



Register by 10 September 2010

Society of Petroleum Engineers

28–30 September 2010

Conference Hall of TNK-BP Company | 14, Kuzovatkina street, TNK-BP office | Nizhnevartovsk, Western Siberia, Russia

Hydraulic Fracturing in Russia: Current Experience and Perspectives



Who Should Attend

- E&P company personnel involved in field development planning
- Completion and Stimulation Engineers
- Engineers carrying out hydraulic fracturing activities and looking to expand the application of their knowledge to different reservoir types
- Service company staff offering products and technologies for hydraulic fracturing

Program Committee

Co-chairperson:
Suleyman Sitdikov
Rosneft

Co-chairperson:
Andrey Dedurin
TNK-BP

Alexander Bogdanov
CAToil

Brian Davidson
Carbo Ceramics

Philippe Enkababian
Schlumberger

Ivan Kashtanov
Gazpromneft

Pavel Kuzovenkov
Russneft

Vladimir Makienko
Lukoil West Siberia

Andrey Mikhin
Lukoil Engineering

Maxim Mikitin
Trican Well Services

Murray Pike
Trican Well Services

Antonina Prudnikova
Halliburton

Pavel Rusinov
Fores Chemicals

Workshop Description

Hydraulic fracturing, as a method of well stimulation, started in USA in the late nineteen forties. In the Soviet Union it was employed for the first time in 1952. Hydraulic fracturing was initially a primarily completion method for injection wells in the course of peripheral waterflooding at that time, less often it was performed on oil wells. Later on in the former Soviet Union hydraulic fracturing was done in oil wells with river sand employed as proppant material.

When development of high production rate oil fields had started in Western Siberia, the interest in hydraulic fracturing dissipated nearly completely. As a result, hydraulic fracturing was not employed on a commercial scale in the Russian petroleum industry between the early seventies and the end of nineties of the 20th century.

The second coming of hydraulic fracturing took place consequently on dramatically worsened structure of reserves in Russia in the early 1990's. It was employed not only as a production enhancement method but also as a commercially viable method of developing hydrocarbon accumulations in low permeability reservoirs. This was facilitated by availability of modern hydraulic fracturing procedures adapted to specific geological conditions of the Russian Federation. By now the Russian oil and gas companies have accumulated substantial experience in hydraulic fracturing operations under various geological conditions.

Our goal is to ensure this Workshop is attended by representatives of the major operators and service companies and is an exemplar forum for a free dialogue that would offer an opportunity for the experienced companies to share accumulated knowledge and to gain knowledge for those in search of solutions.

Workshop Objectives and Deliverables

1. Evaluation and discussion of existing fracturing experience in Russia
2. Exchange of ideas for future development of Russia's fracturing market.

Register online at www.spe.org/atws

Workshop Timetable

Sponsorship Support

Sponsorship support helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operations-level individuals, those who benefit most from these technical workshops.

Sponsors benefit both directly and indirectly by having their names associated with a specific workshop.

While SPE prohibits any type of commercialism within the conference hall itself, the society recognizes that sponsoring companies offer valuable information to attendees outside the technical sessions.

Sponsorship Categories

Sponsorship can be offered in the following categories:

General Sponsorship - an organisation can make a general contribution to the workshop costs and be identified on all promotional literature as a "General Workshop Sponsor".

- 1) Audio-visual Equipment: this package covers the hire of the audio visual equipment including the microphones, sound system and data projection.
- 2) Simultaneous Translation: the workshop will be simultaneously translated in English and Russian. This sponsorship covers the hire cost of the equipment and the translators.
- 3) Workshop Coffee Breaks: there will be morning and afternoon coffee breaks on each day of the workshop. Exclusive sponsorship for one or all workshop coffee breaks.
- 4) Workshop Lunches: there will be 3 workshop lunches during the event for all attendees. Exclusive sponsorship for one or all workshop lunches—please indicate on the sponsorship form which day you would prefer.
- 5) Reception: sponsorship of Evening Reception for all Workshop participants

Sponsorship Benefits

For sponsors SPE offers the following benefits during the Workshop

- Display of company name and a black and white logo on Workshop site;
- For coffee breaks, lunches and reception sponsorship: display of company name and black and white logo in the area where the function takes place.
- For audio-visual equipment and simultaneous translation sponsorship: display of logo and company name on acknowledgement slide, projected on screen at beginning and end of session, and during mid-session break for coffee.

