HYDRAULIC FRACTURING 101

December 8-9, 2014
Houston Marriott West Loop by The Galleria
Houston, TX
OVERVIEW

Hydraulic fracturing is a well stimulation process that is becoming increasingly common. Although the idea is simple to understand, the terminology and processes are more complex. An understanding of the fracturing process can help companies increase production from wells while avoiding liability resulting from environmental damage. When problems do arise, understanding what causes the problems is critical to developing cement repair plans, or other remediation plans. An understanding of the issues around water use and re-use will help to manage the expense associated with water management.

This course is designed to give a broad overview of how fracturing works, the terminology used, and the processes that are incorporated into hydraulic fracturing. The instructor will discuss in-depth the various processes, requirements, and issues surrounding hydraulic fracturing. She will identify the steps involved in hydraulic fracturing, types of frac fluids, and types of proppants. She will address drilling and cementing as it relates to hydraulic fracturing. Attendees will learn about cementing repairs as well as water processing for reuse or discharge back into the environment. Attendees will learn how to decipher frac reports. Attendees will also learn about the importance of well integrity during the hydraulic fracturing process. Attendees will leave with a comprehensive understanding of current and pending regulations regarding hydraulic fracturing.

Examples are from a wide variety of areas, including the Bakken, California Diatomite, Barnett, DJ Basin, DOE Research Sites, Marcellus, Ohio Formations, Permian Basin, Wind River Basin, Woodford, Green River Basin, Bainbridge Township Ohio, Pavillion Wyoming, Anticline Disposal Water Recycling Plant and others.

WHO SHOULD ATTEND

- Petroleum industry personnel in need of basic hydraulic fracturing training
- Insurance underwriters who need to be familiar with fracturing
- Attorneys in oil and gas
- Regulatory agency employees who will evaluate wellbore integrity and fracturing
- Environmental professionals in oil and gas companies
- Professionals who source, process or dispose of water
- Financial and accounting managers who need to assess whether to fund development projects
- Support professionals
- Oil and gas employees providing technical support
- Administrative personnel for oil and gas companies

LEARNING OUTCOMES

Attendees to this course will:
- Describe how hydraulic fracturing works
- Show how oil or gas production can be increased by fracturing
- Examine drilling and cementing as it relates to the hydraulic fracturing process
- Discuss data needed for fracture design
- Assess water processing methods for reuse or discharge into the environment
- Review current and pending regulations
- Evaluate FracFocus
- Discuss case studies of pollution problems
- Decipher frac reports
- Describe the types of problems that can arise in petroleum wells, aquifer wells, and water disposal wells
- Discuss how to know if there is a problem
- Evaluate what to do to fix the problem
- Address important well integrity considerations during the hydraulic fracturing process
AGENDA

Monday, December 8, 2014

8:00 – 8:30 a.m.  Registration and Continental Breakfast

8:30 a.m. – 5:00 p.m.  Course Timing

12:00 – 1:00 p.m.  Group Luncheon

How Fracturing Works
- Steps in the hydraulic fracturing process
- Types of frac fluids
- Types of proppants (sand)
- Flowback
- Frac pressure
- Fracturing horizontal wells: openhole vs cemented completions

Drilling and Cementing
- Steps to set the stage for safe, economic fracturing
- Identifying cement problems
- “Squeeze” cementing repairs
- Making sense of cementing reports

Data Needed for Fracture Design
- Role of permeability and fractures: frac fluid viscosity and leakoff
- Layout and spacing of wells relative to surface constraints and geological considerations
- Shape of fractures: planar and complex, rock properties
- Fracture geometry and height growth: modeling and prediction, real-time monitoring
- Why different proppants are used: embedment and crushing
- Perforations
- Evolution of horizontal drilling and fracturing over time

Water Processing for Re-use or Discharge to the Environment
- Evaluating whether produced and flowback water is economic to re-use
- Disposal by injection: mechanical equipment and permitting
- Reuse for fracturing
- Recycle for waterflood or steamflood
- Equipment and processes for water reclamation
- Removing salt and chemicals from water

Regulations
- How is the regulatory framework taking shape?
- Issues addressed by new and existing regulations
- The difference between laws, regulations and recommended practices
- Documents “incorporated by reference”
- Federal vs. state jurisdiction
- What types of chemicals are in frac fluid, and why do we use them?
- Land issues

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“EUCI delivered an expert on the subject matter. The EUCI team, combined with experts in the room, far exceeded my expectations as a technical professional.”

