

Crisman EFD Program

08122-35 The Environmentally Friendly Drilling Systems Program - Houston Advanced Research Center (HARC)

Additional Project Participants: Texas A&M University, Sam Houston State University, University of Arkansas, University of Colorado, Utah State University, University of Wyoming, West Virginia University, Argonne National Laboratory, Los Alamos National Laboratory, TerraPlatforms, LLC, the Environmentally Friendly Drilling Joint Industry Partnership, The Nature Conservancy, Natural Resources Defense Council, New York State Energy Research and Development Authority

Industry has made great strides in protecting the environment while increasing natural gas production in the U.S. However, producers face daunting challenges to effectively produce more natural gas in environmentally sensitive areas. The Houston Advanced Research Center (HARC) and its partners offer options to reduce the impact of O&G operations in environmentally sensitive ecosystems. The Environmentally Friendly Drilling (EFD) program combines new low-impact technologies that reduce the footprint of drilling activities, integrates light weight drilling rigs with reduced emission engine packages, addresses on-site waste management, optimizes the systems to fit the needs of a specific development sites and provides stewardship of the environment. In addition, the proposed RPSEA EFD includes industry, the public, environmental organizations, and elected officials in a collaboration that addresses concerns on development of unconventional natural gas resources in environmentally sensitive areas. Partners have regional expertise that they are able to bring together in a synergistic manner to address the needs across the country.

The RPSEA EFD effort is based on a previously co-funded U.S. DOE/industry JIP program led by Texas A&M University and HARC that created a government, industry, public partnership to reduce the environmental footprint of drilling systems in sensitive ecosystems. The 2005-2008 EFD program identified critical technologies appropriate for low impact systems, created industry-led research projects, and developed techniques for selecting low impact systems for a given project site. The first EFD program showed that the industry could achieve more than 90% reduction in the impact on the environment if low impact technology was combined into a complete system.

The partnership established in the 2005-08 EFD program provides the foundation of the new RPSEA EFD program. It offers an organizational structure that both identifies new technologies and transfers those and existing technologies to areas of development that must incorporate new practices to address environmental concerns. Nine key areas and 28 specific technologies are discussed. Regional U.S. partners will manage the RPSEA EFD program and will optimize technologies to fit the needs of their locale. Partners in each region will work to incorporate such systems into operations in the Rockies, in the Southwest desert, and in the Appalachia region of the U.S. Partners will routinely come together to present work progress to each other and to the sponsors/advisors.

HARC will be the prime contractor with Dr. Richard C. Haut acting as the project director/principal investigator. In addition to HARC, the RPSEA EFD team includes Texas

A&M University (TAMU) and its Global Petroleum Research Institute (GPRI), Sam Houston State University, University of Arkansas, the University of Colorado, Utah State University, the University of Wyoming, West Virginia University, Argonne National Laboratory, Los Alamos National Laboratory and TerraPlatforms, L.L.C. A Joint Industry Partnership (JIP) will provide cost share. The JIP includes BP, CSI Technologies, Devon Energy, Gulf Coast Green Energy, Halliburton, Huisman, KatchKan USA, M-I SWACO, Newpark Mats and Integrated Services, and Weatherford. Pending JIP members include: Apache, Chesapeake Energy, EnCana, Shell, Total, and others. The Nature Conservancy and the Natural Resources Defense Council (NRDC) will provide in-kind contributions. In the Northeast, the New York State Energy Research Development Authority (NYSERDA) will help promote the program.

The RPSEA EFD program will leverage on-going research in order to move technologies closer to field application and subsequent commercialization. The program will include (a) commercialization of technology to treat and reuse produced water, (b) development of Alternate Rig Power to reduce operating costs and emissions, and (c) identification and testing of improved technologies and equipment that will reduce the footprint of access roads and well pads, to optimize EFD technologies in E&P activities. Various applications supported in the U.S. DOE NETL “Microhole Technology” will also be brought within the RPSEA EFD collaboration.

To inform the public of the industry’s environmental advancements in technology, the RPSEA EFD program will develop a computer based model to select complementary environmentally friendly technologies for E&P operations along with an EFD Scorecard to measure performance. The model and the scorecard are important tools that allow industry and regulators to measure performance. The Scorecard concept engages all stakeholders, including industry, academia and environmental organizations, in identifying technologies and systems that can be used to recover unconventional natural gas reserves with the lowest possible environmental footprint. The Model and the Scorecard are based on the principles of what gets measured gets done and what gets identified gets dealt with.

Technology Transfer activities will include the human dimension of technology incorporation in societal areas. Educating and informing will be directed both toward the industry, regulators and the public.

The outcome of the RPSEA EFD program is expected to result in greater access, reasonable regulatory controls, lower development cost and reduction of the environmental footprint associated with operations for unconventional natural gas. The RPSEA EFD program will increase the public’s and regulatory agencies’ acceptance to operate in environmentally sensitive areas, and add significant reserves to the U.S. unconventional natural gas inventory.

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...for more information: <http://www.netl.doe.gov/technologies/oil-gas/EPAAct2005/Projects/Index.html>