

The “Hole” Story

Stefani Brakenhoff, Senior Petrophysical Engineer, The Discovery Group



The Discovery Group offers courses in petrophysics for your people, at your location, at a date convenient to your needs and internal schedules. The courses will benefit geologists, engineers, geophysicists, and geotechs, and can be of benefit to other specialists who routinely work with those geotechnical specialists. The best class size is from about 10 to 25 people from a variety of specialties who can share their professional experiences in the context of a greater understanding of petrophysics.

Synopsis: This course is a journey through the fundamentals of openhole logging, from the basics of a wellsite location setup and an open hole logging job, to prepping data delivered from the field for importation into common software packages. Stefani draws on her experience as an openhole field engineer, and begins the class at the wellsite where the data is collected. The class continues to some basic geological principles that, when combined with open hole logging measurements, provide a powerful tool to understanding hydrocarbon storage and distribution. A detailed description of each measurement in a typical quad combo tool string is discussed, and how that data can be delivered in a coherent, validated package, ready for interpretation. The class wraps up with exercises that urge the attendee to gather information from paper copies on relevant logging run data of different wireline logs run by multiple service companies.

The course:

- Introduces the methodology and process of acquiring open hole wireline
- Provides background about the geology and drilling practices which affect that data.
- Offers a “hands-on” approach to the gathering of data volumes, the quality control of that data, and the creation of databases ready for the manipulation of that data.

The course assumes minimal knowledge of basic geology, well log data acquisition and preparation. It strives to provide a strong and coherent foundation for the validation and preparation of openhole log data, and an understanding of why that preparation is critical to the specialized interpretation techniques which use that data.

Course topics include:

- How the data are acquired, and who does the acquisition;
- How the data are identified on analog (paper or digitally scanned) prints and digital files;
- The role of each measurement in characterizing a formation;
- Identifying the forms and file types of openhole data, and which applications can be used to access and view these files;
- How to read and understand the delivered data, including log header data, data wrapping on displays, variations in curve mnemonics (curve names);
- Identifying valid and invalid data, and how to identify and modify that data to prevent erroneous interpretations;
- Discovering challenges in interpretation of the data (data importing, aliasing, integrity, normalization), why those issues are important, and why they can be controversial;
- How data management and integrity issues can impact project efforts and outcomes, and how those issues can impact the company.

Length: 1 day

Equipment needed: A writing instrument for taking notes.

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Agenda: No specific times are listed, as the times to cover material will depend on the questions and comments of the class. Questions and comments based on the experience of participants are welcomed and encouraged, and often provide insights to local conditions and methods that would otherwise not be presented.

Short breaks will be taken throughout the course, as needed.

Day 1

What is oil and gas, and how is it made?

The life of a well

Wellsite equipment

Geology

Openhole logging tools

The data

The data in detail: gathering, identification, quality assurance, assembly into a working database.

Course summary

Time for hands-on exercises, which the class can do individually or in small groups, is included in the above schedule.

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About the instructor:



Stefani has over 13 years of experience in the petroleum industry. She graduated from the Colorado School of Mines in December 2002 with a B.S. in Chemical Engineering and a B.S. in Mathematical and Computer Sciences and a minor in Public Affairs for Engineers. After school, she was employed with Schlumberger for two and a half years beginning in 2003 as a Senior Open-hole Wireline Field Engineer in the Washakie and Greater Green River Basins of Southwestern Wyoming.

Stefani has been with Discovery Group for 11 years and is now a Sr. Petrophysical Engineer with specialties including log data cleanup, log normalization, reservoir characterization, log database setup and management, neural net solutions, tool theory and characterizations, water storage projects, and setting up and coding petrophysical workflows for tight gas and gas/oil shales. She has worked most on-shore basins in the U.S. as well as basins in Western Africa, Australia, India, Poland, Russia, the U.K., and U.A.E.

She is a member of member of the Order of the Engineer, the Society of Petroleum Engineers (SPE), the American Association of Petroleum Geologists (AAPG), the Rocky Mountain Association of Geologists (RMAG), the Society of Petroleum Well Log Analysts (SPWLA), and past member of the Next Generation Oil and Gas Professionals (NGOGP). She has served as Treasurer, President and extra materials keeper of the Denver Well Logging Society (DWLS), the North American Region II SPWLA Director for two years, was on the board for NGOGP for four years, and helped run the RMAG Prospect Fair in October 2011.

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