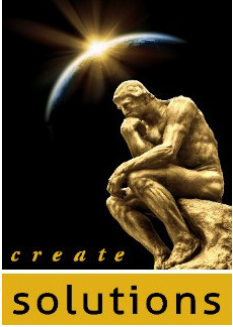
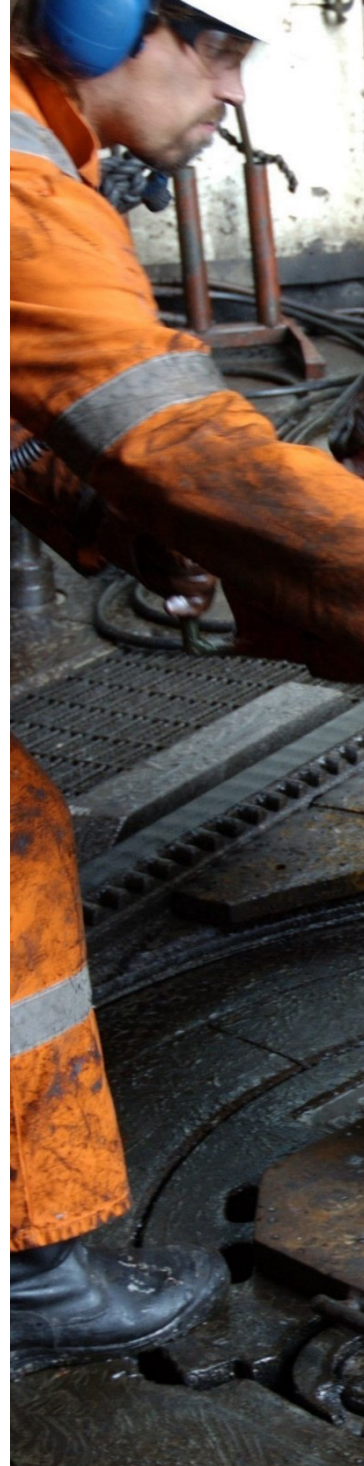


ideas



HPHT WELL CONTROL



Contact Us for Special Corporate Rate Now!

HPHT WELL CONTROL

Course Overview

This course covers the key aspects of HPHT Well Control in detail through the media of:-

1. Lectures (The Trainer began his career 35 years ago and has worked on HPHT Projects both on and offshore the USA; offshore to the North Sea (UK & Norwegian Sectors) and has advised many Asian Operators & Drilling Contractors regarding HPHT Wells. His PhD is in HPHT Drilling & Blowout Prevention. He is a Certified IADC WellCap Plus Well Control Instructor, has taught Well Control for many years and has written many Operators & Drilling Contractors HPHT Well Control Manuals, Specialist Drilling Procedures & Policies).
2. PowerPoints (written by the Trainer);
3. Videos;
4. Case history examples (from IADC / SPE / Scandpower & UK HSE Databases);
5. Teamwork exercises.

New technologies available to the Industry are also covered if required by the client (e.g. MPD, Virtual Hydraulics etc).

Provision is also made for delegates to discuss any aspect of HPHT Well Control / Drilling Operations which are pertinent to their particular up-coming project(s) in order to secure maximum success first time.

For each subject area, benefits of certain industry practices are covered in detail as well as why difficulties are often encountered on the rig.

Solutions are presented (e.g. optimal well control & drilling practices per IADC & IWCF) so that the well to be drilled is a success first-time, without incident.

Please note that this course is divided into 4 sections:-

1. Well Control Event Prevention
2. How to Handle a Well Control Event Should one Occur
3. Case Histories / Teamwork Exercises
4. The HPHT Well Control Manual (which all delegates receive)

Aims & Objectives

By the end of the course, delegates will understand the key drivers behind successful HPHT Drilling Operations so that their wells are drilled without a Well Control Event. However, in the event that the client does encounter a Well Control incident the client will know how to kill the well successfully.

Delegates will also benefit from the successes – and failures – of HPHT Wells worldwide and what can be done to maximise success and minimise failure.

