COURSE OVERVIEW DE0108-4D
Tubing Design and Selection

Course Title
Tubing Design and Selection

Course Date/Venue
November 04-07, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
DE0108-4D

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs

Course Description

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of tubing design and selection. It covers the preliminary casing and tubing design including design approaches like deterministic (WSD) and probabilistic; the basis of design, initial conditions, installation loads, drilling loads and production/injection loads for casing strings and tubing; the design factors, tubular strength, buckling and temperature considerations; and the design optimization techniques, material selection, metallurgy fundamentals, corrosion mechanisms and sour service grade selection.

Further, the course will also discuss the tubing design, casing and tubing design criteria and completion equipment selection; the types, applications, limitations, testing and qualification of connections; the well architecture, well integrity, basis of design, initial conditions and worst-case discharge loads; and the installation loads, drilling load, production/injection loads, drilling and production thermal loads.

During this interactive course, participants will learn the temperature considerations, load cases, pipe strength, material selection, movement, buckling and APB; the fracture failure (brittle burst analysis), quality assurance and quality control; the connection assessment levels (CAL), testing and qualification and the use of qualifies envelopes in casing and tubing design; and the casing wear proposed workflow, wear prediction workflow, wear factors and key factors impacting casing wear; the survival design considerations, WCD, WCD loads multi-string analysis, special problems and expandable tubular; and the steam cycling issues like plastic strain, bauschinger effect, low cycle fatigue and subsidence/compaction.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a good working knowledge on tubing design and selection
- Discuss preliminary casing and tubing design including design approaches like deterministic (WSD) and probabilistic
- Identify the basis of design, initial conditions, installation loads, drilling loads and production/injection loads for casing strings and tubing
- Recognize the design factors, tubular strength, buckling and temperature considerations
- Carryout design optimization techniques, material selection, metallurgy fundamentals, corrosion mechanisms and sour service grade selection
- Describe tubing design, casing and tubing design criteria and completion equipment selection
- Identify the types, applications, limitations, testing and qualification of connections
- Illustrate well architecture, well integrity, basis of design, initial conditions and worst-case discharge loads
- Recognize installation loads, drilling load, production/injection loads, drilling and production thermal loads
- Discuss temperature considerations, load cases, pipe strength, material selection, movement, buckling and APB
- Apply fracture failure (brittle burst analysis), quality assurance and quality control
- Carryout connection assessment levels (CAL), Testing & qualification and the use of qualifies envelopes in casing and tubing design
- Identify casing wear proposed workflow, wear prediction workflow, wear factors and key factors impacting casing wear
- Explain survival design considerations, WCD, WCD loads, multi-string analysis, special problems, expandable tubular, steam cycling issues like plastic strain, bauschinger effect, low cycle fatigue and subsidence/compaction

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of tubing design and selection for well services engineers, drilling operations section leaders, drilling engineering supervisors, well engineers, petroleum engineers, well servicing/workover/completion staff and field production staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 6,750 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Stan Constantino, MSc, BSc, is a **Senior Petroleum Engineer** with over **35 years** of **Offshore & Onshore** extensive experience in **Oil** & **Gas** industries**.** His area of expertise includes **Fractured Reservoir Evaluation & Management**, **Reservoir Surveillance & Management**, **Reservoir Engineering & Simulation**, **Reservoir Monitoring**, **Pressure Transient Testing & Reservoir Performance Evaluation**, **Reservoir Characterization**, **Reservoir Engineering Applications** with ESP and Heavy Oil, **Reservoir Volumetrics**, Water Drive Reservoir, **Reserve Evaluation**, Rock & Fluid Properties, Fluid Flow Mechanics, PVT Analysis, Material Balance, Darcy's Law & Applications, Radial Flow, **Gas Well Testing**, Natural Water Influx, EOR Methods, Directional Drilling, **Drilling** Production & Operations, Field Development & Production of Oil & Gas, **Wireline Logging**, **Mud Logging**, **Cased Hole Logging**, **Production Logging**, **Slick Line**, **Coil Tubing**, Exploration Wells Evaluation, **Horizontal Wells**, **Well Surveillance**, **Well Testing**, **Design & Analysis**, **Well Testing & Oil Well Performance**, **Well Log Interpretation** (**WLI**), **Formation Evaluation**, **Well Workover Supervision**, **Pressure Transient Analysis** and **Petrophysical Log Analysis**. Currently, he is the **CEO** & **Managing Director** of **Geo Resources Technology** wherein he is responsible in managing the services and providing technical supports to underground energy related projects concerning **field development**, **production**, **drilling**, **reservoir engineering** and **simulation**.

