
Overview

This unit is about the competence involved in making calculations to support well control, recording and reporting the results effectively. The unit also covers the control of a well in response to deviant and emergent loss of control situations and the selection and implementation of a well kill method. This unit deals with the following:

- 1 Calculate Well Control Data
- 2 Record And Report Well Control Data
- 3 Control And Shut In A Well
- 4 Kill A Well

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Performance criteria

- You must be able to:*
- P1 correctly determined the well control equipment types, classification and performance
 - P2 referred to and used the correct formulae in all **calculations**
 - P3 gathered and validated the data required for each calculation from the appropriate sources
 - P4 carried out all calculations accurately
 - P5 carried out calculations at the required points and frequencies in the drilling process
 - P6 recognised when calculation results may be incorrect and re-check calculations accordingly
 - P7 kept accurate, clear and up to date records of all data used and calculations performed in the agreed format
 - P8 made sure that data records and calculation results are stored securely
 - P9 relayed data records and calculation results to relevant parties in good time for them to use the information
 - P10 reported data and calculation results using efficient channels of communication
 - P11 used the correct record systems and units for each type of calculation
 - P12 determined the space out of the rams accurately
 - P13 obtained clear, accurate and current information on well status on a regular basis
 - P14 made sure that well control equipment is inspected and tested on a regular basis and is kept within specifications
 - P15 promptly and accurately identified emerging and actual loss of control situations
 - P16 activated the relevant alarms in line with operational requirements
 - P17 taken effective and safe action to control and alleviate the situation
 - P18 worked in line with all safety, health and environmental protection requirements that are relevant to the drilling process
 - P19 given clear directions and maintain effective communications with crew members throughout the control process
 - P20 provided a clear and accurate report of the situation and actions taken
 - P21 ensured that the well is shut in and secured in line with operational requirements
 - P22 ensured that the well is stabilised
 - P23 gathered and use current and accurate data and calculation results
 - P24 determined which kill technique to use for optimum safety and efficiency
 - P25 planned the sequence of system and equipment operation needed to kill the well safely and efficiently
 - P26 made sure that the appropriate systems and equipment are started up, operated and shut down safely and as needed to meet operational

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- requirements
- P27 provided clear and accurate information on the setting of instruments, recording devices and alarms required during well killing
- P28 taken appropriate and prompt action to maintain safety and the progress of the operation in response to deviations in parameters and feedback from hole monitoring data
- P29 given clear directions and maintained effective communications with crew members throughout the killing process
- P30 maintained accurate, clear and complete records of the kill programme and report its completion through the required channels to the relevant parties
- P31 worked safely in accordance with operational requirements and associated **Safe Systems of Work**

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Knowledge and understanding

You need to know and understand:

- K1 what calculations are made (and when) for kick data; well control; well kill
- K2 which formulae to use for each type of calculation carried out
- K3 which records and units of measurement to use for each type of calculation carried out
- K4 how to obtain and confirm data from down hole monitoring; data loggers
- K5 how to recognise possible discrepancies from the result when compared with similar calculations for pressure; temperature; depth; deviation; fluid type/weight
- K6 what are the implications of not keeping clear, accurate and up to date records of the data used and calculations performed
- K7 who needs to be given data and calculation results and when
- K8 when records need to be completed, updated and reported
- K9 how communication systems (including voice box; CCTV; radio links; signalling) can be used to assist and report well control situations
- K10 what levels in each of the parameters (including pressure; temperature; fluid type/weight)
- K11 would indicate deviations needing control actions or emergent loss of control
- K12 what actions should be taken to control and alleviate problems in pressure; temperature; fluid type/weight
- K13 what likely abnormalities are implied by kick indicators and what actions are taken to normalise them
- K14 what are the procedures for use of voice box; CCTV; radio links
- K15 the current safety, health and environmental protection measures relevant to well control
- K16 what reporting procedures are followed
- K17 when and how should well control equipment be tested
- K18 what the principles, limitations and functions are of well control systems including BOP's; Accumulators; Manifolds; Hydraulic Choke Remotes (HCRs)
- K19 which alarms to use in respect of which type of problem
- K20 the range of kill techniques available to you
- K21 what are the methodology and limitations of kill techniques including weight and waite; drillers; volumetric
- K22 what are the current safety, health and environmental protection practices and procedures relevant to drilling processes
- K23 what parameter levels (including pressure; fluid type/weight) should be achieved during a kill
- K24 what actions should be taken to deal with parameter variations during a well kill
- K25 what potential limits to the kill programme may be imposed by severe

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environmental forces

K26 what recording and reporting procedures should be followed during and on completion of a well kill

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Additional Information

Scope/range

The following terms in **bold** relate directly to those shown in **bold** in the Performance Statements.

- 1 **Calculations** must include those relating to choke volume; difference between Measured Depth (MD) and True Vertical depth (TVD); gains; hole capacity and volume; kill mud weight; kill sheet; Maximum Allowable Annulus Surface Pressure (MAASP); ram space out; riser lengths and content; Slow Circulating Rates (SCR); slush pump strokes; string volume; subsea stack
- 2 **Safe Systems of Work** must include processes or systems that incorporate Hazard Identification, Risk Assessment, Permit to Work and any other associated systems.

During this work you must take account of the relevant worksite operational requirements, procedures and safe working practices AS THEY APPLY TO YOU.

- 3 How to use 'Safe systems of Work' processes to identify hazards and mitigate or reduce risks to as low as reasonably practicable (ALARP)
- 4 How to select, use and care for PPE (to include sight/hearing protection, coveralls, gloves, footwear, hard hats, respirators)
- 5 The implications of statutory (e.g. HASAWA and COSHH) and organisational requirements.
- 6 How to interpret requirements (e.g. relevant policies, procedures, instructions, codes of practice, standards, schedules)

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