceedings of the Geo-Frontiers Conference, Dallas TX USA, March 13-16.

20. Yu O.Y., Medina-Cetina Z., Geikema S., Briaud J.L. and Burnet D., (under review), "Causal vs. Non-Causal Selection of Environmentally Friendly Drilling Systems," *Journal of Economics and Management of the Society of Petroleum Engineering SPE*.
21. Yu O.Y., Medina-Cetina Z., Geikema S., Briaud J.L. and Burnet D., (under review), "Risk-Based Selection of Environmentally Friendly Drilling (EFD) Systems," *Journal of Systems Engineering*.

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22. Anderson, B.J., and Theodori, G.L. (2009). "Local Leaders' Perceptions of Energy Development in the Barnett Shale." *Southern Rural Sociology* 24(1): 113-129.
23. Theodori, G.L., Anderson, B.J., Fox, W.E., and Burnett, D.B. (2009). "Public Perception of Desalinated Water from Oil and Gas Field Operations: Data from Texas." *Society and Natural Resources* 22(7): 674-885.
24. Verma, A., and Burnett, D. B., "Alternate Power and Energy Storage/Reuse for Drilling Rigs: Reduced Cost and Lower Emissions Provide Lower Footprint for Drilling Operations," SPE-122885-PP. SPE Latin American & Caribbean Petroleum Engineering Conference. 31-May-09, Cartagena, Colombia.
25. Burnett, D. B., Yu, Ok-Youn, Schubert, J. J. SPE, Texas A&M University Well Design for Environmentally Friendly Drilling Systems: Using a Graduate Student Drilling Class Team Challenge to Identify Options for Reducing Impacts SPE/IADC 119297 presented at the SPE/IADC Drilling Conference and Exhibition held in Amsterdam, The Netherlands, 17–19 March 2009.
26. Yu, OK-Youn, Briaud, J. L. Guikema, S., Bickel, E., Burnett, D. B. Systems Approach and Quantitative Decision Tools for Technology Selection in Environmentally-Friendly Drilling SPE-120848-PP 2009 SPE Americas E&P Environmental & Safety Conference, March, 2009, San Antonio, TX.
27. Burnett, D. B., Haut, R., Williams, T.E., "Environmentally Friendly Drilling Systems. Background & Current Programs", presented at the 2008 Great Plains Expo, Bismarck, ND. Nov 12, 2008.
28. Haut, R.C., Burnett, D. B., Rogers, J. L., Williams, T. E. "Determining Environmental Tradeoffs Associated with Low Impact Drilling Systems," SPE Paper 114592 presented at the Annual Technical Conference and Exhibit, Denver, 2008.
29. Oluwaseun, Olatubi, Burnett, D., Hann, R. and Haut. R. HARC, "Application of Membrane Filtration Technologies to Drilling Wastes," SPE 115587 presented at the Annual Technical Conference and Exhibition, 2008.
30. Theodori, G. L., Public Perception of the Natural Gas Industry: Insights from Two Barnett Shale Counties, SPE 115917, presented at the 2008 ATCE Meeting, Denver CO.
31. Theodori, G.L. and Lyke-Ho-Gland, H. 2008. Energy Resources and Natural Environments Survey of Texans: An Illustrative Summary. Huntsville, TX: Department of Sociology, Sam Houston State University.
32. Haut, R.C., Rogers, J.D., McDole, B.W., Burnett, D.B., Williams, T.E. and Olatubi, O.: "Collaborative Team Researches Best Management Practices for Drilling Wastes," *The American Oil & Gas Reporter*, August 2007, pp. 58-66.
33. Haut, R.C., Rogers, J.D., McDole, B.W., Burnett, D. and Olatubi, O.: "Minimizing Waste During Drilling Operations" AADE-07-NTCE-54, 2007 AADE National Technical Conference and Exhibition, Houston, TX, April 10-12, 2007.
34. Haut, R.C., Rogers, J.D., Williams, T. and Burnett, D.: "Environmentally Friendly Drilling Targets Responsible Operations in Sensitive Locations" *Drilling Contractor*, March/April 2007. pp. 92-94.