Throughout his long career life, Mr. Stan has worked for many international companies such as the **Kavala Oil**, **North Aegean Petroleum Company** and **Texaco Inc.**, as the **Managing Director**, **Operations Manager**, **Technical Trainer**, **Training Consultant**, **Petroleum Engineering & Exploration Department Head**, **Assistant Chief Petroleum Engineer**, **Resident Petroleum Engineer**, **Senior Petroleum Engineer** and **Petroleum Engineer** wherein he has been managing the evaluation of exploration wells, reservoir simulation, development training, production monitoring, wireline logging and well testing including selection and field application of well completion methods.

Mr. Stan has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Geology** from the **New Mexico Institute of Mining & Technology** (**USA**) and from the **Aristotelian University** (**Greece**) respectively. Further, he is a **Certified Instructor/Trainer** and a member of the Society of Petroleum Engineers, USA (**SPE**), Society of Well Log Professional Analysts, USA (**SPWLA**) and European Association of Petroleum Geoscientists & Engineers (**EAGE**). Moreover, Mr. Stan published numerous scientific and technical papers and delivered various trainings, courses and workshops worldwide.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Monday, 04th of November 2024***

0730 – 0745	*Registration & Coffee*
0745 – 0800	*Welcome & Introduction*
0800 – 0815	***PRE-TEST***
0815 – 0900	***Preliminary Casing & Tubing Design, Design Approaches like Deterministic (WSD) & Probabilistic***
0900 - 0930	***Basis of Design, Initial Conditions***
0930 – 0945	*Break*
0945 – 1030	***StressCheck Exercises-Well File Build-Up with all Inventory Entries***
1030 – 1100	***Load-Cases- Casing & Tubing***
1100 - 1130	***Installation Loads, Drilling Loads, Production/Injection Loads for Casing Strings & Tubing***
1130 – 1230	***Design Factors: Rationale & Assumptions, Design Factors for Tubing, Casing & Connections***
1230 – 1245	*Break*
1245 – 1330	***Tubular Strength: Axial, Burst, Collapse, De-ration due to Corrosion & Temperature***
1330 - 1420	***StressCheck Exercises – Tubing Design***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Tuesday, 05th of November 2024***

0730 - 0830	***Buckling & Temperature Considerations, Design Optimization Techniques***
0830 – 0930	***Material Selection, Metallurgy Fundamentals, Corrosion Mechanisms, Sour Service Grade Selection***
0930 – 0945	*Break*
0945 – 1030	***Tubing Design, Difference between Casing & Tubing Design Criteria, Completion Equipment Selection***
1030 – 1130	***Connections: Types, Applications, Limitations, Testing & Qualification***
1130 - 1230	***StressCheck Exrecises – Casing Design***
1230 - 1245	*Break*
1245 – 1330	***Well Architecture, Well Integrity, Basis of Design, Initial Conditions (Procedures & Injectors), Worst-Case Discharge Loads***
1330 – 1420	***Installation Loads, Drilling Loads, Production/Injection Loads, Drilling & Production Thermal Loads***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3:	Wednesday, 06th of November 2024
0730 - 0830	WellCAT Exercises – Well File Build up with all Inventory Entries
0830 – 0930	Design Factors: Rationale & Assumptions, Uni-Axial & Tri-Axial Design Factors, Design Fcators for Connections
0930 – 0945	Break
0945 – 1030	Tubular Strenght: Axial, Burst, Collapse, De-Ration due to Corrosion & Temperature, Material Anisotropy, High Collapse (Non API), Limit State Collapse
1030 – 1130	WellCAT Exercises – Drill & Prod Module
1130 - 1230	Temperature Considerations
1230 - 1245	Break
1245 – 1300	Load Cases, Pipe Strength, Material Selection, Movement, Buckling, APB
1300 - 1330	Fracture Failure (Brittle Burst Analysis), Quality Assurance & Quality Control
1330 – 1420	WellCAT Exercises – Casing & Tube Module
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4:	Thursday, 07th of November 2024
0730 – 0830	Connections: Types, Applications, Limitations
0830 – 0930	Connection Assessment Levels (CAL), Testing & Qualification, Use of Qualifies Envelopes in Casing & Tubing Design (Connection Tri-Axial Design)
0930 – 0945	Break
0945 – 1045	Casing Wear Proposed Workflow, Wear Prediction Workflow, Wear Factors, Key Factors Impacting Casing Wear
1045 – 1130	WellCat Exercises – Design with Connection Envelope, Casing Wear Analysis
1130 – 1230	Kick Tolerance
1230 - 1245	Break
1245 – 1300	Survival Design Considerations, WCD, WCD Loads (Cap & Contain, Hot Collapse)
1300 -1315	Multi-String Analysis incl. WHG, APB, System Fixity Considerations
1315 – 1345	Special Problems, Expandable Tubular, Steam Cycling Issues like Plastic Strain, Bauschinger Effect, Low Cycle Fatigue, Subsidence/Compaction Loads
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Certificates
1430	Lunch & End of Course

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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