For More Information

For more detailed information with regard to sponsorship support, please contact Karina Kalmykova, tel. 7 495 748 35 88 or at kkalmykova@spe.org.

Tuesday, 28 September 2010

0845–0930	SPE Registration, Coffee
0930–0945	Workshop Opening
0945–1030	Session 1: Well Candidate & Treatment Selection
1030–1100	Coffee Break
1100–1230	Session 1: Continued
1230–1330	Lunch
1330–1500	Session 2: Latest Technology Achievements in Hydraulic Fracturing. Specialized Hydraulic Fracturing Techniques for Specific Geological Conditions
1500–1530	Coffee Break
1530–1700	Session 2: Continued
1730–1930	Reception

Wednesday, 29 September 2010

0830–0900	Morning Coffee
0900–1030	Session 3: Practical Application of Spatial Fracture Orientation Technology in Re-Fracturing. Necessity and Efficiency of Re-Fracturing Operations
1030–1100	Coffee Break
1100–1230	Session 3: Continued
1230–1330	Lunch
1330–1500	Session 4: Horizontal Well Fracturing
1500–1530	Coffee Break
1530–1700	Session 4: Continued

Thursday, 30 September 2010

0830–0900	Morning Coffee
0900–1030	Session 5: Acid Fracturing
1030–1100	Coffee Break
1100–1230	Session 5: Continued
1230–1330	Lunch
1330–1500	Discussions
1500–1530	Coffee Break
1530–1700	Discussions: Continued
1700	Workshop Closing

Preliminary Technical Agenda

Introduction

A well-known saying that describes the childhood goes: "When trees had been tall..." The childhood of hydraulic fracturing in Russia took place in the early 1990-s with the launch of Russian-German and Russian-Canadian fracturing joint ventures. We were mastering a new business and like all children made childish mistakes at that time. We have been growing during the past twenty years, trees no longer seem very tall and we have gained a lot of knowledge and experience. The substantial scope of national and international hydraulic fracturing expertise has been accumulated in this country. However, there are some fundamental issues that, on the one hand, are very clear but on the other hand have some outstanding implications that prevent us from considering those topics finalized.

Tuesday, 28 September 2010

Session 1: Well Candidate & Treatment Selection

Session Managers: S. Sitdikov, A. Bogdanov

One of the current typical issues related to hydraulic fracturing is selection of candidate wells. Everything seems clear and logical. Everyone knows what skin is and how to deal with it. Assessment methods of the current reservoir status also pose no problem except for a few little things—operator's unwillingness to commit substantial funds to production testing, as well as obsolete measuring equipment, tons of articulation statement printouts that cannot be quickly processed and analyzed, and other trifles that prevent application of simple and logical approaches in order to evaluate well potential and to select a candidate for hydraulic fracturing.

We, Russian engineers, have to undertake remarkable ingenuity in order to attain desired objectives. Sessions 1 and 2 will attempt to answer the questions about candidate selection under insufficient information, about identifying the most efficient procedures for specific wells and the latest special hydraulic fracturing methods available on the Russian market.

Session 2: Latest Technology Achievements in Hydraulic Fracturing. Specialized Hydraulic Fracturing Techniques for Specific Geological Conditions

Session Managers: S. Sitdikov, A. S. Mikhin

Nowadays the portion of the reserves that are difficult to recover in overall residual recoverable reserves amounts to more than 50% and it increases every year. A major amount of hydraulic fracturing jobs are limited to using the standard procedure employing the polymer-based aqueous solution as a fracturing fluid. The partial gel breakdown leads to the significant decrease of the reservoir residual conductivity and the generated fracture as well as to nearly uncontrolled vertical propagation of fractures. All these effects result in high water cut production and failure to achieve the planned incremental production rate of oil.

