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GP 10-35

Well Operations

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Introduction

The introduction to this ETP mirrors section 20 of the revised DWOP.

All Well Operations activity shall conform to Engineering Technical Practice GP 10-35 – Well Operations

1 General

- 1.1 The Well Engineering Authority is accountable for appointing relevant technical authorities for delivery of well integrity and assurance throughout the complete lifecycle of each well.
- 1.2 The Well Engineering Authority shall provide assurance that all professional, supervisory, operational and maintenance staff involved in well activity are competent to do so.
- 1.3 The management and deployment of all intervention hardware (Pressure Control Equipment) shall be controlled.
- 1.4 SPU's shall develop a written philosophy for tubing and annuli management over full well life cycle.
- 1.5 SPU's shall develop process for the derivation and revision of formal Maximum Allowable Annulus Surface Pressure (MAASP) and Maximum Allowable Operating Surface Pressure (MAOSP) values and in some cases minimal allowable pressure recognising that annular fluids can change over time.
- 1.6 SPU's shall develop a written philosophy for tree and wellhead operations, maintenance, inspection and testing procedures over full well life cycle and establish and maintain service records.
- 1.7 A downhole safety valve (DHSV) shall be fitted below the seabed as a minimum, in every offshore platform well capable of naturally flowing hydrocarbons to surface. Acceptable leak rates shall be defined in the SPU well integrity procedures in line with requirement 7.6 of the ETP. Failed DHSVs shall be replaced or substituted by an item which provides an equivalent level of well integrity in a safe and timely manner based on proper risk assessment and as deemed appropriate by the Well Engineering Authority.
- 1.8 SPU's shall develop a fit for purpose DHSV maintenance and testing programme when a DHSV is fitted.

2 Well Intervention

- 2.1 Prior to the commencement of any well intervention operations, the location shall be inspected to ensure it is safe for personnel and equipment during the planned operations.
- 2.2 Personnel and equipment shall be protected from exposed runs of wireline or coiled tubing and from any voids created by the removal of deck hatches and floor gratings.
- 2.3 During the period of well intervention, a single person shall be designated responsible for the well intervention operation.



- 2.4 Clear emergency shutdown procedures shall be in place, with which all drilling and well operations personnel are familiar.
- 2.5 All equipment subject to operational loading (sheaves, units etc) shall be load path certified and securely fastened or anchored to withstand the maximum expected forces during the operation of that equipment.
- 2.6 An assessment shall be made to determine if a wellhead/tree bending stress analysis is required depending on the nature of the well and subsequent well operations.

3. Pressure Control

- 3.1 If the lubricator connection is broken above an already fully tested riser and BOP, a retest of the lubricator connection above the BOP for 5 minutes, to the maximum anticipated wellhead pressure, is sufficient to confirm integrity.
- 3.2 The pressure control equipment rig-up, from the swab valve up, or from an installed downhole lubricator valve up, shall be long enough to allow retrieval of the whole toolstring, including items which may be retrieved from the well.

4 Well Intervention Operations

- 4.1 On production wells fitted with more than one tubing string all strings should be shut in during wireline rig-ups. Once rigged-up and tested, the other strings may be opened up until such time as the operations are complete and the equipment required to be rigged-down.
- 4.2 A recently calibrated and tested pressure relief valve of sufficient capacity, or an alternate safety mechanism, shall be included in the surface hook up on the fluid discharge line on any temporary or permanent pumping system that is capable of exceeding pressure ratings of any connected equipment.
- 4.3 A record of every wireline and coiled tubing toolstring (naming items, providing lengths, outside diameter thread type, fish neck sizes and any other salient points) shall be made prior to running in hole. This record shall be available at the wellsite throughout the time the toolstring is downhole.
- 4.4 Prior to the commencement of any well intervention operation, the swab valve turns to open and close shall be physically checked and noted.
- 4.5 If any well safety valve is held open by a temporary local control unit, that unit shall never be left unattended.
- 4.6 Pressures in the tubing and annuli shall be regularly monitored and recorded during all well operational activities.

5 Fishing

- 5.1 On completion of every well operation any tools or part of tools left downhole shall be accurately recorded and reported.
- 5.2 The configuration of BOPs in the rig up should be sufficient to close on both the fishing wire and the fished wire.



- 5.3 The lower BOP(s) should be fitted with rams and guides suitable for the fished wire.

6 Coiled Tubing Operations

- 6.1 On coiled tubing rig ups all primary pressure-containing connections up to the hydraulic BOPs should be flanged. Threaded connects can be used, provided a proper risk assessment is conducted.
- 6.2 The coiled tubing BOPs shall be fully function tested on installation and pressure tested at least once every 7 days, after any BOP changes or after a coil change-out. Tests shall be recorded.
- 6.3 On any perforated well where a coiled tubing BHA is worked on bottom or where the coiled tubing is to be run without check valves, shear-seal BOPs shall be installed, to give a reasonable expectation that once cut, the coiled tubing will drop to regain control of the tree valves. When shear-seal BOPs are employed, all connections between them and the tree or wellhead shall be flanged and double valve isolated, thereby excluding elastomers from connections beneath these BOPs.
- 6.4 Shear seal and shear ram preventers shall be capable of shearing the coil and any lines within it, at all pressures up to the preventer's maximum anticipated working pressure. When lower shear seal preventers are equipped with single needle valve pressure equalising capability, the valve shall be replaced with a plug.
- 6.5 To ensure that it will always be possible to unlatch the riser from a subsea well, the lower riser assembly shall be capable of severing coiled tubing of the maximum wall thickness to be used as well as any wireline or control lines contained within, and provide a seal.
- 6.6 A choke manifold containing at least two adjustable chokes shall be installed, unless the normal production flowline is used through the tree and production manifold. In this case, the single production choke is sufficient.
- 6.7 Unless pressure deployment is used, the lubricator shall be of sufficient length to contain the BHA between the swab valve and the pack-off or between the downhole lubricator valves, where fitted, and pack-off.
- 6.8 Dual flapper check valves shall be run above the BHA on all strings unless the planned operation precludes their use. When not utilised, the programme or local standard operating practice should refer to a detailed and current assessment of risks, mitigations and contingency responses.
- 6.9 When elastomer seals are used they shall be made of a material intended for exposure to prevailing wellbore conditions.
- 6.10 The vapour pressure and flash point shall be known for all potentially flammable fluids. Special precautions should be in place.
- 6.11 Remaining coil tubing fatigue life shall be known and monitored prior to and during each job. A coil replacement philosophy should be in place commensurate with operating conditions. The position of all welds and the fluid exposure history shall be documented for each reel of tubing.
- 6.12 For coil tubing operations the maximum operating tension loads of 80% of minimum yield strength shall not be exceeded.



Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 10-35. This Group Practice (GP) is based on parts of the *BP Drilling and Well Operations Policy* (BPA-D-001), and, for the subject matter covered herein, supersedes that document.

This ETP sets out the basic well operational requirements in specific terms, particularly in relation to Accountability, Well Operations, Well Intervention, Well Annuli Management, Tree & Wellhead Management and DHSV Management. This ETP shall be used as a basis for all well operational activity as it defines the minimum requirements in terms of the six elements.

Each Business Unit shall develop, implement and maintain a Well Operational Management System that recognises the individual BU well hazards and risks and is designed to meet the Group HSE Standard "Integrity Management".

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