

Operate an Oil and Gas Process (Nitrogen Generation)

Overview

This process involves the generation and distribution of nitrogen for use within processes.

This Occupational Standard involves:

- 1 Starting up the nitrogen generation process
- 2 Operating and monitoring the nitrogen generation process
- 3 Shutting down the nitrogen generation process
- 4 Isolating and reinstating the nitrogen generation 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/equipment for maintenance

P19 carry out integrity testing of the isolation and confirm the safety of the plant/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/equipment is 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

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Knowledge and understanding

You need to know and understand:

Process - General

- K1 generating nitrogen cryogenically and by solid bed absorption
- K2 phases of the production process, the reactions taking place and the effect of changes on physical and chemical properties
- K3 sources of information
- K4 plant procedures and layout and its integration with other processes
- K5 functioning of process control
- K6 relation to control room operations
- K7 how to connect to plant and utilities
- K8 effects of loss of any utility and its reinstatement
- K9 how to isolate plant and utilities from operating sources
- K10 the principles of de-isolation
- K11 how to carry out integrity tests
- K12 how to take samples and interpret results
- K13 methods and consequences of depressurisation/pressurisation
- K14 blowdown and relief systems and their limitations

Process – Specific

- K15 function and operation of equipment
- K16 utilities required for nitrogen generation
- K17 normal plant conditions and operating parameters for nitrogen generation
- K18 what steady state conditions are for nitrogen generation operations and how they are achieved
- K19 factor impacting on performance of nitrogen generation operations and how to achieve optimum processing
- K20 types and causes of deviations and faults for nitrogen generation operations and the relevant actions to take when they occur
- K21 the effects of changes in ambient conditions on process operation
- K22 drain systems associated with the plant and their limitations
- K23 flare/vent systems associated with the plant and their limitations

Safe Systems of Work

- K24 the implications of health, safety and environmental legislation
 - K25 work area hazards and how to identify and control/minimise them and reduce risks to as low as reasonably practicable
 - K26 safe systems of work procedure
 - K27 consequences of emissions to the environment and procedures for dealing with spillages and uncontrolled emissions
 - K28 segregation of waste materials
- #### Critical and Emergency Situations

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K29 critical conditions for the process and how to control and respond to them
K30 the effect and potential implications of loss of any critical process and its reinstatement

K31 the principles and effect of hydrocarbon hydrate formation, prevention and dispersion

K32 emergency response procedures for plant and location

K33 the operation and implications of the emergency shutdown (ESD) control systems

K34 the operation and implications of the fire and gas control systems

K35 actions to be taken in event of critical and emergency situations

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Scope/range

Equipment:

- compressors
- filters
- bottles
- pressure swing adsorption (PSA) skids.

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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