

ELY

Global
Hydraulic
Fracturing
Expertise



HYDRAULIC FRACTURING SYSTEMS

Design, implementation and optimization

In North America, virtually every producing well on land is hydraulically fractured, and the way the fracture treatment is designed has a direct impact on the operator's success. Many E&P companies have walked away from very successful shale plays because the wrong fracture design and treatment failed to produce results. Ely Corporation has a time-tested track record in virtually every shale play and conventional reservoir in North America, and many others around the world.

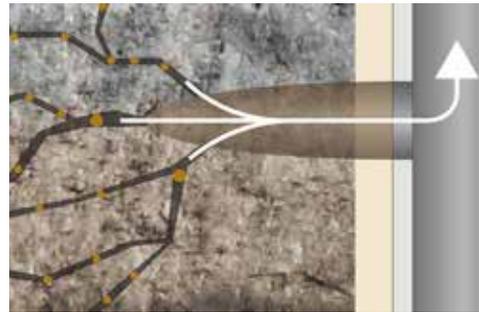
Our core objective

Massive hydrocarbon reserves, enough to produce energy to the growing population for many years, are locked in low-permeability reservoirs. Many of these plays have been deemed inviable with conventional completions, due to the slow release rate from tight pores in the rock.

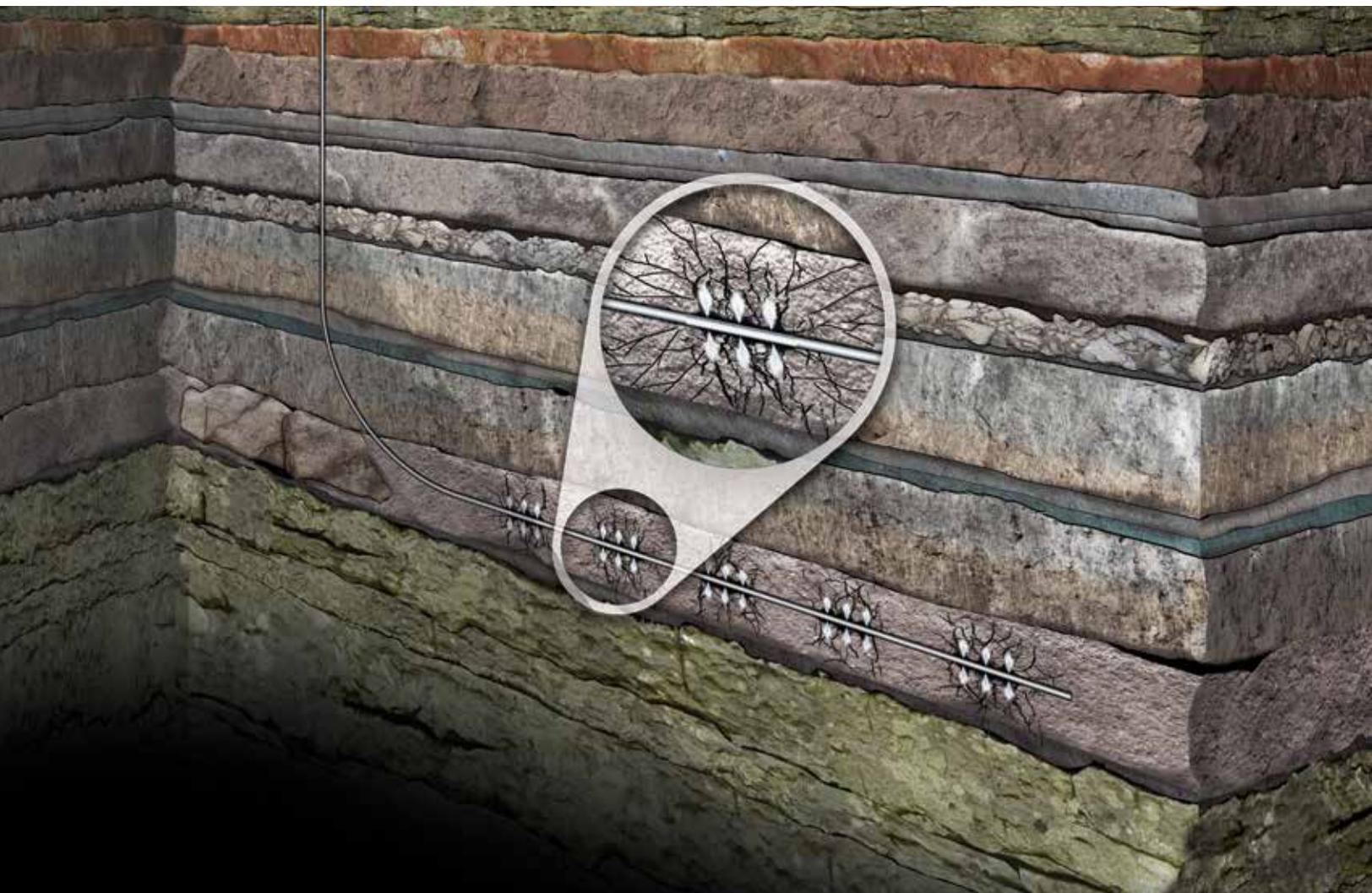
By creating vast, interconnected fracture systems in the rock with water injected under high pressure, producers are able to extract fuels in exponentially higher volumes.

