STELLAR CONSULTING GROUP

DIRECTIONAL, HORIZONTAL and MULTILATERAL WELL DRILLING

Kuala Lumpur, Malaysia 24-28 June 2013
Jakarta, Indonesia 1-5 July 2013

Drilling, production, and operations engineers, field supervisors, tool pushers, managers, and technical support personnel will find the content of this course a valuable addition to their drilling knowledge.Concepts of directional drilling, calculations, and planning for directional and horizontal wells are covered. Specific problems associated with directional/horizontal drilling such as torque, drag, hole cleaning, and drill string component design are included.

Participants will receive instruction on planning and evaluating horizontal wells based upon the objectives of the horizontal well. The applications and techniques for multi-lateral wells are covered in the course. Participants will develop the concepts necessary for designing and implementing horizontal wells as well as a typical directional and extended reach well.

Additionally, they will become familiar with the tools and techniques used in directional drilling such as survey instruments, bottomhole assemblies, motors, steerable motors and steerable rotary systems. Participants will be able to predict wellbore path based on historical data and determine the requirements to hit the target.

The course material available is up-to-date, offering recent practical hands on knowledge and experiences from practicing drilling professionals, and suitably illustrated with case studies, images and diagrams.

For more information and to register please visit : **www.stellarcg.com** or contact us:

Email : andrew@anisahassan.com

Tel : +65 6336 5458

Fax : +65 6538 8197

Dr. Ferda Akgun

ADNOC-Petroleum Institute
Petroleum Engineering

In his twenty+ year career as an academic, Dr Akgun has worked in several countries from North America to Australia; participated in cutting edge research projects in respectable institutions; consulted major oil companies; and conducted numerous training courses in his area of expertise-Drilling for operators in the Middle East, Central and South-East Asia. Dr Akgun has set up several drilling laboratories; developed an IADC and IWCF accredited Well Control School under the PI banner; and authored more than 30 papers on new developments and technical issues in drilling engineering.

He is a recognized Well CAP instructor and holds a PhD in Petroleum Engineering from Colorado School of Mines.

Specialties: Drilling and well bore engineering

Responsibilities/Activities involved in:

- Set up several well control schools and drilling laboratories including; Well-CAP and IWCF Audited well control school, Drilling Fluids, Cementing and Drilling Simulation laboratories.
- Taught Drilling Engineering courses both at undergraduate and graduate levels.
- Supervised graduate students who were interested in drilling related research topics.
- Served society by participating in regional and international conferences in different capacities such as; being a member of program steering committee, chairing a session in the conferences, and mostly, by presenting technical papers.
- Participated in numerous research activities and published research findings many of which are mostly related to practical Drilling and Well Engineering problems. Some of which are: improvements in practical well control, drill string buckling and failure analysis, numerical and analytical modelling such as casing deformation and ROP, as well as studying economical and technical limitations of underbalanced drilling.
- With the NOC of Turkey as an intern engineer, participated in field activities in the Drilling and Production Departments, such as; drilling in the Hamidabat Natural Gas Field, joined and observed field activities in the Natural Gas gathering and Separation Plant of Northwest Turkey.

EDUCATION

1989	Ph.D. Petroleum Engineering, Colorado School of Mines
1985	M.Sc. Petroleum Engineering, University of Louisiana (Un. of South-Western LA)
1982	B.Sc. Petroleum Engineering, Middle East Technical University, Turkey

EMPLOYMENT

2003- Present	ADNOC Petroleum Institute. Title: Associate Professor
2000-03	U.A.E. University. Title: Assistant Professor
1994-00	University of New South Wales, Sydney. Title: Lecturer
1991-93	Colorado School of Mines. Title: Visiting Professor during summer months of 1991 thru 93
1990-94	Middle East Technical University, Turkey, Title: Assistant Professor

HONOURS & AWARDS

2009-10	Petroleum Institute Service award
2008	ADCO best technical paper award
2003-04	Petroleum Institute outstanding faculty award
1992-93	Nominated to the best instructor of year award, based on senior student survey in the Middle **East Technical University.**
1992	Fellowship by Turkish Scientific Research Council (3 months)
1983-89	Scholarship by Turkish Ministry of Education to pursue postgraduate study (6 years).

Dr. Akgun has authored and co-authored more than 34 books such as :