- VP Technology, MacDormid Offshore Solutions

“A must attend intro to hydraulic fracturing.”

- Sales, Donison & Associates
AGENDA

Tuesday, December 9, 2014

8:00 – 8:30 a.m.  Continental Breakfast
8:30 a.m. – 5:00 p.m.  Course Timing
12:00 – 1:00 p.m.  Group Luncheon

Deciphering Frac Reports
- Vocabulary terms
- Different fluid types
- Pressures and rates
- Instantaneous Shut In Pressure
- Packers, bridge plugs, balls and sliding sleeves

Well Integrity Information
- Types of problems that can arise in petroleum wells, aquifer wells, and water disposal wells
- How to know if there is a problem
- What to do to fix the problem
- Caliper logs
- Cement evaluation logs
- Pressure tests of wells
- Data to evaluate a field for purchase
- Sorting out jargon filled reports

Case Studies: Water Contamination
- Overview
- Specific incidents
- Remediation
- Conclusions

Summary and Conclusion

INSTRUCTOR

Lisa Denke / Instructor / EUCI

Lisa Denke graduated from University of Wyoming in 1993. She took a job cementing, acidizing and fracturing wells with Dowell Schlumberger in Worland, Wyoming, and transferred to Bakersfield, California with Schlumberger in cementing. She worked for Texaco in production, including high temperature steam fracturing in Cymric field, with the attendant wellbore challenges. Working for Aera as a drilling/completions engineer gave her the opportunity to work on a variety of wells, from high volume programs with hundreds of wells per year, to horizontals with foamed cement, and quad completions with mud-to-cement conversion. At Berry, she had the opportunity to install fiber optic capillary strings in horizontal wells, as well as successfully shepherding new water disposal project permits through the regulatory process in old oilfields, with the attendant plugging of legacy wells, including wells dating from the 1800’s. Her academic background also includes research in groundwater and geology, including an EPScOR research project on the groundwater at Pavillion, Wyoming.

“Very detailed and informative. I learned quite a bit about issues that were supplemented with factual case studies.”
- Sales Representative, United Casing Inc.

“With the advent of larger oil companies coming into the State of Nevada, this course would be excellent for the state regulators that are now just beginning to write hydrofracturing regulations for the state.”
- Project Manager, Lumos & Associates, Inc.
INSTRUCTIONAL METHODS

Class lectures will be presented using Microsoft PowerPoint.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.4 CEUs for the program.

EVENT LOCATION

A room block has been reserved at the Houston Marriott West Loop by The Galleria, 1750 West Loop South, Houston, TX 77027, for the nights of December 7-8, 2014. Room rates are $189 for single & double occupancy, plus applicable tax. Call 1-713-960-0111 for reservations and mention the EUCI course to get the group rate. The cutoff date to receive the group rate is November 7, 2014, but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

PROCEEDINGS

The proceedings of the course will be published, and one copy will be distributed to each registrant at the course.
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PLEASE REGISTER THE FOLLOWING

HYDRAULIC FRACTURING 101
DECEMBER 8-9, 2014: US $1495
EARLY BIRD ON OR BEFORE NOVEMBER 28, 2014: US $1295

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name

Job Title

Company

What name do you prefer on your name badge?

Address

City

State/Province

Zip/Postal Code

Country

Telephone

Email

List any dietary or accessibility needs here

CREDIT CARD

Name on Card

Account Number

Billing Address

Billing City

Billing State

Billing Zip Code/Postal Code

Exp. Date

Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)

OR Enclosed is a check for $___________________ to cover __________________ registrations.

CANCELLATION POLICY

All cancellations received on or before November 7, 2014, will be subject to a US $195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event or publication. This credit will be good for six months. In case of event cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at (201) 871-0474.