Completion Design

Designed for:
Completion, workover, well intervention and drilling engineers and anyone involved in the well and completion design process (e.g. production chemists, reservoir engineers and subsea engineers). The course is targeted for persons with general wells and oil / gas industry awareness.

Duration
(days)
1 2 3 4 5
flexible

Learning Level:
Skills
Knowledge
Awareness

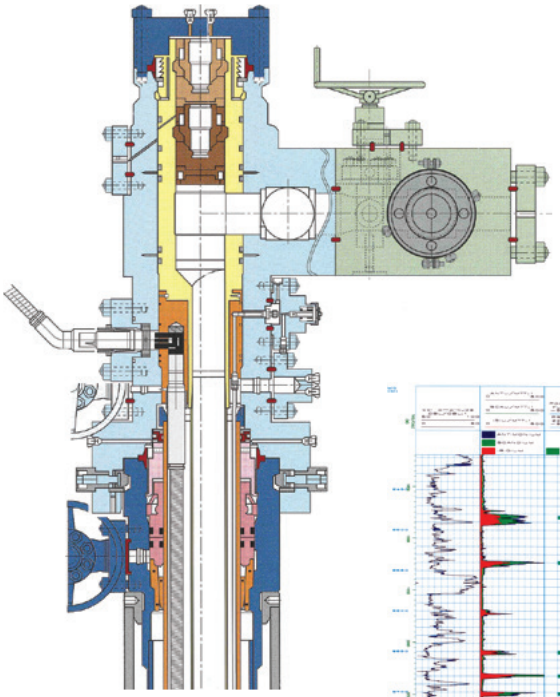
This course is focused at taking a basic awareness of wells and completions and expanding it to cover the design process and all the key decisions that are made in completion design.

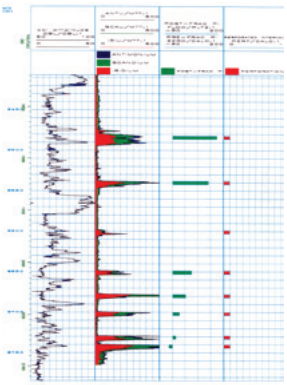
The focus is on the overall design rather than the detail of completion equipment from specific vendors. It assumes some knowledge of general well intervention methods (slickline, coiled tubing, etc.), but does not significantly expand this knowledge. The course covers land, platform and subsea wells.

The course is based around the well respected book Well Completion Design. With over 700 pages and in full colour, this book is authored by the course presenters.

The course has a mixture of informal lectures, course handouts, videos and exhibits. Bound copies of overheads accompany the course.

The course is practical in nature and has a thread of a practical exercise through the week. This single exercise is a completion design, where the students, in teams, are expected to design, cost and present the conceptual completion designs for a development scenario.





Early Development
E&P Overview
Reservoir
Wells
Business & Risk
Open Air
Coaching
Master Class

Completion Design continued

Course Content:

- Types and configurations of completions.
- The completion design process.
- Inflow performance, skin and formation damage.
- Perforating; selection, deployment and interface with rest of completion.
- Stimulation and impact on completion and flow performance with coverage of modern horizontal multifrac tools.
- Open hole, non-sand control completions including open hole packers and horizontal well clean up.
- Sand control; when do you need it, basic types and selection guidelines. Includes standalone screens, ICDs, various gravel packing techniques, frac packs and expandable screens.
- Smart completions and multilaterals.
- Tubing sizing, flow estimation and liquid loading.
- Artificial lift; types and selection criteria, interface with drilling, reservoir and facilities. Design of gas lift and ESPs included.
- Production chemistry impacts on completion, prevention and removal (scales, wax, asphaltene, hydrates, and souring).
- Metallurgy, corrosion, and erosion; metal types and selection of.
- Elastomers and plastics; types and selection of.
- Tubing stress analysis; picking the grade and weight of tubing, plus selection criteria for packers and expansion devices. Interface between tubing stress analysis and casing design.
- Completion equipment; basic types of equipment, reliability and selection criteria for each (tree, safety valve, mandrel, packers, expansion devices etc.)
- Completion installation; importance of wellbore clean-out, function and types of brines, pointers for efficient completion installation.

Course Duration:

Duration is 3 - 5 days

Courses available from this series:

Drilling Awareness
Introduction to Drilling
Well Productivity Awareness School (WASP)
Completion Design
Completion Practices
Well Management
Tubing Stress Analysis
Artificial Lift
HPHT Drilling
Integrated Well Planning & Drilling Operations
Operations Geology
Maximising Well Productivity in a Low Oil Price World
Stuck Pipe Prevention
Well Integrity Management

Course Tutors

Jonathan Bellarby BSc (Hons), MSc
Main Series tutoring: Wells, Early Development
Industry experience: over 25 years, well technology
Career background: BP, ICE, AGR and TRACS
Personal: Author, 'Well Completion Design'

Roger McIlroy BSc, MEng, CEng, MEI
Main Series tutoring: Wells and Reservoir
Industry experience: over 40 years, subsurface leadership production technology and reservoir engineering
Career background: Maersk, BP, Shell, AGR and TRACS
Personal: Chartered Petroleum Engineer, Member of Energy Institute, Member SPE

Howard Crumpton
Main Series tutoring: Wells
Industry experience: over 30 years, interventions and completions
Career background: Otis, Camco, Thistle Well Services, Wellserv, BP, AGR and TRACS
Personal: Extensive experience with operators (BP) and vendor companies Author of Well Control for Completions and Interventions

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