PETROSYNC’S DRILLING ENGINEERING SERIES

ADVANCED STUCK PIPE PREVENTION

A Task Force Approach to Reducing Major Drilling Trouble Cost

22 FEBRUARY—24 FEBRUARY 2016
BANDUNG, INDONESIA
**Course Overview**

Efforts to reduce stuck pipe are not new in Oil & Gas industry. Steady progress has been made in the past by Operations and by Research and Development efforts. The purpose of the task force approach is to bring extra focus to further accelerate the reduction of stuck pipe costs.

This course has been written for Operators, Drilling Contractors and Service personnel who require an in-depth detailed understanding of the causes of stuck pipe (which includes drill pipe, BHA’s, casing, liners and logging tools) and how sticking can be prevented.

As compared with the standard Stuck Pipe Prevention Course, we spend more time studying downhole tectonic / rock mechanics forces (including wellbore stability / instability with respect to mud weight, mud chemistry, hole angle and azimuth), the importance of optimised drilling fluids design, BHA design, optimised well design, and optimised drilling practices.

**Includes Specific and Actual Case Histories**

For the “practical session” of the course, we work through a number of advanced-level stuck pipe case histories (which were all preventable) to cement the delegates learning & understanding.

**Covers Every Key Disciplines**

The Course Structure focuses upon the prevention of stuck pipe through studying Wellbore Stability, Drilling Fluids, Well Design & Operational Practices. The Course covers every essential discipline from Conceptual Well Design through to the Drilling of the Well, including specific case histories of where things went extremely well and where things went wrong.

**How Does This Course Benefits You?**

**Optimize Success Rate**

Maximize success and minimize failure by learning the best practices to prevent stuck pipe from occurring downhole.

**Response to Problem Quickly**

Prevent pipe stuck by learning the various method to prevent stuck pipe happen and you will know how to get free quickly.

**Increase Productivity**

Improve Work Effectiveness and Efficiency by learning the Best Practices section of the course in order to help the well to be drilled more efficiently, effectively and economically.

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**Worldwide Stuck Pipe Cost**

Do you know that the industry’s stuck-pipe costs exceed $250 million/year, equivalent to annual GDP of Micronesia?

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**Stuck Pipe VS Freeing**

Do you know that prevention of stuck pipe is far more economical than even the best of freeing procedures?
PetroSync Distinguished Instructor

Practical & Consulting
Over 35 years of drilling and well engineering experiences on drill-ships semi-submersibles tender-assist unites platform and jack-ups and land rigs. Extensive risk assessment advisory planning and rig-site work experience ranging from drilling engineer through to manager in SHELL International.

Training
Has taught this course and it has been well-rated from the past attendees.

Regional
Clientele base is from the SEAsian region, as well as in the ME, and UK.

Awards
- Specialist HPHT (PhD, SHELL UK) and Deepwater experience IADC WellCap Plus Certified.

Who Needs This Program

- This Advanced Stuck Pipe Prevention course has been specifically targeted to:

  **Job Titles Include:**
  - Assistant drillers
  - Drillers
  - Toolpushers
  - Oim’s
  - Mud engineers
  - Drilling engineers
  - Senior drilling engineers
  - Offshore drilling engineers
  - Offshore supervisors
  - Drilling superintendents
  - Drilling managers
  - Service company personnel

Course Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>08:00–09:00</td>
<td>Registration (Day 1)</td>
</tr>
<tr>
<td>09:00–11:00</td>
<td>Session I</td>
</tr>
<tr>
<td>11:00–11:15</td>
<td>Refreshment Session I</td>
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<tr>
<td>11:15–13:00</td>
<td>Session II</td>
</tr>
<tr>
<td>13:00–14:00</td>
<td>Lunch</td>
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<tr>
<td>14:00–15:30</td>
<td>Session III</td>
</tr>
<tr>
<td>15:30–15:45</td>
<td>Refreshment Session II</td>
</tr>
<tr>
<td>15:45–17:00</td>
<td>Session IV (Last Session)</td>
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</table>

PetroSync Quality Assurance

All PetroSync courses are developed with top quality to address all your training needs and purposes. Our courses are vetted strictly to ensure that we always deliver the best courses with the best industry expert.

