

Cementing Operations

Course Description

The course will present an overview of oil and gas well cementing operations. The course includes overview of pore and fracture pressures, overview and discussion on cement properties, measurement techniques and evaluation of results, cement placement techniques, and cement quality evaluation. The course will cover cement standards, cement materials.

Course Objectives

At the end of the course delegates will learn about the reasons and importance of cementing operations, about cement properties, how to achieve required properties using appropriate additives, how measurements are performed in the laboratory and in the field, how to design a cement job, how to achieve, how to properly execute the job and how cement job evaluation is performed.

Who Should Attend

Geo-scientists, Engineers and Managers (in Drilling, Well Intervention/Services, Reservoir Engineering, Production Operations, Marketing/Sales etc.), whose jobs require them to interface with Completion Engineers, Production Technologists, Well Production Operations Engineers, and Well Maintenance/Servicing Engineers who wish to enhance their current job effectiveness, through more knowledge on Well Completion and Performance, than that attained from their own “core” discipline training and exposure.

Course Content

Day 1

1. Introductions
 1. History of Cementing
2. Cementing Principles
 1. Reasons for Cementing
3. Chemistry of Cement
 1. Manufacture of Portland Cement
 2. Hydration of Cement
 3. Retardation and Acceleration
 4. Strength Retrogression
 5. Sulfate Resistance
4. Rheology
 1. Types of Flow

2. Laboratory Determination of Rheological Properties
3. Flow Calculations

Day 2

5. Properties of Cement

1. Slurry Properties
2. Set Cement Properties
3. Laboratory Testing

6. Additives for Oil-Well Cements

1. Accelerators
2. Retarders
3. Fluid Loss Additives
4. Dispersants
5. Extenders
6. Weighting Agents
7. Lost Circulation Materials
8. Special Additives

7. Special Cement Systems

1. Lightweight Cements
2. Thixotropic Cements
3. Expanding Cements
4. Thermal Cements
5. Salt Saturated Slurries
6. Annular Gas Flow

Day 3

8. 1. Field Calculations

1. Slurry Properties
2. Primary Cementing
3. Plug Balancing
4. Squeeze Cementing

9. Mud Removal

5. Well Preparation
6. Mud Removal Efficiency During the Cementing Operation

10. Primary Placement Techniques

7. Large Diameter Casing
8. Primary Cementing
9. Liner Cementing

Day 4

11. Cement Job Design

1. Introduction
2. Known Conditions and Expected Variables
3. Designing the job



12. Remedial Placement Techniques

4. Squeeze Cementing
5. Cement Plugs

13. Cementing Equipment

6. Casing Hardware
7. Liner Equipment
8. Cementing Heads
9. Bulk Storage and Handling
10. Mixing Equipment
11. Pumping Equipment
12. Data Acquisition

Day 5

14. Post-Job Evaluation

1. Cement Bond Log
2. Variable Density Log
3. Temperature Log
4. Cement Evaluation Log
5. Dry Testing
6. Pressure Testing
7. On-Site Data Analysis