Transocean

FUNDAMENTAL WELL CONTROL COURSE - CONTENT AND OBJECTIVES

Description:

The aim of the course is to give candidates an understanding of some of the calculations, well control equipment and practices used for primary and secondary well control operations.
The course combines practical hands on training with the use of the DS500 drilling and well control simulator. Self-study with reference books and also exercises to provide the basic skills needed to understand the fundamentals of well control. Emphasis on the Transocean policies and specific procedures will form part of the course structure.

Content:

The areas of instruction, evaluation and testing will be in the following subjects:

- Basic Calculations.
- Primary Well Control.
- Basic Understanding of System Pressure Losses.
- Formation Fracture Pressures.
  - Why's and When's of FIT and LOT Procedure
  - Explanation of MAASP and MAMW
- When, How and Where to take SCR's.
- Determining Choke Line Friction
- Drilling Fluids and their Importance regarding Primary Well Control.
- Pump Speed and Mud Weight Effects on Pressure Losses.
- Formation Trends.
  - Top Hole Drilling / Shallow gas
  - Changes in Formation Pressures
- Causes of Kicks.
- Kick Indicators and Response.
- Secondary Well Control, Shut–in Procedures
  - Tripping
  - Drilling
- Monitor and Record Shut in Data.
- Shut-in Calculations.
- Kill Methods.
  - Driller's
  - Wait and Weight
- Basic Surface and Subsea Accumulator System.
- Basic Surface and Subsea BOP Equipment.

Objectives: Participants should be able to:

- Calculate all formulas set out by the fundamental level certification standards.
- Demonstrate knowledge of the importance of taking and recording SCR's.
- Describe setting up of alarms and manifold systems for drilling.
- Explain response to audible/visual alarms on monitoring system.
- Identify drilling trend changes and correct response to same.
- Describe the correct shut-in procedure.
- Identify correct monitoring and collection of shut-in data.
- Fill out a kill sheet.
- Identify basic components of BOP equipment, accumulator equipment and related instrumentation.
- Demonstrate an understanding of well control through exercises and testing.
- Pass an in-house examination with a minimum 70% pass mark.

Participants: The course is intended for training personnel in the following positions:

- Pumpman, Derrickman, Assistant Driller and Driller

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Day One

Time	Subject	Topic	Manual Reference	Source Materials/Notes
0800	Course Introduction and Overview WC Manual Exercise 1 (during Dept meeting)	Houston Training Center Fire & Muster Details Toilets/Smoking/Lunch Forms Completion		Related Forms to Complete Well Control Manual Formula Sheets Exercise Workbooks Notebooks/Pens/Name Cards
0830	Review and discuss WC Manual Exercise 1 and overall manual organization and contents.	Table of Contents "Well Control Procedures and Responsibilities"	1.2.1.0 1.2.2.0 1.2.3.0 1.2.4.0	Well Control Manual
0900	Use of the Calculator Workshop *Workbook Exercise One	Basic Calculations Complex Calculations Step-by-Step Method		Calculators "Use of the Calculator" White Board Presentation #1
0930	Drilling Fluid Basics Workshop * Workbook Exercise Two	Primary Stage of Control Drilling Fluid Functions Key Mud Properties Types of Drilling Fluid	3.1.1.0	Well Control Manual Exercise Workbooks "Drilling Fluids Basics" PowerPoint Presentation #2
1030	Gas Properties & Behaviour Workshop * Workbook Exercise Three	Types of Gases Migration Density	4.4.5.0 5.4.6.0 5.4.7.0	Well Control Manual Exercise Workbooks "Gas Properties & Behaviour" PowerPoint Presentation #3
1100	Lunch			
1130	Continue Gas Properties & Behaviour Workshop			
1200	Capacities & Volumes Workshop * Workbook Exercise Four Formula Sheet: Section A	Well Schematic Drillstring Cap & Vol Annular Cap & Vol	Kill Sheet Formula Sheet	Well Control Manual Exercise Workbooks "Capacities & Volumes" PowerPoint Presentation #4
1400	Pump Calculations Workshop * Workbook Exercise Five Formula Sheet: Section B	Pump Outputs Strokes & Time System Pressure Losses Slow Pump Rate Pressure Choke Line Friction Loss	Formula Sheet 4.3.2.0 4.3.3.0	Well Control Manual Exercise Workbooks "Pump Calculations" PowerPoint Presentation #5
1600	End of Day One			

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Day Two

Time	Subject	Topic	Manual Reference	Source Materials/Notes
0700	Pressures – Hydrostatic & Dynamic Workshop * Workbook Exercise Six Formula Sheet: Sections C & D	Hydrostatic: Hydrostatic Pressure Pressure Gradient Mud Weight & Pressure Primary Well Control Dynamic: BHCP ECD Mud Weight & Pressure Pump Speed & Pressure	 2.1.0.0 2.2.1.1 Formula Sheet 2.4.3.2 Formula Sheet	Well Control Manual Exercise Workbooks "Pressures – Hydrostatic & Dynamic" PowerPoint Presentation #6
0900	WC Manual Exercise 2 Review and Discuss WC Manual Exercise 2	"Well Planning Considerations"	2.0.0.0	Exercise Workbook
0930	Formation Pressure & Strength Workshop * Workbook Exercise Seven Formula Sheet: Section C	Leak Off Test Procedure Formation Fracture Pressure MAMW MAASP	2.3.2.1 Formula Sheet 4.3.1.0	Well Control Manual Exercise Workbooks "Formation – Pressure & Strength" PowerPoint Presentation #7
1100	Lunch			
1130	WC Manual Exercise 3 Review and Discuss WC Manual Exercise 3	"Well Control Principles"	3.0.0.0	Exercise Workbook
1200	Kicks – Causes, Detection & Shut-In Workshop * Workbook Exercise Eight	Causes of Kicks Detection of Kicks Shut-In Procedures Drilling – Surface BOP's Drilling – Subsea BOP's	3.1.2.0 5.1.2.0 5.2.1.0 5.3.2.0 5.3.3.0	Well Control Manual Exercise Workbooks "Kicks – Causes, Detection & Shut-In" PowerPoint Presentation #8
1330	Shut-In Calculations Workshop * Workbook Exercise Nine Formula Sheet: Sections A & C & D	Formation Pressure Height of Influx Influx Gradient Kill Mud Weight Initial Circulating Pressure Final Circulating Pressure	2.2.0.0 5.4.7.0 5.4.7.0 Formula Sheet	Well Control Manual Exercise Workbooks "Shut-In Calculations" PowerPoint Presentation #9
1500	Well Kill Methods Workshop * Workbook Exercise Ten	Constant BHP Kill Methods Wait and Weight Method Driller's Method Start Up Procedures	6.1.0.0 6.1.1.1 6.2.1.0 6.1.1.1	Well Control Manual Exercise Workbooks "Well Kill Methods" PowerPoint Presentation #10
1600	End of Day Two *Workbook Exercise Eleven Homework Assignment			