PetroSync Inhouse Solutions

PetroSync can tailor our courses to meet your specific needs at your preferred location and schedule. Contact us for more information at +65 6415 4500 or email to general@petrosync.com
Course Agenda — 3 Days

DAY 1

Introduction To Downhole Forces
- Cohesion / Adhesion, Mobile Formations, Fractured Formations
- Reactive Clays & Shales, Tectonic Stress, Differing Overburden Pressures
- Over-pressure, Unconsolidation, Contamination & Fracture, Differential

Review Of Recent Industry Data
- Drilling
- Reaming
- Tripping out and Tripping into the hole

Stuck Pipe Area 1: Solids Induced / Formation Collapse Pack-Off
- Bridging Warning Signs

- Pack-off Warning Signs
- The Driller’s First Actions On Becoming Stuck
- Pump Pressure / Speed
- Torque
- Pull / Set-down
- Pressure beneath the pack-off
- List of Actions (When & How)

Rock Mechanics & Problem Prevention
Mobile Formation Problem Prevention
What Does Cavings Tell Us
Rock Strength & Brittleness
Data & Interpretation
Drilling Fluids
Teamwork Exercises & Case Studies Based Upon Past & Current Events & Incidents

DAY 2

Wellbore Stability / Instability
The Use Of Expandable Liners
- Solid Liner Expandables
- Lattice Expandable Liners

Increasing Hole Angle Effects
Tripping Practices
Stuck Pipe Area 2: Differential Sticking
- What causes Differential Sticking
- How it can be prevented
- What the Driller’s First Actions should be if the string becomes differentially stuck downhole

The Driller’s First Actions On Becoming Stuck
- Circulate at Maximum Allowable Rate
- Slump torqued-up string (Optional)
- Jar
- Spot suitable pills / acid
- Pump Nitrogen / U-Tube

- The Driller’s First Actions On Becoming Stuck
- Ensure circulation is maintained
- If the drill-string became stuck when moving up, apply torque and jar down
- If the drill-string became stuck when moving down, do not apply torque and jar up
- Jarring operations should start with light loading of about 50,000 lbs & then systematically be increased to maximum load over a one hour period
- Stop or reduce circulation when:
  a. cocking the jars to fire up
  b. jarring down
- Pump pressure increases jar blow when jarring up, so full circulation is beneficial but beware of maximum load at the jar.
- If jarring is unsuccessful, consider acid pills where conditions permit.

Register For This Course Now!

Kindly fill up your particulars in the registration form placed at the end of this brochure, and send it to us or email to registration@petrosync.com

general@petrosync.com  |  +65 6451 4500  |  www.petrosync.com
Course Agenda — 3 Days

DAY 2 (Continue)
Spudding the Well: Top Hole & Running the Conductor

How Differential Sticking Can Be Prevented
- Low overbalance
- Well Stabilised BHA
- Thin / hard filter-cake
- Oil Based Mud
- Know where your porous / permeable formations are
- Keep the pipe moving
- Reduce time for MWD surveys

Hole Cleaning
- Characteristics of Cuttings Beds
- Hole Cleaning in Deviated Wells
- Hole Cleaning Pills
- Drill String Movement
- Back Reaming & Hole Cleaning
- Surface Hole Section

- Use of Larger Drill Pipe
- Circulation Before Conns / Trips
- Wiper Trips
- Trend Information
- Hole Cleaning Charts
- Cuttings Transport
- Rheology
- Yield Stress
- Flow Rate
- Hole Geometry
- Mud Weight
- Cuttings Properties
- Rate of Penetration
- Drill String Rotation

Teamwork Exercises & Case Studies Based Upon Past & Current Events & Incidents

DAY 3

Best Practices
- Reaming & Back Reaming
- Tripping in Deviated Hole
- Connections
- Surveying
- Drilling Parameter Trends
- Running Casing & Liners
- Logging
- Coring
- Well Control
- Lost Circulation
- Air & Foam Drilling
- Example Procedures
- Drilling with Coiled Tubing
- Care of Tubulars

- Jar Types, How they’re designed and How they work
- Cocking and Firing
- Successful Usage
- Forces required to fire
- Jar Descriptions (Mechanical & Hydraulic)
- Accelerator Descriptions
- Proper Handling of Jars
- Delivery to Location
- Picking Up & Laying Down
- Stand Back Procedure
- Routine Maintenance
- Jar & Accelerator Positioning
- Vertical Wells
- Deviated & Horizontal Well

Teamwork Exercises & Case Studies Based Upon Past & Current Events & Incidents

Jars & Accelerators

You Might Also Be Interested In:

Advanced Fishing
25—26 February 2016 | Bandung, Indonesia

HPHT Drilling Operation
4—7 April 2016 | Bali, Indonesia

Deepwater Drilling Optimization
16—19 May 2016 | Bali, Indonesia

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COURSE DETAILS

Title: ADVANCED STUCK PIPE PREVENTION
Date: 22-24 FEBRUARY 2016
Location: BANDUNG, INDONESIA

INVESTMENT PACKAGES (Please Circle)

<table>
<thead>
<tr>
<th>INVESTMENT PACKAGE</th>
<th>DATELINE</th>
<th>FULL MASTERCLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Price</td>
<td>19 FEB 2016</td>
<td>USD 2,895</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>22 JAN 2016</td>
<td>USD 2,695</td>
</tr>
<tr>
<td>Group Discount (3 or more</td>
<td>19 FEB 2016</td>
<td>Enjoy 10% discount for groups of 3</td>
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<tr>
<td>Delegates)</td>
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</tbody>
</table>

Group Discount is based on Standard Price
*To enjoy the promotion & discount offer, payment must be made before dateline
* For 7 or more delegates, please inquire for more attractive package.
* Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.

Important: Please note that registration without payment will incur a SGD 200 administration fee.

DELEGATES DETAILS

1st Delegate Name: ___________________________   Mr  Mrs  Ms  Dr  Others   
Direct Line Number: ___________________________  Email: ___________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: ___________________________  

2nd Delegate Name: ___________________________  Mr  Mrs  Ms  Dr  Others   
Direct Line Number: ___________________________  Email: ___________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: ___________________________  

3rd Delegate Name: ___________________________  Mr  Mrs  Ms  Dr  Others   
Direct Line Number: ___________________________  Email: ___________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: ___________________________  

INVOICE DETAILS

Attention Invoice to: ___________________________  
Direct Line Number: ___________________________  Fax: ___________________________
Company: ___________________________  Industry: ___________________________
Address: ___________________________  Postcode: ___________________________
Country: ___________________________  Email: ___________________________

Please note:
- If you have already registered by Phone  Fax  Email  Web  
- If you have not received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHOD

☐ By Credit Card: Please quote invoice number(s) on remittance advice
 PetroSync Global Pte Ltd Bank Details:
 Account Name: PetroSync Global Pte Ltd
 Bank Name: DBS Bank Ltd
 Account No: SGD: 288-901898-0  USD: 0288-002682-01-6
 All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

☐ By Direct Transfer: Please quote invoice number(s) on remittance advice

PAYMENT TERMS: Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

CONFIRMATION

I agree to PetroSync’s terms & conditions, payment terms and cancellation policy.

Authorized Signature: ___________________________

TERMS AND CONDITIONS

DISCLAIMER
Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics. As such, PetroSync reserves the right to change or cancel any part of its published course due to unforeseen circumstances. Any substitutions or alterations will be updated on our web page as soon as possible.

DATA PROTECTION
The information you provide will be safeguarded by PetroSync that may be used to keep you informed of relevant products and services. As an international group we may transfer your data on a global basis for the purpose indicated above. If you do not want us to share your information with other reputable companies, please tick this box.

CANCELLATION POLICY
You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync. For any cancellation received in writing not less than fourteen (14) working days prior to the training course, you will receive credit voucher less a SGD $200 administration fee and any related bank or credit card charges.

Delegates who cancel less than fourteen (14) working days of the training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted.

In the event that PetroSync cancels or postpones an event for any reason and that the delegate is unable or unwilling to attend in on the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync to be mutually agreed with PetroSync, which must occur within a year from the date of postponement.

PetroSync is not responsible for any loss or damage as a result of the cancellation policy. PetroSync will assume no liability whatsoever in the event this event is cancelled, rescheduled or postponed due to any Act of God, fire, act of government or state, war, civil commotion, insurrection, embargo, industrial action, or any other reason beyond management control.

CERTIFICATE OF ATTENDANCE

70% attendance is required for PetroSync’s Certificate of Attendance.

DETAILS

Please accept our apologies for mail or email that is incorrectly addressed.
Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

CHARGES & FEE(S)

- For Payment by Direct Telegraphic Transfer, client has to bear both local and oversea bank charges.
- For credit card payment, there is additional 4% credit card processing fee.

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