Presentations

Phase 2: 2009 – present

- 2010-11-16 Geospatial Decision Support for Reducing Environment Impact in Natural Gas Shale Operations, Managing Fayetteville Shale Play Development Workshop. Workshop held in Fayetteville, AR.
- 2010-10-28 Decision-Support System for Pad Siting, West Slope Colorado Oil & Gas Association Environmental Summit, Grand Junction, CO.
- 2010-10-27 Reducing Environmental Impacts in the Fayetteville Shale Play using Geospatial Decision Support, A Spatial Quest: Twenty Years of Mapping the Natural State, Arkansas GIS User's Forum, Hot Springs, AR.
- 2010-10-25 Natural Gas in the New Energy Economy, Panel discussion part of Clean Energy Day, University of Colorado, Boulder, CO.
- 2010-10-22 Natural Gas Development and Social Well-Being. Presentation delivered at the Pennsylvania State University, Department of Agricultural Economics and Rural Sociology, M.E. John Lecture Series. University Park, PA.
- 2010-10-14 Geospatial Decision Support for Reducing Environment Impact in Natural Gas Shale Operations, Opportunities and Obstacles to Reducing the Environmental Footprint of Natural Gas Development in the Uintah Basin. Workshop held in Vernal, UT.
- 2010-10-14 Intermountain Oil and Gas BMP Project, Presented at the Opportunities and Obstacles to Reducing the Environmental Footprint of Natural Gas Development in the Uintah Basin Conference, Vernal, UT.
- 2010-10-10 *Minimizing the Surface Footprint for Unconventional Gas*, Presented at the 2010 GCAGS/GCSSEPM Annual Meeting, San Antonio, TX.
- 2010-09-26 *Water Availability and Management in Shale Gas Operations*, Presented at the Ground Water Protection Council Water/Energy Sustainability Symposium, Pittsburg, PA.
- 2010-09-22 Public Perception of the Oil and Gas Industry: The Good, the Bad, and the Ugly. Presented at the 2010 Society of Petroleum Engineers Annual Technical Conference and Exhibition. Florence, Italy.
- 2010-09-01 Water Modeling in the Fayetteville Shale, 17th International Petroleum & BioFuels Environmental Conference, San Antonio, TX.
- 2010-08-31 *Water Availability and Management in Shale Gas Operations*, Presented at the 17th International Petroleum and Biofuels Conference, San Antonio, TX, August 31-September 2, 2010.
- 2010-08-31 *The Regulatory Environment*, presented at the 17th International Petroleum and Biofuels Conference, San Antonio, TX, August 31-September 2, 2010.
- 2010-08-12 *'Deep in the Heart of Texas' Barnett Shale Perceived and Objective Community Level Impacts of Unconventional Gas Development*, Presented at the annual meeting of the Rural Sociological Society, August 12-15, Atlanta, GA.
- 2010-08-10 Findings for the Publics' Willingness to Adopt Desalination (Purification) of Oilfield Brine. Presented at the 6th Annual Practical Short Course on Water Desalination, Process and Wastewater Issues & Technologies. College Station, TX
- 2010-07-12 Assessing Opportunities and Barriers to Improving the Environmental Footprint of Oil and Gas Development in Utah. Presented at the Utah Governor's Energy Forum. Salt Lake City, UT.
- 2010-07-08 *Water Management Technologies & Regulatory Requirements for Different Locations and Environments*, Workshop presented at the 2010 Summer Meeting of the IOGA of New York, Findley Lake, NY.
- 2010-07-07 *The Inextricable Linkage between Water and Energy*, Presented at the 2010 Summer Meeting of the IOGA of New York, Findley Lake, NY.