Consultancy services can be provided both before the course (e.g. certain wells / problems can be looked at), during the course (e.g. certain problems can be reviewed) or after the course (e.g. advice / well review) should delegates require.

Who Should Attend

Drillers, Toolpushers, OIM's, Drilling Engineers; Senior Drilling Engineers; Offshore Drilling Engineers; Offshore Supervisors; Drilling Superintendents; Service Company Personnel.

Your Dedicated Coach

Michael Gibson (PhD)



❖ *Overview*

- Seasoned professional with 35 years' worldwide experience on drill-ships, semi-submersibles, tender-assist units, platforms, jack-ups and land rigs.
- Extensive experience both onshore and offshore in engineering and operations for Operators and Drilling Contractors on exploration, appraisal & development wells.
- Extensive risk assessment, advisory, planning and rig-site work experience ranging from Drilling Engineer through to Drilling Supervisor, Superintendent & Drilling Manager.

❖ *Training*

Training experience worldwide ranges across Operators, Drilling Contractors and Service Companies both in-house and public in the following areas :-

- HPHT
- Stuck Pipe Prevention & Fishing
- Deepwater Well Engineering
- Deepwater Operations
- Directional Drilling
- Horizontal & Multilateral Wells
- Accelerated Drilling Programmes for Drilling Contractors
- Graduate Drilling Engineering for Operators
- Optimised Drilling Practices
- Well Planning & Engineering
- Well Construction
- Well Control (Advanced, Understanding, Deepwater & HPHT)

❖ *Consultancy*

Engineering & Operations Advisor to Operators, Drilling Contractors, Banks & Insurance Companies worldwide re Drilling & Field Development, Risk & Blowouts

- Hazard Analysis
- Offshore Operations
- Technical Advisor for HPHT Developments
- Well Control
- Technical Advisor for Deepwater Operations

❖ *Project*

- Project Manager for HPHT Field Development; Standard Field Development
- Production Optimisation
- Risk Mitigation
- Brownfield Re-development
- Deepwater
- Well Control
- Management Systems

IDEAS CREATE DRILLING SOLUTIONS

visit us at www.wellideas.com

HPHT WELL CONTROL

DAY ONE

INTRODUCTION

- Industry Definition of HPHT
- Key Characteristics
- Key Challenges
- Application & Benefits
- Evolution / Developments / Achievements
- The Necessity for Total Teamwork
- Why HPHT Wells Typically Fail
- Discussion

SECTION 1: WELL CONTROL EVENT PREVENTION

HPHT DRILLING PRACTICES OVERVIEW

- Responsibilities
- Suspension of Operations
- Equipment & Instrumentation
- Drills
- Acceptable Gas Levels
- Causes & Identification of Kicks
- Identifying Abnormal Pressure (Includes Review of Cavings Poster)
- Undetected Kicks
- Kick Development in Water Based Mud & Oil Based Mud
- Shut-In Procedure Whilst Drilling
- Shut-In Procedure Whilst Tripping (Includes Review of Decision-Making Flowchart)
- Flow Checks
- Pit Management
- Making Connections with a Working Stand
- Tripping-In
- Tripping-Out (Including Short Trip Checks)
- Gas Behaviour in Water Based Mud & Oil Based Mud
- Hydrostatic Pressure with respect to Temperature
- Hydrostatic Pressure with respect to Pressure
- Mud Gas Separator Overloading
- Slugging
- Examples of Pumping Out of Hole Sheets
- HPHT Coring: Surging, Swabbing & Hydrogen Sulphide
- Casing pressure – Driller's Method
- Maximum Kill Rate versus Choke Pressure
- Discussion

SPECIALISED HPHT PRACTICES 1: FINGER-PRINTING CONNECTIONS

- Objective of Finger-printing
- Lining-up to the trip-tank
- Procedure
- Involving the Mud Loggers
- Post Connection
- Sample / Example
- Discussion

SPECIALISED HPHT PRACTICES 2: TRAPPED PRESSURE

- What is it
- Why it's important to understand it
- It's relationship with flow rate
- How do you determine "typical" values
- Methodology
- Interpretation
- Discussion

HPHT WELL DRILLING 1: FORMATION BALLOONING OR "CHARGING"