How we define success

We at Ely measure our success by an objective, fool-proof standard: ongoing productivity. A high production well that quickly tapers off in production has little value to an E&P. By prescribing-and applying-the proper stimulation, we routinely attain high ongoing production, to keep wells profitable.



Effective treatment results in interconnected fracture systems, which greatly increases the surface area of the rock formation, allowing considerably more hydrocarbons to be produced from a well.





GLOBAL CREDENTIALS

Ely engineers have been at the forefront of hydraulic fracturing innovation for decades, having worked with countless applications on every continent. We routinely consult both private and state-run companies, and our clients comprise a wide range from majors to small, independent producers. Our involvement in a project ideally begins at the outset, to ensure the well is built with the necessary considerations, and ends only when production rates are optimized.

Why our expertise matters

Every rock formation has different physical properties. Every region has different resources available. In fact, at least 95% of land wells in the US won't produce anything at all unless they're fracture treated, and many other plays around the world are equally difficult.

Prescribing the wrong treatment, either because of lack of knowledge or misinterpretation of data, can result in a failed well and the loss of the investment.

Ely experts have successfully completed thousands of wells around the world, and have broad experience working in various types of plays. This familiarity is critical to getting a superior result from your investment. A combination of our unique design process and first-hand knowledge sets us apart on the global stage.



Ely designed and executed the first large-scale fracture treatment in Poland.

JOHN ELY

Founder



2013 ◀ Ely & Associates becomes Ely Corporation

1991 ◀ Founder, Ely & Associates Inc

1985 ◀ Holditch & Associates, VP

1982 ◀ Nowsco Services, Engineering Manager

1973 ◀ Halliburton, Technical Advisor

1968 ◀ Graduated Oklahoma State University
Halliburton, Fracture Researcher

1965 ◀ Halliburton, Field Technician

John Ely has a well-earned reputation as a global leader in hydraulic fracture treatments. With many thousands of successfully completed wells in his portfolio, he has also developed multiple product lines for leading oil and gas service companies. His research has brought about numerous, innovative fracturing processes that continue to yield results today.

John Ely's career in hydraulic fracture engineering began in 1965, when he went to work as a Halliburton technician while studying chemistry at Oklahoma State University. After graduation in 1968, he shifted his focus to fracturing research, but with heavy machinery experience gained from field work and his childhood on the farm, was back in field operation by 1973. After seven years as Halliburton's technical advisor in international operations for the eastern hemisphere, Mr. Ely went to work for Nowsco-now Schlumberger—as an Engineering Manager.

In 1985, Mr. Ely became VP of Stimulation with Holditch & Associates, where he specialized in gas research and consulted across the industry.