- 2010-07-07 Exploration and Production of Oil and Natural Gas in Environmentally Sensitive Areas: Views from the Public. Presented at the 15th International Symposium on Society and Resource Management. Vienna, Austria
- 2010-06-24 *Water and Energy Relationships with a Focus on Oil and Gas Produced Water*, Presented at the 10th Biannual Research Review Meeting, National Science Foundation Industry/University Cooperative Research Center for Multiphase Transport Phenomena, East Lansing, MI.
- 2010-06-17 *Minimizing the Surface Footprint for Unconventional Gas*, Presented at the 2010 Global Unconventional Gas Forum Amsterdam, Netherlands.
- 2010-06-15 *Water & Energy - Inexorably Entwined Dance Partners, but without Perfect Choreography*, Seminar presented to staff at the Oak Ridge National Laboratory, Oak Ridge, TN.
- 2010-06-13 *Options for Management of Produced Water*, Presented at the Goldschmidt Conference, Knoxville, TN.
- 2010-06-07 *Opportunities and Barriers to Environmentally Friendly Energy Exploration and Production Practices in the Uinta Basin*, Presented at the 16th International Symposium on Society and Resource Management, Corpus Christi, TX.
- 2010-05-25 *Produced Water – Nuisance Byproduct or Valuable Resource?* Presented at the University of Wyoming Produced Water Conference, Laramie, WY.
- 2010-05-24 *Water & Energy - Inexorably Entwined Dance Partners, but without Perfect Choreography*, seminar presented to staff at the National Renewable Energy Laboratory, Golden, CO.
- 2010-05-20 Disappearing Roads Competition Finals, Texas A&M University.
- 2010-04-07 *The Environmentally Friendly Drilling Systems Program*, Presented at the RPSEA Unconventional Natural Gas Forum, Golden, CO.
- 2010-04-06 Conference Keynote Speaker for the AADE Conference, Houston, TX.
- 2010-03-18 Houston Association of Professional Landmen (HAPL), Petroleum Club, Houston, Luncheon Presentation.
- 2010-03-03 *Natural Resources and Environmental Issues and Energy Policy: A Sociologist's Perspective*, Presented at the Center for Environmental Research, Education, and Outreach, Washington State University, Pullman, WA.
- 2010-02-08 Energy Development, Natural Environments and Quality of Life: The Good, the Bad, and the Ugly as Perceived by Texans. Presented at the Annual Meeting of the Southern Rural Sociological Association. Orlando, FL.
- 2009-11-05 *From the Past to the Future: The Environmentally Friendly Drilling Systems Program*, Presented at the 2009 IOGA Conference, Buffalo, NY.
- 2009-11-03 *Environmental Stewardship of Natural Gas Operations*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Causal vs. Non-Causal Selection of Onshore Environmentally Friendly Drilling Systems*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Pretreatment Options for Water Based E&P Wastes*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Environmental Benefits of KERS System with Electrical/Diesel Rigs*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Team Challenge: Environmentally Friendly Drilling Using Low Impact Access Practices for Desert Ecosystems*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Public Opinion on Exploration and Production of Oil and Natural Gas in Environmentally Sensitive Areas*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-11-03 *Constructed Wetland Treatment Systems for Environmentally Friendly Drilling*, Presented at the 2009 IPEC Conference, Houston, TX.

- 2009-11-03 *A Crystal Ball View of the Energy Industry in 2025: How Environmentalists Hold the Key to America's Future Energy Security*, Presented at the 2009 IPEC Conference, Houston, TX.
- 2009-10-14 Intermountain Oil and Gas BMP Project, Presented at the Best Practices for Community and Environmental Protection Workshop, Rifle, CO.