- What is it
- Why it's important to understand it
- Reactions
- Ballooning from PWD Data
- Diagnosis from LWD Data
- Ballooning versus Lost Returns
- Distinguishing Ballooning from a Kick
- Step-Down Test
- Ballooning & High Gas
- Mitigation
- Discussion

HPHT WELL CONTROL

DAY TWO

HPHT WELL DRILLING 2: GAS BEHAVIOUR IN MUD (DRILLING FLUID)

- What can the Driller expect to see with regard to gas behaviour in a Water Based Mud
- What can the Driller expect to see with regard to gas behaviour in an Oil Based Mud
- Solubility
- Bubble Point
- Unloading
- Key Practices to prevent the well unloading whilst Tripping
- Key Practices to prevent the well unloading whilst Drilling
- Situations that can mask a small influx
- Discussion

HPHT WELL DRILLING 3: PRESSURE INTEGRITY TESTING

- Types of Pressure Integrity Testing: Casing Test, Leak-off Test, Formation Integrity Test
- Procedures
- System Rig-up
- Procedures
- Casing Testing
- Leak-off Testing
- Formation Integrity Testing
- When to stop pumping
- Interpretation
- Discussion

HPHT WELL DRILLING 4: LOST CIRCULATION

- The cost of the problem (per IADC “Unscheduled Events” data)
- Typical HPHT Well Lost Circulation Mechanisms
- Classification
- Effect Upon Drilling Operations
- Natural Fractures / High Permeability
- Pressure Induced Fractures
- Lost Circulation – General
- Why Lost Circulation Causes Stuck Pipe
- Flowchart Planning
- Underground Blowouts as a result of Lost Circulation (Type 1 & Type 2)
- Discussion

HPHT WELL DRILLING 5: UNDERGROUND BLOWOUTS / CROSS-FLOWS

- Types of Under-ground Blowouts (Type 1 & Type 2)
- Flow Indicators
- Kill Considerations
- Handling a Type 1 Flow
- Spotting a Heavy Slug
- Setting a Barite Plug
- Recipe for a Barite Plug
- Dynamic Kill
- Handling a Type 2 Flow
- Gunk Plug Recipe & Procedure
- Discussion

Break

HPHT WELL DRILLING 6: THE COMMONEST CAUSE OF BECOMING STUCK: DIFFERENTIAL STICKING (NOTE: YOU DO NOT WANT TO BECOME STUCK DURING AN ON-GOING WELL CONTROL EVENT)

- IADC Definition
- Description
- How it happens
- Why it happens
- Filter Cake
- BHA Design
- Drill-string Movement
- Pressure-Time Effect
- Estimating Sticking Force
- Spotting Pills
- The Driller’s First Actions
- Multiple Problems
- Plan in Advance
- Class Exercise
- Discussion

HPHT WELL CONTROL

DAY THREE

HPHT WELL DRILLING 7: JARRING IN HPHT WELLS (NOTE: YOU DO NOT WANT TO REMAIN STUCK DURING AN ON-GOING WELL CONTROL EVENT)

- IADC Definition
- Which type of Jar is the most suitable for use in an HPHT well? Mechanical or Hydraulic?
- Mechanical Jars
- Hydraulic Jars
- Impact Energy
- The Acceleration Factor
- Successful Use of Jars
- Firing a Hydraulic Jar
- Firing a Mechanical Jar
- Pre-Set Trip Load
- Variable Trip Load
- Jar Firing Force Envelope
- Pump Open Force
- Accelerators
- Jar & Accelerator Positioning
- Videos
- Calculations
- Discussion

HPHT WELL DRILLING 8: INDICATORS & CAUSES OF KICKS IN HPHT WELLS

- Kick Indicators & Causes of Kicks
- Primary Well Control in HPHT Wells (And Why Hydrostatic Pressure Varies)
- Annular Pressure Loss, Temperature & Weight Gradients
- Indicators of Downhole Changes
- Indications of Increasing Formation Pressure
- Changing Trends
- Hard Shut-In: Why?
- Discussion