A great number of hydraulic fracturing jobs are carried out annually in order to maintain high oil production level and to enhance efficiency of oilfield development, including in new drills, in horizontal wells and lateral holes, in cased and open holes, in cemented and uncemented wellbore intervals. More often than not a projected goal in production rate is not achieved. The challenge of increasing oil production under worsening reserves structure necessitates a search for new engineering and technological solutions in hydraulic fracturing.

This workshop will offer a unique opportunity to learn about the latest achievements in hydraulic fracturing technology that are widely used by the advanced oil companies worldwide. The conference will help the specialists

clearly formulate specific tasks for themselves and identify way forward based on the international experience.

The key topics for discussion during Sessions 1 & 2:

- Principles for well candidate selection for hydraulic fracturing.
- Experience of various hydraulic fracturing technology application under different geological conditions.
- Development trends for hydraulic fracturing technologies in order to meet Russia's geological conditions

Wednesday, 29 September 2010

Session 3: Practical Application of Spatial Fracture Orientation Technology in Re-Fracturing. Necessity and Efficiency of Re-Fracturing Operations.

Session Managers: A. S. Mikhin, B. Davidson

The past decade has witnessed significant changes in hydraulic fracturing technology. Modern equipment, new fracturing procedures, advanced software tools for modeling and fracturing technology efficiency assessment, modern systems of fracturing target isolation are integrated into operations on the broad scale both in Russia and internationally. They facilitate better adaptation of every component of a hydraulic fracturing process to specific downhole conditions in order to achieve the best result. Russian and western companies pay a lot of attention to mastering best modern hydraulic fracturing procedures.

At the current stage of many oilfield developments the unsatisfactory integration into operations of new hydraulic fracturing procedures is accounted for by the fact that the principal production well stock has undergone repeated hydraulic fracturing stimulation with the same standard fracturing procedure that varied only in the volume of proppant and work fluid.

This session will offer an opportunity to discuss some issues related to re-fracturing:

1. Does the need for re-fracturing realistically exist?
2. What is the maximum efficiency of such operations?
3. What for is it required to change the spatial fracture orientation for re-fracturing jobs performance?
4. How this task is operationally carried out?

During this session the following critical areas will be explored in more detail:

- Purpose and objectives of re-fracturing treatments—Spatial Fracture Orientation Technology.
- Theoretical framework for re-fracturing operations with spatial fracture orientation technology.
- Potential efficiency of re-fracturing treatments.
- Well candidate selection for re-fracturing treatments.
- Practical execution of re-fracturing treatments.
- Technologies and procedures employed for re-fracturing operations.
- Re-fracturing case histories.
- Re-fracturing treatments control methods.
- Practical execution of re-fracturing treatments in non-standard reservoirs—bituminous shale, viscous oil, etc.
- Fracturing fluids and materials recommended for application at re-fracturing treatments.
- Re-fracturing in horizontal wells.

Session 4: Horizontal Well Fracturing

Session Managers: P. Kuzovenkov, M. Pike

Fracturing in horizontal wells has increased in popularity in North America over the past decade. Technologies and fracturing techniques in horizontal sections have enabled operators to significantly reduce field development costs and gained access to previously uneconomical deposits. In the Russian market, horizontal wells are commonly drilled but with minimal fracturing work completed. Currently many operators in Russia are investigating technologies and techniques to better take advantage of horizontal drilling. The workshop will explore some of the practices around the world and discuss their viability to the unique Russian market. Some of the key topics to be discussed in the session include:

- Reasons behind fracturing in horizontal wells
- Effective horizontal well design for effective fracturing operations
- Completion systems
- Fracturing techniques—how Russia differs from the World
- Economics