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- 2009-05-14 *Environmentally Friendly Drilling Project – Reclaiming Drilling Wastes*, Presented at the Messina Drilling Fluids Mud School, Dallas, TX.
- 2009-05-13 *New Environmental Technologies for Gas Exploration and Production*, Presented at the SPE T&T Natural Gas Workshop, Port of Spain, Trinidad.
- 2009-05-13 *Environmentally Friendly Drilling Program*, Presented at Energy Day Forum, Washington, DC.
- 2009-05-12 *Environmentally Friendly Drilling Program – Coming to Your Backyard*, Keynote Address presented at the IOGCC Midyear Summit, Anchorage, AK.
- 2008-11-18 *Environmentally Friendly Drilling Project – Determining Environmental Tradeoffs*, Presented at the IOGCC Annual Meeting, Santa Fe, NM.
- 2008-11-13 *Leadership in Energy Environmental Stewardship*, Panel Discussion at the Senior Executive Energy Summit, Jackson Hole Policy Institute, Jackson Hole, Wyoming.
- 2008-11-12 *A Social License: Reducing the Footprint of Energy Production-The Next 50 Years*, Presented at the North Dakota Energy Expo.
- 2008-11-05 *Environmentally Friendly Drilling Program: History and Accomplishments*, Presented at the RPSEA EFD Crisman Institute Forum and Workshop
- 2008-10-28 *A Social License - Responsible E&P operations in reducing the footprint of drilling and production over the next 50 years*. Presented at Exp. Tech. Summit, Houston
- 2008-10-27 *Exploration and Production in Environmentally Sensitive Arctic Areas*, Poster presentation at the U.S. – Canada Oil and Gas Research Forum, Anchorage, Alaska.
- 2008-09-21 *Application of Membrane Filtration Technologies to Drilling Wastes*, Poster Presentation at the 2008 SPE Annual Technical Conference and Exhibition, Denver, CO.
- 2008-10-20 *Environmentally Friendly Drilling: Lowering the Footprint of Barnett Shale Development in Environmentally Sensitive Areas*, Presented at the Fort Worth Nature Center
- 2008-09-22 *Public Perception of the Natural Gas Industry: Insights From Two Barnett Shale Counties*, Presented at the 2008 SPE Annual Technical Conference and Exhibition, Denver, CO.
- 2008-09-23 *Determining Environmental Tradeoffs Associated with Low Impact Drilling Systems*, Presented at the 2008 SPE Annual Technical Conference and Exhibition, Denver, CO.
- 2008-09-04 *Demonstrating and Evaluating Low Impact Drilling Systems*, Presented at the Independent Producers Association of the Rocky Mountains Technical Conference, Denver, CO.
- 2008-09-04 *Energy Development and Water Needs*, Presented at the Independent Producers Association of the Rocky Mountains Technical Conference, Denver, CO.
- 2008-07-01 *Exploration and Production in Environmentally Sensitive Arctic Areas*, Exhibit at the Ninth International Conference on Permafrost, Fairbanks, Alaska.
- 2008-06-26 *Testimony given at to the Colorado Oil and Gas Commissioners concerning Colorado's Draft Rules for Oil and Gas Activities*, Denver, CO.
- 2008-06-05 *Desalination of Oil Field Brine* presented at the PE ATW Workshop, Port of Spain, T&T.
- 2008-06-05 *Desalination of Oil Field Brine* presented at the PE ATW Workshop, Port of Spain, T&T.
- 2008-05-13 *The Environmentally Friendly Drilling Program*, Presented at the RPSEA Rocky Mountain Forum, Golden, CO.

- 2008-02-20: *Environmental Aspects of Oil and Gas Operations in the USA*, Invited keynote speaker by the Canadian Consulate.
- 2008-02-07 *The Disappearing Roads Competition*, Presented at Texas A&M University.
- 2008-02-06 *The Disappearing Roads Competition*, Presented at University of Kansas.
- 2008-02-05 *The Disappearing Roads Competition*, Presented at University of Wyoming.
- 2008-02-01 *Energy Production and Quality of Life: A Tale of Two Counties*, presented at the Annual Meeting of the Southern Rural Sociological Association, Dallas, Texas.
- 2007-11-01 *Health, Safety & Environmental Issues – at all times, for all times*, Presented at the Hart Optimizing Mature Assets Conference, Houston, Texas.
- 2007-09-13 *The Environmentally Friendly Drilling Program*, Presented at the American Rock Mechanics Association Drilling Forum, Chicago, Illinois.
- 2007-04-04 *Environmentally Friendly Drilling Systems*, Presented at the IADC Environmental Conference & Exhibition, Amsterdam.
- 2007-02-11 *The Environmentally Friendly Drilling Systems Program*, Presented at the Jicarilla Apache Nation Tribal Council.
- 2006-06-05 *Impediments to Produced Water Reuse*, presented at the 12th International Symposium on Society and Resource Management, Vancouver, British Columbia, Canada.
- 2006-03-15 *Environmental Aspects of Oil and Gas Operations in the USA*, Invited keynote speaker by the Canadian Consulate.