HPHT WELL DRILLING 9: MUD PIT MANAGEMENT

- The Tri-angle of Mud Pit Management Communication
- Active Pit Changes
- The Importance of the Mud Loggers
- Mud Additions
- Information
- Shale Shakers
- Mud Pit Management
- Discussion

HPHT WELL DRILLING 10: BOP SURFACE EQUIPMENT (HERE WE WILL REVIEW THE DRILLING CONTRACTOR'S BOPE. NOTE: OPERATORS TYPICALLY BENEFIT FROM A COMBINED DRILLING CONTRACTOR COURSE)

- Elastomeric Seals
- Chokes & Remote Kill Line
- IBOP
- Vacuum Degasser
- Glycol Injection
- Mud Gas Separator
- Pit Level Indicators & Flow Shows
- Driller's Recorders & Stroke Counters
- Mud Loggers Recorders & Sensors
- HPHT Checklists
- 18 ¾" BOP Stack
- Driller's Remote Panel
- Choke Operator Observing Pressures
- MGS Temperature & Pressure Read-outs
- Principles of the MGS
- MGS Dip Tube & Vent Lines
- MGS Components
- MGS Liquid Seal & Calculation
- Hot Mud Line
- Discussion

HPHT WELL CONTROL

DAY FOUR

HPHT WELL DRILLING 11: KICK TOLERANCE

- Kick Intensity Example
- Kick Intensity Formula
- What is MAASP?
- Why is Height of Influx Important?
- Why is Mud Weight Important?
- Why is TVD of the Casing Shoe Important?
- So what does Kick Intensity actually mean?
- Discussion

SECTION 2: HOW TO HANDLE A WELL CONTROL EVENT SHOULD ONE OCCUR

HPHT WELL DRILLING 12: HPHT WELL CONTROL / KILL METHODS

- Discussion re: Securing the Well
- Introduction to Kill Method & Kill Rates
- The Drillers' Method (Discussion & Worked Example): We will discuss why the Driller's Method is the preferred Kill Method)
- What the changes in the SIDPP & SICP gauges mean

HPHT WELL DRILLING 12: CONTINUED: HPHT WELL CONTROL / KILL METHODS

- The Weight & Wait Method (Discussion & Worked Example)
- What the changes in the SIDPP & SICP gauges mean
- The Volumetric Method
- Bull-heading (The Pro's & Con's: We will also look at Under-ground Blowouts)
- Off-Bottom Kill
- Discussion

HPHT WELL DRILLING 13: CHOKE DRILL

- Why
- Procedures
- What to Observe
- Discussion

HPHT WELL DRILLING 14: STRIPPING

- Why
- Objectives
- Stripping Considerations
- Surge Bottle
- Procedures
- Example
- Example Worksheet
- Discussion

HPHT WELL DRILLING 15: HYDRATES

- What they are
- Why they are so important to us
- Prevention
- What we can do if they do form
- Discussion

HPHT WELL CONTROL

DAY FIVE

HPHT WELL DRILLING 16: MANAGING HPHT WELL OPERATIONS FROM DERRICKMAN TO DRILLER TO TOOLPUSHER TO OIM (INCLUDING OPERATOR'S DRILLING SUPERVISOR)

- Responsibilities
- Suspension of Operations
- Alertness & Checklists
- OIM
- Toolpusher
- Driller
- Assistant Driller
- Derrickman
- Barge Engineer
- Rig Electrician
- Company Man (Drilling Supervisor)
- Drilling Engineer
- Mud Engineer
- Mud Loggers
- MWD / LWD Engineers
- Cementer
- Discussion

SECTION 3: CASE HISTORIES / HPHT WELL CONTROL LESSONS LEARNED

HPHT WELL DRILLING 17: HPHT LESSONS LEARNED

- Gulf of Mexico: Lesson 1: Here we will review the key lessons to be learned from this Gulf of Mexico Well – and see how it applies to all that we have covered so far during this course.

HPHT WELL DRILLING 18: HPHT LESSONS LEARNED

- Mediterranean Sea: Lesson 2: here we will review the key lessons to be learned from this Mediterranean Sea Well – and see how it applies to all that we have covered so far during this course.