With regards to horizontal well drilling and completion, our country is like with fracturing in the early 1990s, in the age of “tall trees” now. In many cases, we attempt to eliminate errors made during well drilling by subsequent hydraulic fracturing, efficiency of which, however, leaves much to be desired. Is it necessary to design the well horizontal section with consideration of a future possibility for hydraulic fracturing? How many fracturing jobs will be performed and in what plane with respect to the wellbore? What will be the well bottom design to ensure the fracturing job efficiency? These and many other questions will be addressed during this session.

Thursday, 30 September 2010

Session 5: Acid Fracturing

Session Managers: A. Dedurin, Ph. Enkababian

In this session we will speak about carbonate formations, the type of reservoir that is much friendlier to acid than to proppant. Such reservoir can produce the significant rates of fluid and oil provided that the correct treatments are applied. In this area some Russian operators are still in the “tall trees” zone and the others have had significant improvements and accumulated sufficient experience.

The main difference of acid hydraulic fracturing from the classical fracturing is that the geometry and flow capacity of created fractures are the most important aspects for standard fracturing where the chemical reactions and mud pumps hydraulic horsepower are critical for acid fracturing treatments. A great number of acid fracturing methods are currently in use. They allow the well life extension through more uniform sweep of the treated reservoir, acid's deep formation penetration with creation of efficient channels for oil flow, avoidance of side chemical reaction development that damages the formation.

There again, the fact that chemistry is going into the forefront makes it necessary to consider comprehensive quality control of materials, chemicals and equipment utilized in hydraulic fracturing.

Stimulation of carbonate reservoirs is a daily occurrence around the world. Russia has reservoirs ranging from developed reservoirs to newly explored reservoirs. No matter what the stage of development most reservoirs will undergo stimulation at some stage of their life. Many of the newly explored reservoirs have unique characteristics and pose new challenges to the industry. This session will explore some of the existing and new fracturing and matrix acidizing technologies used in Russia and around the world through case studies.

During this final workshop session those who overgrew their “trees” will share the experience with those who are still looking at these “trees” from bottom to top. Some of the key topics to be discussed in the session include:

- Requirements for reservoir characterization
- Formation damage and candidate selection principles
- Treatment fluid selection including quality assurance and quality control considerations
- Selecting the correct stimulation technique
- Stimulation evaluation—feedback for improvement

Workshop guidelines

FORMAT

The workshop will last for 3 days, 1st, 2nd, 3rd days are informal sessions with a number of short presentations (15-20 min) and discussions.

ATTENDANCE

Attendance will be limited to a maximum of 100 delegates with proven experience and/or knowledge of the subject areas being covered.

CONTINUING EDUCATION UNITS

The workshop qualifies for SPE Continuing Education Units (CEUs), at the rate of 0.1 CEU per hour of attendance at the workshop

SCRIBE'S REPORT

The Program Committee will appoint a scribe to make a full report of the workshop summarizing all presentation and discussion materials. This report will be circulated to all attendees. The copyright of the scribe's report will belong to SPE.

ATTENDANCE CERTIFICATE

All attendees will receive a certificate from SPE attesting to their participation in the workshop.

CANCELLATION POLICY

Written notice received 30 days before the starting date of the workshop entitles registrants to a 50% refund. There will be no refund for cancellations received after this time.

PLEASE USE FORM ON BACK FOR REGISTRATION

ATTENTION NON-MEMBERS:

Join SPE during this workshop and receive your first year's (2010–2011) membership free.

Submit your membership application form onsite.



Society of Petroleum Engineers

28–30 September 2010

Conference Hall of TNK-BP Company

14, Kuzovatkina street, TNK-BP office | Nizhnevartovsk, Western Siberia, Russia

Register by 10 September 2010

WORKSHOP

*Hydraulic Fracturing in Russia:
Current Experience and Perspectives*