ENVIRONMENTALLY FRIENDLY DRILLING USING LOW IMPACT ACCESS PRACTICES FOR DESERT ECOSYSTEMS

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All Areas are Environmentally Sensitive

- The value of oil and gas resources are increasing.
- The value of protecting the environment is important.
- The public’s interest in energy development is significant.
- The O&G Industry must engage the public.

- Identify and develop technologies to obtain access with minimal impact.
- Determine how to measure the tradeoffs.
Low Impact Access—Three Key Programs

1. Disappearing Roads
2. RPSEA Access Roads in Desert Ecosystems
3. U of Wyoming “Laydown Road”
A&M EFD Low Impact Access

Low Impact Access Projects within the EFD Program

The impact of access roads and drilling pads has been identified by the Environmentally Friendly Drilling Program (EFD) as one of the major problems to be managed when conducting oil and gas operations in environmentally sensitive areas. Since 2005 the EFD program has been identifying technology and sponsoring research in reducing surface impact. Three major projects are underway specifically addressing such technology.

1. The "Disappearing Road Competition" is a yearly nation-wide scholastic competition sponsored by Halliburton to create a new concept of moving men and materials to and from well sites. A brief description of this year's awards is attached. From this program will come new ways to move across the landscape in a minimal way.

2. The Research Partnership to Secure Energy of America (PRSEA) [http://www.prsea.org Unconventional Oil & Gas Development (Environmental issues)] is funding a new project by Texas A&M University to construct and then perform demonstrations of low impact O&G lease roads designed to reduce the environmental impact of field development in sensitive new desert ecosystems. A summary of the winning projects is attached here while more information on the site is at:

   [Low Impact Access Roads Demonstration (Pecos Research Test Center)]

3. The EFD program and DOE are sponsoring a study on the feasibility of using agribusiness hydrology GIS models and databases to optimize siting of O&G operations on sensitive landforms. The concept is to modify biophysical hydrologic models developed in agriculture to determine the impacts of land management on water quality and the landscape. These models could serve terrestrial exploration and development in the oil and gas industry by providing a tool to evaluate environmental impact from drilling and recovery prior to operations. Minimizing Surface Impacts by Optimization of O&G Facilities [http://sites.google.com/a/pe.tamu.edu/low-impact-access/sites/home?previewAsViewer=1]

See attachments.

Attachments (3)

  - [View Download]
- [Public Executive Summary_2.pdf] - on Aug 5, 2008 3:11 PM by David Burnett (version 1, earlier versions)
  - [View Download]
- [Surface Activities.pdf] - on Aug 5, 2008 4:46 PM by David Burnett (version 1)
  - [View Download]
Details of Project

• Task 1 – Research Management & Technology Status Assessment
• Task 2 – Early Economic, Market, and Environmental Studies.
• Task 3 – Technology Transfer.
• Task 4 – Planning Field Demonstration - Development, Testing and Deployment
Details (contd.)

- Task 5 Mobilize Equipment to Test Site and Construct Test Tracks.
- Task 6 Operations: Performance, Monitoring and Demonstrations.
- Task 8 – Update Economic Analysis and Finalize Project Field Testing – Field Demonstrations
Pecos Desert Test Center
Approximately ½ mile
Texas A&M and RPSEA are developing, testing, and adopting technologies that contribute to the cost-effective construction of low impact roads.
1. Scott Environmental – recycled drill cuttings
2. NewPark DuraBase Composite Mats
3. U. of Wyoming “Laydown Road”
4. Caliche Road
Scott Environmental Services
Recycled Drill Cuttings Road Base

Scott Environmental Services, Inc.

“Reliable Results Through Proven Approaches”
Site Cleared and Ready for Construction
1. Scarified, Bladed, and Shaped Existing Subgrade
4. Cement Added at Design Content and Mixed In
3. Water Added to Predetermined Optimum
Layer of Conventional Granular Base Added as Surface Course
250 ft of Scott DC Pavement
DR 10.30.2009 (48 hrs After Rain and Sleet Storm)
Field Evaluation Testing

• Portable Falling Weight Deflectometer
  – Measures modulus and uniformity of the constructed roadway
  – To monitor changes in modulus due to weathering and trafficking

• Additional Field Testing
  – Density Measurements
  – Dynamic Cone Penetrometer
    • Stiffness measurement
• Mats similar to wood mats

• Uses current installation techniques

Mat Concept
Disappearing Roads
An Exploration Into Low Impact And Efficient Gas Field

University of Wyoming – Multidisciplinary Senior class project
• Main Components
  • Conformable
  • Hinged board segments

Rollout Road
The “Disappearing Road Competition”
2009-2010
http://sites.google.com/a/pe.tamu.edu/disappearing-roads-competition/

Department of Petroleum Engineering
Crisman Institute, GPRI
Department of Civil Engineering
Texas Transportation Institute
Texas A&M University
Houston Area Research Center
Halliburton, Year 2009-2010 Sponsor
Disappearing Road Entrants -

• Texas A&M Petroleum Engineering
• Auburn University
• Rose-Hulman Institute of Technology
• PolyTechnic University of New York
For Further Information

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Thank You!
Any Questions?