

ADVANCED CASING DESIGN

DRL022

COURSE DESCRIPTION

This course provides explanations and examples of all the aspects of oilfield tubular design. It covers relevant subjects required to understand the structural mechanics of downhole tubular. Material aspects, connection selection, performance properties, load cases, design factors and buckling are just a few of the many topics covered. The training is designed to take participants through the key drivers behind casing design for exploration, appraisal and well developments and their associated risks, challenges and solutions.

COURSE GOAL

To enhance the participants' knowledge, skills, and ability necessary to design casings for any well: onshore, offshore, high pressure and high temperature wells, horizontal and multilateral wells.

COURSE OBJECTIVES

By the end of this course, participant will have covered:

- Understand the basis for the published API tubular strengths.
- Design drive pipe to sustain a compressive load.
- Design conductor, intermediate, drilling liners, and production casing strings for burst, collapse and tension.
- Select couplings.
- Take into account biaxial and triaxial loading.
- Design for bending, point loading, ballooning, and buckling.
- Understand how temperature reduces yields strength.
- Understand recommended sequence for combination considerations.
- Learn a complete integrated procedure for designing oilfield tubulars.

WHO SHOULD ATTEND

- Drilling Managers.
- Drilling Supervisors.
- Drilling Superintendents.
- Senior Drillers.
- Drilling Engineers.
- Project Engineers.
- Operation Engineers.



COURSE DURATION

5 Working Days

COURSE OUTLINES

- Steel properties and API casing strengths.
- Fracture gradient: A Rock Mechanics approach.
- Casing seat selection: graphical methods, refinements, case histories.
- Casing design criteria: Collapse, Burst, Tension.
- Detailed Collapse design: partial and full evacuation; when to use each.
- Kick tolerance and kick profiles: industry approach.
- Burst Design: Casing full of gas, limited kick design.
- Detailed tension design: self weight, shock loading, pressure testing, bending forces, thermal forces, pressure-area method.
- Offshore conductor design.
- Production casing design: tubing leak approach.
- Design factors: typical values; what do they mean.
- Casing design methods for: Exploration, Development, Horizontal and HPHT.
- Triaxial loadings.
- API load lines.
- Stress Ellipse including API load lines.
- Load cases.
- Temperature effects and trapped annular pressures.
- Buckling analysis.
- Sour gas consideration: special casing grades and effects of temperature, NACE and European standards.
- Connections: API and premium, methods of selection.
- Well suspension and abandonment.
- Casing wear.
- Complete well design.

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