NOTE: Should the Client require, more HPHT Well Control Lessons Learned can be covered, as Teamwork Exercises. A further 10 could be selected. To be discussed.

HPHT WELL OPERATIONS: OPEN FORUM

During this last section of the Course, the Trainer will cover those key areas which the Classroom Delegates would like to cover in more detail, as well as "Open House "Q & A" and those HPHT experiences / lessons learnt which he has encountered from working within the HPHT arena since 1991 / 1992 in the USA through to 2015 encompassing the USA, UK, Norway, Azerbaijan and Asia (specifically Shell Brunei, Talisman Malaysia, JX Nippon Sarawak, Vantage Drilling, Songa Drilling, Transocean & PV Drilling / Bien Dong).

HPHT Well Control Manual

NOTE: All delegates receive a copy of the HPHT Well Control Manual which contains the following subject areas:-

HPHT WELL CONTROL MANUAL CONTENTS

Section

1. INTRODUCTION TO HPHT
2. GAS BEHAVIOUR, KICKS AND CONTROL
3. GAS SOLUBILITY IN OBM'S – EFFECTS ON KICK BEHAVIOUR
4. RIG EQUIPMENT SUMMARY
5. SURFACE GAS HANDLING CAPACITIES AND PROCEDURES FOR HPHT WELLS
6. DRILLING AND WELL CONTROL PROCEDURES FOR HPHT WELL PROGRAMMES, TRAINING AND COMMUNICATION
7. SHUT-IN PROCEDURES AND DECISION TREES
8. BULLHEADING OVERVIEW
9. VOLUMETRIC METHOD OF WELL CONTROL
10. STRIPPING
11. THE EFFECTS OF TEMPERATURES AND PRESSURES ON MUDS
12. THE EFFECTS OF BOREHOLE BALLOONING ON DRILLING RESPONSES
13. MANAGEMENT OF OPERATIONS
14. SAMPLE HPHT WELL CONTROL PROCEDURES (1)
15. SAMPLE HPHT WELL CONTROL PROCEDURES (2)

Appendix 1 UKOOA GUIDELINES FOR HPHT WELLS

Appendix 2 NPD GUIDELINES FOR HPHT WELLS

Appendix 3 HPHT MUD PRESENTATION

Appendix 4 HPHT CEMENT PRESENTATION



Independent Drilling Engineering AssociateS

IDEAS (Independent Drilling Engineering AssociateS) is a **thinking** company. It **focuses** its in-depth and holistic knowledge, breadth of experience and expertise onto operators, drilling contractors and service companies' drilling engineering and related work requirements, to provide top quality fast turnaround bespoke work packages on either an ad-hoc or long term basis, 24 hrs per day / 365 days per year, worldwide.

Through applying creative thought, ingenuity, experience, integrative life-cycle considerations, fully focused dedication and commitment to problem-solving, **IDEAS** aim to provide the most professional, solution-oriented, cost-effective drilling engineering and related services anywhere around the world at any time.

Objectively.

Independently.

Quickly.

*Contact us today for **In-House Drilling Solutions** to maximise safety, efficiency, performance, productivity & minimise cost!
For more information, please email us at info@wellideas.com*

IDEAS CREATE SOLUTIONS

visit us at www.wellideas.com

Contact Details



- I am interested to register for “HPHT Well Control”
- I would like to contact IDEAS for In-House Training Solutions
- I would like to contact IDEAS for In-House Consultancy Solutions
- Other enquiry

Name : _____

Job Title : _____

Company : _____

Department : _____

Mobile / DID : _____

Email : _____

Independent Drilling Engineering

Associates Singapore

18 Sin Ming Lane
#08-26 Midview City
Singapore 573960
Tel: +65 6659 0272
Email: info@wellideas.com
Website: www.wellideas.com

Independent Drilling Engineering

Associates Scotland

1 Mill Court
Gourdon Montrose DD10 0NL
Scotland, United Kingdom
Tel: +44 1561 360358
Email: info@wellideas.com
Website: www.wellideas.com

IDEAS CREATE SOLUTIONS

visit us at www.wellideas.com