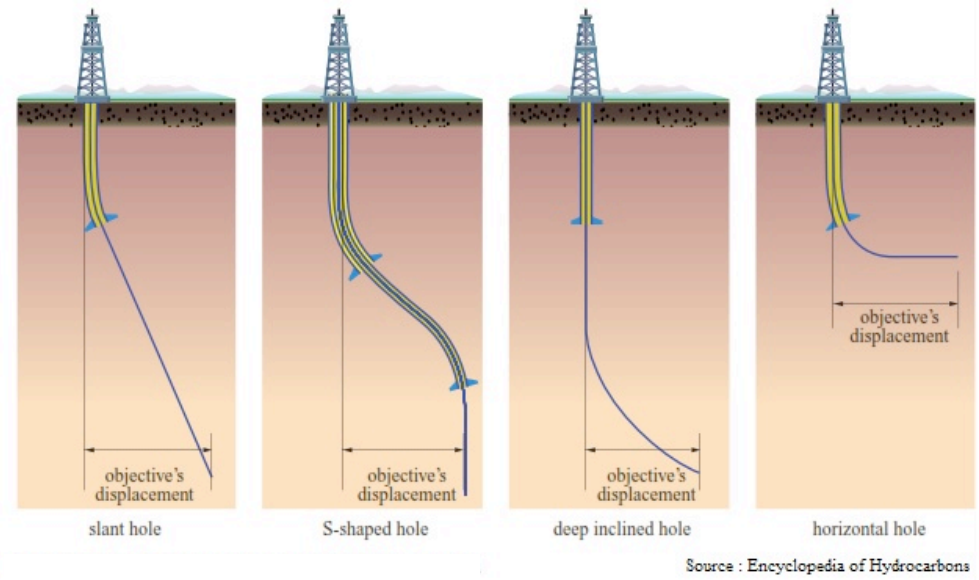
Carrying Capacity Design for Directional Wells, vol. 2, pp. 22-33, Dec'08, Int. J.of Petroleum Science and Technology.

Drilling Rate at the Technical Limit, Vol.1, No. 1, 2007, pp 99-119, Int. J. of Petroleum Science & Technology.

DIRECTIONAL, HORIZONTAL and MULTILATERAL WELL DRILLING

Instructor : Dr Ferda Akgun

COURSE AGENDA



Source : Encyclopedia of Hydrocarbons

DAY 1

- The need for Directional Drilling.
- Introducing Directional Drilling Terminology; Section view, Plane view, Measured Depth, True Vertical Depth, Departure, Dog-Leg Severity, Kick Off Point, Build Gradient, Build up radius, Tangent Section, Slant Angle, Drop off gradient, Drop off radius, Hang Section, Hang down angle, Survey Points, coordinate systems (Polar, Cartesian and Cylindrical) in directional drilling.
- Types of Directional Wells and their applications; Slant, S-Type and Double-build and J type horizontal wells.
- Deviation techniques and deflection tools; Jetting, Whip stock, motors and bend sub.
- Reviewing basic math and geometry to perform directional drilling calculations.
- Transposing Measured Depth (MD) to True Vertical Depth (TVD) and transposing TVD to MD
- Understanding the meaning of Dog-Leg Severity (DLS) and relating it to radius of curvature.
- Understanding the relationship among DLS, hole inclination and MD
- Understanding Horizontal Departure and relating it to hole inclination.

- **Practical Session** *In this session, course participants will be given a set data to practice the required basic directional drilling mathematics.*

DAY 2

- Designing Directional wells: Slant, S-type and Double Build and Horizontal Wells.
- How to generate a 'section view' of directional well.
- Things to consider when planning a directional well. How to avoid potential problems and industrially accepted 'Rule of Thumbs' considered in directional well planning.
- Important considerations in a 3-D well planning.
- Collision and Target intersection.

- **Practical Session** *In this practical session, each participant will be given a set of data to practice the process of directional well planning. Such data consists of wellhead location, target location, build up and drop off gradients as well as kick-off point. In this exercise, they are expected: firstly, design a double build horizontal well; then; they are expected to draw the section view of the planned horizontal well.*

DAY 3

- What we mean by 'Monitoring a directionally drilled well' and What do we survey?
- Surveying tools (Single shot, Tatco, gyro, etc)
'Hot-Spots', Magnetic and non-magnetic Drill Collars.
- How to decide the minimum required length for non-magnetic drill collars.
- Three definitions of NORTH; True North, Magnetic North and Grid North.
- Survey calculations: Tangential Method, ROC and Minimum Curvature Methods
- How to generate a 'Horizontal (plane) view' of a directional well.
- Circle of uncertainty in directional calculations.
- Survey computations by using popular computer software packages.

- **Practical Session** *Participants will be given a set of survey data, such as; inclinations, directions at different survey points (measured depths). They will be asked to determine North and East coordinates and True Vertical Depths by one of the popular survey techniques. They then, will be asked to draw two dimensional plane view of the drilled trajectory.*

DAY 4

- Drill String Design for Directional Wells (BHA and DPs)
- Dog legs and Lubinski's bending stresses.
- Surface running loads and dog leg running loads.

- **Practical Session** *The participants will determine whether a given drill pipe in given borehole condition will be able to run through a severe dogleg without failing. They will have to determine the anticipated dogleg and surface running loads and compare with the yield strength of the tubular.*

- Directional Drilling Issues; Cuttings Bed Deposition, Severe Dog-Legs, Key Seats, Differential Sticking, Ledges, Stuck Pipe.
- Importance of Solids Control and Optimum Solids Concentration.
- Safe fishing loads in directional wells under combined loading; simultaneous torque, tension and pressure loading-How to compute von Misses' stress and how to avoid failures while fishing.
- Horizontal well issues; Critical Buckling Loads.