Day Three

Time	Subject	Topic	Manual Reference	Source Materials/Notes
0700	Review Workbook Exercise Eleven Homework Assignment			
0730	Well Control Simulator #1 Group A Group B WC Manual Exercise 4 when not in the Simulator Room	Introduction to the Simulator and demonstration of: Slow Circulating Rates Choke Line Friction Loss Hands-on Practice on: Simulator Operation SubSea Panel Operation Choke Operation		Well Control Simulator Exercise Workbooks
0930	Review and Discuss WC Manual Exercise 4	"Preparation & Prevention"	4.0.0.0	Exercise Workbooks
1000	Introduction to Kill Sheet "Well # 1" Instructor led Kill Sheet Workshop – "Left Side" Projection of Kill Sheet on Screen Formula Sheet: Sections A & B	Well Data Schematic Pump Calculations: Displacement Strokes/Time Dynamic Pressure Loss Choke Line Friction Volume Calculations: Drill String Open Hole Annulus/Chokeline	Formula Sheet 4.3.3.0 4.3.2.0 Formula Sheet	Exercise Workbooks String & Annular Volume Handouts Pumps Calculations Handouts Transocean Subsea BOP Vertical Well Kill Sheet Well #1 Data Sheet
1100	Lunch			
1130	Continue "Left Side" Workshop			
1230	Kill Sheet Workshop – "Right Side" Demonstration & Exercise Formula Sheet: Sections C & D	Formation Strength Data Pump and SCR Data Current Well Data Pre-Recorded Volume Data Pump Strokes and Time Data Kick Data Kill Fluid Density Initial Circulating Pressure Final Circulating Pressure	2.3.2.1 4.3.2.0 Formula Sheet Kill Sheet	Well Control Manual Transocean Subsea BOP Vertical Well Kill Sheet Projection of Kill Sheet on Screen
1400	Kill Sheet Exercise – "Well 2" Individual with Instructor Assistance and Group Review			Data Sheet Kill Sheet
1600	End of Day Three			

Day Four

Time	Subject	Topic	Manual Reference	Source Materials/Notes
0700	Well Control Simulator #2 Group A Group B WC Manual Exercise 5 & 6 when not in the Simulator Room	Take Slow Circulating Rates Take Choke Line Friction Loss Drill Ahead and Take Kick Shut-In and Record Data Repeat Start ups in Driller's Method with each person on the Choke		Well Control Simulator Well and Situation Data Operating Parameters Exercise Workbooks
0930	Kill Sheet – Group Exercise on Well B-5 Data Sheet with Shut-In Data from Simulator #2 Workshop Review Kill Sheets in Class			Well Data Sheet B-5 Kill Sheets
1100	Lunch			
1130	Review and Discuss WC Manual Exercises 5 & 6	"Actions Upon Taking a Kick" "Well Kill Techniques"	5.0.0.0 6.0.0.0	Exercise Workbooks
1230	Tripping & Stripping Workshop * Workbook Exercise Twelve Formula Sheet: Section A & D	Tripping Pipe – Dry & Wet Mud Level Drop – Dry & Wet Pressure Drop – Dry & Wet Flow Checks Trip Tanks & Fill Volumes Slug Calculations Stripping – General Procedures	4.4.1.0 4.4.1.2 4.4.1.2 4.4.1.5 4.4.1.1 4.4.1.2 6.5.1.0	Well Control Manual Exercise Workbooks "Tripping & Stripping" PowerPoint Presentation #12
1330	Well Control Equipment Workshop * Workbook Exercise Thirteen	Well Control Instrumentation Surface BOP Equipment Subsea BOP Equipment Diverter System Manifolds & Piping Choke & Kill Manifolds Blowout Preventer Safety Valves Subsea BOP Control Equipment Accumulator System Equipment Testing Mud Gas Separator	4.1.3.0 9.1.2.2 9.1.2.3 9.2.1.0 9.4.1.0 9.4.2.0 9.5.1.0 9.3.3.0 9.3.2.1 9.6.1.0 9.5.1.6	Well Control Manual Exercise Workbooks "Well Control Equipment" PowerPoint Presentation #13 NOTE: Handout copies of the PowerPoint Presentation #13 to students. Inform them that they can use it as a reference for the exam.
1430	Course Discussion & Review Questions & Answers Kill Sheet Review Group Study Time			
1600	End of Day Four			

Day Five

Time	Subject	Topic	Manual Reference	Source Materials/Notes
0700	Test			
1100	End of Day Five			