Operate an Oil and Gas Process (Wellheads)

Overview

This process involves the operation of wellheads (oil well, gas producing well, water injection well, gas injection well) within operational envelopes in order to maximise the performance and exploitation of the reservoir. The process boundary is from downhole safety valve through the christmas tree and choke, to well fluid entry and to the process facilities.

This Occupational Standard involves:
1 Starting up the wellhead process
2 Operating and monitoring the wellhead process
3 Shutting down the wellhead process
4 Isolating and reinstating the wellhead process
5 Complying with HSE and safe systems of work

Who is this standard for
This standard is recommended for process operators/technicians working in oil and gas production.
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Performance criteria

You must be able to:

Start up the process
P1 obtain relevant operational instruction and ensure that information received on current operational status is accurate and complete
P2 brief relevant personnel and organise work of self and others, where appropriate
P3 prepare and integrate plant and utilities
P4 carry out pre-start up checks
P5 start up the process in accordance with procedures
P6 achieve steady state conditions
P7 identify and take relevant action to deal with faults and any operational issues

Operate and monitor the process
P8 monitor and take relevant action to optimise the process
P9 identify and take relevant action to deal with upsets in the process
P10 ensure effective on-going communication of relevant information on operational status
P11 maintain relevant records

Shut down the process
P12 obtain relevant operational instruction and ensure that information received on current operational status is accurate and complete
P13 brief relevant personnel and organise work of self and others where appropriate
P14 shut down the process in accordance with procedures
P15 monitor the shut down and take relevant action to deal with issues

Isolate and reinstate the process
P16 obtain relevant operational instruction and ensure that information received on current operational status is accurate and complete
P17 brief relevant personnel and organise work of self and others where appropriate
P18 isolate plant and equipment for maintenance
P19 carry out integrity testing of the isolation and confirm safety of the plant and equipment
P20 monitor and maintain the integrity of the isolation
P21 confirm completion of maintenance and associated documentation
P22 carry out integrity testing and confirm the plant and equipment safe to return to service
P23 de-isolate and reinstate plant and equipment

Comply with HSE and safe systems of work
P24 carry out relevant risk assessments and ensure that controls are in place to
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ensure that risks are as low as reasonably practicable
P25 ensure that relevant safety briefings are carried out
P26 work in accordance with safe systems of work
P27 take relevant steps to protect the environment
P28 identify issues which may impact on safe systems of work and take relevant action
P29 maintain relevant safety records
Knowledge and understanding

You need to know and understand:

- **Process - General**
  - K1 phases of the production process, the reactions taking place and the effect of changes on physical and chemical properties
  - K2 sources of information
  - K3 plant procedures and layout and its integration with other processes
  - K4 functioning of process control
  - K5 relation to control room operations
  - K6 how to connect to plant and utilities
  - K7 effects of loss of any utility and its reinstatement
  - K8 how to isolate plant and utilities from operating sources,
  - K9 the principles of de-isolation
  - K10 how to carry out integrity tests
  - K11 how to take samples and interpret results
  - K12 methods and consequences of depressurisation/pressurisation
  - K13 blowdown and relief systems and their limitations

- **Process – Specific**
  - K14 function and operation of equipment
  - K15 utilities required for operation of wellheads
  - K16 normal plant conditions and operating parameters for wellheads
  - K17 what steady state conditions are for wellheads operations and how they are achieved
  - K18 factor impacting on performance of wellheads operations and how to achieve optimum processing
  - K19 types and causes of deviations and faults for wellheads operations and the relevant actions to take when they occur
  - K20 the effects of changes in ambient conditions on process operations
  - K21 drain systems associated with the plant and their limitations
  - K22 flare/vent systems associated with the plant and their limitations

- **Safe Systems of Work**
  - K23 the implications of health, safety and environmental legislation
  - K24 work area hazards and how to identify/control/minimise them and reduce risks to as low as reasonably practicable
  - K25 safe systems of work procedure
  - K26 consequences of emissions to the environment and procedures for dealing with spillages and uncontrolled emissions
  - K27 segregation of waste materials

- **Critical and Emergency Situations**
  - K28 critical conditions for process and how to control and respond to them
K29 the effect and potential implications of loss of any critical process and its reinstatement
K30 the principles and effect of hydrocarbon hydrate formation, prevention and dispersion
K31 emergency response procedures for plant and location
K32 the operation of and implications of the emergency shutdown (ESD) control systems
K33 the operation of and implications of the fire and gas control systems
K34 action to be taken in event of critical and emergency situations
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Scope/range

Equipment:
• well head and associated annulus valve
• christmas tree and associated valves
• downhole safety valve and hydraulics
• choke
• control systems

Safe working practices
Candidates must demonstrate safe working practices at all times. This will involve:
• wearing correct PPE at all times
• complying with regulations
• proactively raising safety issues and participating in a safety culture
• ensuring work area is kept clear
• disposing of waste in accordance with environmental requirements
• taking part in safety drills and briefings.

Working relationships
Candidates must demonstrate effective working relationships at all times. This will involve:
• making clear efforts to establish and maintain productive working relationships
• ensuring effective communication with colleagues on operational matters
• communicating all relevant information on activities, progress and results to supervisors/managers
• providing support and advice for colleagues within limits of own responsibility and expertise.
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