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OF KNOWLEDGE

## Cementing of Wells

TRAIN



## Course Overview:

Cementing plays a crucial role in well construction, ensuring wellbore integrity, zonal isolation, and safe production operations

This comprehensive 5-day professional training course will provide a thorough understanding of cementing principles, cement slurry design, placement techniques, and evaluation methods

## Course Objectives:

By the end of this course, participants will be able to:

1

Grasp the fundamental principles of cementing and its significance in wellbore integrity and well performance

2

Identify the different types of cement slurry systems and their applications in various well conditions

3

Understand the factors influencing cement slurry design, including wellbore pressure, temperature, and formation characteristics

4

Apply cementing principles to optimize slurry properties, such as thickening time, rheology, and fluid loss control

5

Discuss the different cementing placement techniques, including conventional cementing, staged cementing, and liner cementing

6

Analyze the importance and procedures for cementing evaluation, including cement bond logs and integrity tests

## Course Agenda:

### Day 1: Introduction to Cementing

- Delve into the significance of cementing in oil and gas well construction and its impact on wellbore stability, zonal isolation, and long-term well performance
- Explore the history of cementing technology and the evolution of cementing practices
- Discuss the regulatory framework and safety standards governing cementing operations
- Analyze the environmental considerations and regulations associated with cementing materials and disposal

### Day 2: Cement Slurry Design and Properties

- Understand the fundamental principles of cement slurry design and the factors influencing slurry properties
- Identify the key components of a cement slurry, including cement, additives, and water
- Discuss the different types of cement, such as API Class G cement, Portland cement, and high-sulfate-resistant cement
- Explore the functions and applications of various cement additives, such as retarders, accelerators, and fluid loss control agents

### Day 3: Cementing Placement Techniques

- Delve into the principles and procedures for cementing placement, including conventional cementing, staged cementing, and liner cementing
- Discuss the equipment and tools used in cementing operations, such as cement mixers, pumps, floats, and casing shoes
- Analyze the factors influencing cement placement, such as wellbore geometry, cement slurry properties, and pumping rates
- Explore the use of cementing simulators to optimize cement placement and predict cement behavior

### Day 4: Cementing Evaluation and Troubleshooting

- Understand the importance of cementing evaluation and the methods used to assess cement integrity

- Discuss the principles and interpretation of cement bond logs, including sonic logs, ultrasonic logs, and cement evaluation tools
- Analyze the factors contributing to cementing problems, such as poor bonding, channeling, and top of cement challenges
- Explore troubleshooting techniques and remedial actions to address cementing problems and ensure wellbore integrity

#### Day 5: Advanced Cementing Technologies and Applications

- Delve into advanced cementing technologies, such as self-healing cements, ultradeep cements, and lightweight cements
- Discuss the application of cementing in unconventional formations, such as shale gas wells and geothermal wells
- Explore the use of cementing technologies to address environmental challenges, such as CO<sub>2</sub> storage and well abandonment
- Analyze case studies of successful cementing applications and identify key lessons learned

#### Who Should Attend:

- Petroleum engineers, drilling engineers, and completions engineers involved in well design, cementing planning, and well completion operations
- Wellsite supervisors, derrickmen, and cementing crew members responsible for cementing operations and troubleshooting
- Field service technicians and contractors involved in cementing equipment maintenance, testing, and repair
- Students and individuals interested in pursuing a career in oil and gas well construction and cementing technology

#### Course Benefits:

- Develop a comprehensive understanding of cementing principles, cement slurry design, placement techniques, and evaluation methods
- Gain hands-on experience in cement slurry design software, cementing techniques, and cement evaluation tools
- Enhance your ability to identify and address cementing problems and ensure wellbore integrity and long-term well performance
- Stay updated on the latest advancements in cementing technologies, optimization strategies, and environmental considerations
- Network with other professionals in the field of cementing engineering and well construction