Australian Government

Department of Education, Employment and Workplace Relations

PMAOPS335A Conduct pipeline pigging

Release: 1

PMAOPS335A Conduct pipeline pigging

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	In a typical scenario, an operations technician in/on a large plant/platform looks after the pig launching and receiving operations. The type of pigs used may include batching, cleaning, gauging, intelligent and foam pigs.

Application of the Unit

Application of the unit	Generally, the operations technician would be the key person in the team involved in the pigging operations and would be capable of performing all parts of this unit. At all times they would be liaising and cooperating with other members of the team. The operations technician would: • understand the risks associated with pigging and closure mechanisms • prepare the pipeline system for pig launching and rectify any operational problems • prepare the pipeline system for pig receival, and rectify any operational problems • interpret or assist in interpreting pigging data.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work.	1.1. Identify work requirements 1.2. Identify and control hazards 1.3. Coordinate with appropriate personnel
2. Prepare the pipeline system for pigging (launching/receiving).	2.1. Liaise with the relevant people to ensure correct flow conditions are in the pipeline system prior to launching 2.2. Verify that all required permits have been issued 2.3. Prepare specified pig in accordance with requirements 2.4. Prepare pipeline for pigging operation in accordance procedures.
3. Launch, monitor progress and/or receive pig	3.1. Prepare launching and receiving scraper barrels and intermediate site for launching and receiving operations 3.2. Load the pig into the scraper barrel and launch 3.3. Calculate pig travel speed during the pig's progress 3.4. Monitor and track progress of the pig in the pipeline system 3.5. Take appropriate actions 3.6. Receive pig in accordance with legislative and enterprise procedural requirements
4. Interpret pigging data	4.1. Inspect the received pig to determine wear and/or other required information 4.2. Inspect, measure and or sample the waste material gathered during pigging operations as required 4.3. Take appropriate action 4.4. Dispose of waste materials to procedure 4.5. Record data accurately to assist with assessment of pipeline condition.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes the ability to isolate the causes of problems to an item of equipment within the pigging system and to distinguish between causes of problems/alarm/fault indications such as: • instrument failure/wrong reading • electrical failure • mechanical failure • operational problem.
Required knowledge
The knowledge referred to in the Evidence Guide for this unit includes: • reasons for pipeline pigging and the type of pig used for each application • prevention/mitigation measures for closure risks • all items on a schematic of the pigging system and the function of each • the nature/condition of materials/flows entering and leaving the scraper barrels during the launching and receiving operations • correct valve sequences, • expected system pressures for launching/receiving operations • types of pigs and their purpose. • principles of pigging • physics and chemistry relevant to the pigs, pipes and materials • process parameters and limits, eg temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, eg radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility.

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual pig/pipe and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for assessment of parts of this unit. Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios, role plays and 3D virtual reality interactive systems. In the case of evacuation training or training for competencies practised in life threatening situations, simulation may be used for the bulk of the training. This unit of competency requires an application of the knowledge contained in the use of pigs and associated equipment, to the level needed to maintain control and recognise and resolve problems. This can be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • early warning signs of equipment/processes needing attention or with potential problems are recognised • the range of possible causes can be identified and analysed and the most likely cause determined • appropriate action is taken to ensure a timely return to full performance • obvious problems in related plant/platform areas are recognised and an appropriate contribution made to their solution.

EVIDENCE GUIDE	
	These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations which may have been generated from past incident history of pigging operations, pigging incidents from similar plants/platforms around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to pipeline pigging equipment over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with other relevant units.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Range Statement

RANGE STATEMENT	
The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations which form part of the pigging system. For your operation this may include: • batching pigs • cleaning pigs • foam pigs • gauging pigs • intelligent pigs.
Pigging problems	Typical pigging problems may include: • closure seal failure resulting in hydrocarbon release and possible explosion • closure fastening mechanism fails and results in door striking technician • stuck pig • delayed pig • scraper enclosure leaks • leaking valves • damaged pig.
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions

RANGE STATEMENT	
	• standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Health, **safety and environment** (**HSE**)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Unit Sector(s)

Unit sector	Support/generic

Competency field

Competency field	

Co-requisite units

Co-requisite units		