Ely and Associates Inc. was established in 1991 as a three-person startup, and has since grown both its size and footprint exponentially, treating wells around the world with consistent results.

John Ely has authored over a hundred papers and presentation, and holds numerous patents. He has worked extensively as an expert witness, and designs hundreds of fracture treatments every year. A trained chemist, he has also been involved with numerous fracturing water recycling companies.

ENERGY INDEPENDENCE

Creating cleaner energy domestically

The era of easy oil may be long gone, but improved technology has made vast reserves of cleaner fossil fuels available. Hydraulic fracturing has also restored old wells—once unviable—to production. Deep, tight formations appear to contain enough energy to power the world economy for up to a century using today's technology, and that technology is improving daily. This breakthrough has added countless jobs and brightened economic horizons around the world.

And it's just getting started.

SUSTAINABILITY

Improving awareness will increase acceptance

Some colorful mythology has built up around the hydraulic fracture conversation by opponents of the process, generally in regards to impact on communities and the environment. In spite of the many jobs created and huge steps toward energy independence, hydraulic fracturing remains one of the least-understood, yet most controversial industrial processes in widespread use.

Doing it well means doing it right

Most fracture treatments nowadays are performed with water and a simple friction reducer, not the many hundreds of toxic chemicals that detractors so often claim. The vast majority of domestic shale plays are deep in the earth, vertically separated from ground water sources by miles of solid rock. Fossil fuels—and the systems that extract them—are so valuable that simple economic consequences would be an overwhelming motivation to produce safe, secure and viable wells, even if they weren't superceded by a simple desire to fuel humanity while doing what's right by our planet.



Mississippi

21,000 feet

DEEP FORMATION

3.5" tubing

RESTRICTED RATE

30% H₂S

CORROSIVE ENVIRONMENT

330° f

HIGH TEMPERATURES

The operator was in chapter 7 bankruptcy when Ely came on the job, and the simple statistics of the well promised a very challenging treatment. The formation was nearly four miles deep and extremely hot, and the high hydrogen sulphide content (30%) created a dangerous and corrosive environment. To complicate matters, the well had already been completed with 3.5" tubing, causing high friction pressure.

On the bright side, the local infrastructure allowed for the processing of sulphur from existing hydrogen sulphide, and successful wells in the area made more money from this sulphur than from the hydrocarbons.

Our data and our experience with the play told us that only a vast, complex fracture system that opened up ample surface area in the formation would yield the results we needed. We pulled out all the stops.

The well was treated with complex fluids containing bauxite at pressures approaching 19,000 PSI, and immediately began producing 15 million cubic feet per day. Successfully treating this type of well brought the operator out of bankruptcy, and we spent several years treating wells in the area with consistent results.

15,000,000
cubit feet per day

Eagle Ford Shale, Texas



C A S E S T U D Y

Retrograde fluids. Nanodarcy. No problem.

Ely was working on one of the first fracture jobs in deep, high-temperature shale, where the operator was faced with extremely foreboding conditions. The PVT analysis had revealed that fluids in the reservoir were retrograde. Permeability was less than one hundred nanodarcies.

We knew from experience that hydrocarbons in this type of formation didn't come primarily from the matrix. A successful well in low-permeability, fractured rock relies on interconnected fracture systems, and if treated effectively, this well would, indeed, produce.

The treatment we designed would need to deliver proppant evenly throughout a vast fracture system. By utilizing a process unique to Ely, we avoided creating tortuous paths through the formation, and were able to open up large amounts of surface area. The well outperformed most others in the area by a multiple of ten, and gave birth to hundreds of similar wells in the area.

The type of design process that we pioneered has spread throughout the industry, and is the dominant technique in achieving not only the maximum initial production, but sustained productivity over the life of the well. Additionally, lessons learned from this project have shaped our understanding of fluid dynamics and proppant delivery, and are crucial to developing effective, low-chemical treatments that dominate fracture treatment today.

Because of our experience and capability, many of the most impermeable, difficult shale and conventional plays are completely viable.

1,000

barrels per day



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