

# WELLSHARP Drilling Surface - Supervisor

Surface Well Control Course Outline IADC



## 3.5 DAYS - SUPERVISOR

### INTERACTIVE STUDY TOOLS

- Provide students with over 600 pages of pre-course study materials at wildwell.com
- Provide students with study guide that covers up to 150 interactive well control questions and answers
- Provide students with a 50 question test to determine their well control knowledge gaps.

### PRELIMINARY ITEMS

- Safety: scape routes, muster points, etc
- Discussion of special needs
- Introductions
- Class paperwork

### SERIOUS WELL CONTROL PROBLEM FROM THE WILD WELL LIBRARY

- Students form teams
- Team discussion of the potential well control problem
- Simulator exercise demonstrating the well control challenge
- Return to class discuss the challenge

### WELL CONTROL COURSE OBJECTIVES

- Formations, pore pressure, fracture gradients
- Killsheet kick detection, flow checks, well shut-in, and gas behavior
- Well control methods
- Well control equipment (barriers, BOPs, manifolds, accumulator, etc)
- Completing the well and post-completion activity
- Final well control simulation: from kick to kill, with a complication
- Assessment: skills and written

### FORMATIONS, PORE PRESSURE, FRACTURE GRADIENT

- Formation structure
  - Porosity
  - Permeability
- Fracture gradients, kick tolerance, pore pressures
  - Related formulas/math (hydrostatic pressure, the U tube, force MAASP, etc)
  - Equivalent mud weight
  - Kick tolerance
  - Pore pressure vs. fracture gradient (drilling margin/window)
- Simulator exercise demonstrating a FIT; discussion of LOT (if needed, depending upon class knowledge level)
- Discuss casing and cementing program
- Discuss drilling fluids program

### BARRIERS

- Philosophy and operation of barrier systems
- Number of barriers for safe operation
- Testing barriers

### SHALLOW GAS, WATER FLOWS AND TOP-HOLE DRILLING

- Definitions and causes of pressure in top-hole formations
- Causes of under balance top-hole
- Diverting practices
- Top-hole drilling practices and causes of kicks

### ABNORMAL PRESSURE WARNING SIGNS

- Abnormal pressure
- Shaker evidence
- Changes in mud properties
- Changes in drilling data/parameters

# WELLSHARP Drilling Surface - Supervisor

## Surface Well Control Course Outline IADC



### 3.5 DAYS - SUPERVISOR

#### KILLSHEET, KICK DETECTION, FLOW CHECKS, WELL SHUT-IN, AND GAS BEHAVIOR

- Related formulas/math (capacities/volumes, strokes, circulation times, etc.)
- Causes of kicks
  - Overt kick signs
  - Pre-kick signs
- Flow-check procedures
- Shut-in procedures
  - Hard shut-in
  - Soft shut-in
  - Shut-in challenges
- Paper killsheet with preliminary well data
  - Well data, volume calculations
  - Discuss the importance of a killsheet
- Simulator exercises demonstrating hard and soft shut-in
  - Kick detection and shut-in
  - Students complete killsheet with simulator well data (or instructor-given data)
  - Discussion of killsheet calculations: what do they mean? (if needed) Discussion of IADC WellSharp rounding rules
- Gas behavior
  - While drilling
  - In horizontal wells
  - While shut-in

#### WELL CONTROL METHODS

- Review of related formulas/math (capacities/volumes, strokes, circulation times, kill mud, MAASP, ICP, FCP, etc.)
- Wait and weight method
  - Discussion of wait and weight
  - Techniques
  - Skills (pump startup, step-down chart, gauge use, lag time, etc.)

- Simulator exercises
  - Driller's Method
  - Discussion of Driller's Method
- Techniques
- Skills (pump startup, capturing pressure after first circulation, lag time, etc.)
- Simulator exercise
  - Volumetric and Lube and Bleed
  - Discussion of Volumetric Method
  - Formulas
  - Understanding the process and technique
  - Skills (use of electronic killsheet or paper graph, managing gas migration)
- Simulator exercise
- Discussion of Lube and Bleed

#### STRIPING PIPE UNDER PRESSURE

- Discussion of technique
- Skills (annular pressure, speed of strip, managing wellbore pressures via volumetric method)
- Simulator exercise

#### BULLHEAD METHOD - Discussion and simulator exercises if time allows

#### Discussion of study guide questions

#### WELL CONTROL DRILLS

- Pit Drills
- Trip drills
- Tripping drills
- Choke drills
- Early response and empowerment to act

# WELLSHARP Drilling Surface - Supervisor

Surface Well Control Course Outline IADC



## 3.5 DAYS - SUPERVISOR

### COMPLETING THE WELL AND POST-COMPLETION ACTIVITY:

#### Short discussion

- Completions
- Differences between drilling and workover

### FINAL SIMULATOR EXERCISE (if time allows)

- Abnormal lateral well and kick detection
- Kill the well with Wait and Weights Method

### DISCUSSION

- Ballooning wells vs. kicking wells
- Fingerprinting
- 

### DISCUSSION OF STUDY GUIDE QUESTIONS

### SKILLS ASSESSMENT

### COMPUTER-BASED WELLSHARP EXAM