Workshops

Phase 2: 2009 – present

- 2011-03-16 EFD – Managing Eagle Ford Shale Play Development Workshop held at the Mission Verde Center, San Antonio, TX.
- 2010-11-16 EFD – Managing Fayetteville Shale Play Development Workshop held at the University of Arkansas, Fayetteville, AR.
- 2010-10-14 EFD/BMP – Opportunities and Obstacles to Reducing the Environmental Footprint of Natural Gas Development in the Uintah Basin. Workshop held in Vernal, UT.
- 2010-09-23 EFD Europe Kick-Off Forum held in Florence, Italy
- 2010-08-24 PTTC-EFD Workshop/Forum held in Pittsburgh, PA.
- 2010-07-08 *Water Management Technologies & Regulatory Requirements for Different Locations and Environments*, Workshop presented at the 2010 Summer Meeting of the IOGA of New York, Findley Lake, NY.
- 2010-06-07 *The Eagle Ford Shale*, 16th International Symposium on Society and Resource Management in Corpus Christi, TX.
- 2010-05-06 Panel Discussion, Natural Gas Solutions Summit, Aspen, CO.
- 2010-05-05 Panel Discussion, Offshore Technology Conference, Houston, TX.
- 2009-11-12 *The EFD University/National Laboratory Alliance*, Oak Ridge, TN, Special workshop with employees from the Oak Ridge National Laboratory.
- 2009-10-14 *Best Practices for Community and Environmental Protection*, Rifle CO, Over 160 participants from academia, industry, environmental organizations, regulators, landowners and others

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- 2008-11-05 *Setting the Future Direction of the EFD Program*, Over 40 participants from academia, industry, environmental organizations, regulators, landowners and others.
- 2008-03-11 *Development of an EFD Scorecard Methodology*, Over 70 participants from academia, industry, environmental organizations, regulators, landowners and others.

Exhibits

Phase 2: 2009 – present

- 2010/06/07-10 *16th International Symposium on Society and Resource Management in Corpus Christi, TX.*
- 2010/05/20 *IADC Onshore Drilling Conference & Exhibition*, Omni Houston Hotel Westside, Houston, TX.
- 2010/01/26-27 *IADC Health, Safety, Environment & Training Conference & Exhibition*, Omni Houston Hotel Westside, Houston, TX.

Awards

- 2009-10-05: *Environmental Partnership/Chairman's Stewardship Award*, Interstate Oil and Gas Compact Commission.

Stakeholders

The Environmentally Friendly Drilling Systems Program enables all stakeholders to come together to learn from each other about balancing energy production with all living systems. In addition to sponsors that help fund the program, there are various stakeholders that also help set the direction for what we do and actively participate in various projects and programs. Stakeholders include environmental organizations, academia, industry, and government agencies. The EFD program has involved participation and endorsement from the following stakeholders:

Environmental Organizations

The Nature Conservancy
 Natural Resources Defense Council
 Environmental Defense
 Clinton Climate Initiative
 Conservation International
 Fort Worth Nature Center
 International Association for
 Society & Natural Resources
 Rocky Mountain Clean Air
 World Ocean Council

Academia

Texas A&M University - College
 Station
 Texas A&M University - Kingsville
 Mississippi State University
 Sam Houston State University
 Utah State University
 John Hopkins University
 University of South Alabama
 University of Arizona
 University of Texas
 University of Arkansas
 University of Colorado
 University of Houston
 University of Alaska – Fairbanks

State/Federal Agencies

Bureau of Land Management
 New York State Dept of
 Environmental Conversation
 New York State Energy Research
 and Development Authority
 New Mexico Energy, Minerals and
 Natural Resources Department
 Texas Commission on
 Environmental Quality
 Texas General Land Office
 Texas Department of Agriculture
 Texas Department of
 Transportation
 Texas Parks & Wildlife
 Texas Railroad Commission
 Texas Water Board
 US Department of Energy
 US Fish and Wildlife
 US Minerals Management Services
 US Park Service
 Wyoming Oil & Gas Conservation
 Commission

Government Laboratories

Argonne National Laboratory
 Idaho National Laboratory
 Los Alamos National Laboratory

Other

Jicarilla Apache Nation
 McFaddin Ranch

Industry

API
 Apache
 Ballard Exploration
 BP
 Chesapeake Energy
 Chevron
 ConocoPhillips
 CSI Technologies
 Derrick Equipment
 Devon
 EnCana
 EnerCrest
 Gulf Coast Green Energy
 GW Scientific
 KatchKan
 King Exploration
 Land Title Solutions
 H-Tech
 Halliburton
 Heartland Biocomposites
 Huisman
 Mesa Partners
 MGM Energy
 M-I Swaco
 Milagro Energy
 National Oil Well - Varco
 New Mexico Oil and Gas
 Association
 Newpark Resources
 Shell
 StatoilHydro
 Stonegate
 TerraPlatforms
 T. Baker Smith
 Total
 Weatherford
 PTTC
 IADC