DAY 5

- Multi-lateral wells and their applications
- TAML Classification
- Multilateral Junctions and selection criteria
- Horizontal and Extended reach wells
- Torque and Drag Calculations and Maximum Available WOB
- Cementing and Centralizer Spacing
- Closing

*Start: 8.45am
*Break: 10.30am - 10.45am
*Lunch: 12pm - 1pm
*Break: 3.15pm - 3.45pm
*Close: 5.45pm
(*For all days)

WHO SHOULD ATTEND:

Drilling Engineer, Superintendent, Drilling Technologist, District Manager, Geologist, Gelologist I, Geotechnical Analyst, Petroleum Engineer, Drilling Engineer, Drilling Tech, Drilling Foreman, Drilling Supervisor, Drilling and Completions Consultant, Drilling Technician, Reservoir Engineer, Completions Engineer, Technical Supervisors, Directional Driller, Manager-Drilling and Completions, Production and Operations Engineers, Field Supervisors, Business Development Manager, Technical Sales.

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Stellar Consulting Group Pte Ltd

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Malaysia Office: Pusat Perdagangan AmCorp, Menara Melawangi, Unit 13-06, No 18 Jalan Persiaran Barat, 46050 Petaling Jaya, Malaysia.

REGISTRATION FORM

Directional, horizontal and multilateral well drilling	**Early Bird Price** Ends 27 May 2013	**Normal Price**	**GROUP DISCOUNT**
☐ 24-28 June 2013, KL, Malaysia ☐ 1-5 July 2013, Jakarta, Indonesia	SGD 5595	SGD 5795	3 or more at 5% off 5 or more at 7% off 8 or more at 10% off **ONLY 1 DISCOUNT APPLIES**
Stellar Consulting Group Pte Ltd ☐ Yes, I would like to organise this training in-house and save on total course fees. For in-house training, please call **+65 6336 5458** or email **andrew@anisahassan.com**			

DELEGATE DETAILS

Delegate 1 : Mr/Ms/Dr_____

Telephone: _____

Email: _____

Job Title: _____

Department: _____

Company:_____

Address: _____

Country: _____

Postcode: _____

Department: _____

Attention invoice to: _____

Delegate 2 : Mr/Ms/Dr_____

Telephone: _____

Email: _____

Job Title: _____

Department: _____

Telephone: _____

Fax: _____

Email: _____

Payment Method (Please Tick:) ☐ I enclose my cheque payable to Stellar Consulting Group Pte Ltd

☐ I am paying by bank transfer (copy attached)

☐ Payment by Credit Card (AMEX, VISA or MasterCard accepted)

Payment Policy

Full Payment is mandatory for workshop attendance.

1. Payment in Bank Transfer made payable to:-

Stellar Consulting Group Pte Ltd, Account Number: 52-0-000995-9, Standard Chartered Bank. SCBLSGSG

2. Payment by cheque should be made in favour of " Stellar Consulting Group Pte Ltd " and mailed to:

Stellar Consulting Group Pte Ltd
1 Coleman Street, The Adelphi #07-11
Singapore 179803

3. Credit Card Payments

Credit Card No:_____ CVC:_____

Expiry:_____

Type: VISA / AMEX / MASTERCARD (Circle one)

Cancellation & Substitutions : You may substitute delegates at any time. Stellar Consulting Group Pte Ltd does not provide refunds for cancellations. For cancellations received in writings more than seven (7) days prior to the training course you will receive a 100% credit to be used at another Stellar Consulting Group Pte Ltd training course for up to one year from the date of issuance. For cancellations received seven (7) days or less prior to event (including day 7), no credit will be issued. In the event that Stellar Consulting Group Pte Ltd cancels an event, delegate payments at the date of cancellation will be credited to a future Stellar Consulting Group Pte Ltd event. This credit will be available for up to one year from the date of issuance. In the event that Stellar Consulting Group Pte Ltd postpones an event, delegate payment at the postponement date will be credited towards the reschedule date. If the delegate is unable to attend the resheduled event, the delegate will receive a 100% credit representing payments made towards a future Stellar Consulting Group Pte Ltd event. This credit wil be available for up to one year from the date of issuance. No refund will be available for cancellations or postponements.

Stellar Consulting Group Pte Ltd is not responsible for any loss or damage as a result of a substition, alteration or cancellation/postponement of an event. Stellar Consulting Group Pte Ltdshall assume no liability whatsoever in the event this training course is cancelled, rescheduled or postponed due to a fortuituos event, Act of God, unforeseen occurence or any other event that renders performance or this training course impracticable or impossible. For purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labor strike, extreme weather or other emergency.

Program Change Policy: Please note that speakers and topics were confirmed at the time of publishing; however, circumstances beyond the control of the organizers may necessitate substitutions, alterations or cancellations of the speakers and/or topics. As such, Stellar Consulting Group Pte Ltd reserves the right to alter or modify the advertised speakers and/or topic if necessary. Any substitutions or alterations will be updated on our web page as soon as possible.

Stellar Consulting Group Pte Ltd
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