



Australian Government

Department of Education, Employment and Workplace Relations

PMAOPS319A Adjust batch

Revision Number: 1

PMAOPS319A Adjust batch

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the adjustment of a batch which has been manufactured to bring it into specification. It typically applies in batch plants where variability of materials leads to a variability in product which needs to be adjusted for.
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Application of the Unit

Application of the unit	In a typical scenario a batch has been made in a batch kettle or vessel. The manufacturing process is not important to this unit and may involve a chemical reaction between materials or a dissolution or a mixing of materials or other process. After the batch has initially been made there will be some testing of the batch and then some adjustments will need to be made to bring it into specification. The adjustments may be to the chemical, physical or biological properties of the batch (or some combination of these). The adjustments will typically occur in the making kettle/vessel although this is not a necessary component of this unit. The operations technician would: • estimate what needs to be done • make the adjustment(s) • recheck and readjust as required • note anything which was out of the ordinary and take appropriate action The operations technician may make these adjustments in liaison with another person who does the required testing, or they may also do the testing themselves. Testing is not part of this unit - see relevant testing unit.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
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Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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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 1.4. Take sample(s) as required.
2. Estimate required adjustment.	2.1. Interpret test results 2.2. Identify any conflicting results or suspicious results and take appropriate action 2.3. Identify required adjustment protocol for this adjustment 2.4. Estimate amount and type of materials to be added or other adjustments required 2.5. Estimate duration of this adjustment.
3. Make adjustment.	3.1. Obtain required materials for adjustment 3.2. Determine addition rate for materials/rate of applying adjustment 3.3. Make adjustment at the determined rate 3.4. Monitor the batch as the adjustment occurs 3.5. Take appropriate action.
4. Recheck batch	4.1. Repeat the adjustment process as required to bring batch to specification 4.2. Identify likely problems arising from adjustment process 4.3. Take appropriate action

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

- efficient and effective operation of plant/equipment
- hazard analysis
- completing plant records
- communication
- problem solving
- analysis of test results

Required knowledge

The knowledge referred to in the Evidence Guide for this unit includes:

- product specifications and tolerances
- systems operating parameters
- system integrity limits
- process specific physics, chemistry and mathematics
- distinguish between elements, compounds and mixtures in their raw materials and products
- describe the nature/condition of materials at each stage of the reaction (or making/adjusting process), the changes which have occurred in that stage and why they have occurred
- describe reaction (or making/adjusting process) in chemical terms, including the effect of changing variables such as temperature, pressure, catalyst, concentration, pH
- describe any reaction(s) using appropriate chemical equations
- state the type of vessel/reactor used and their characteristics (advantages and limitations)
- describe the methods of controlling the reaction/or adjustment, including rate and yield
- impact of external factors, eg variations in weather, feed etc
- effective communication techniques
- organisation procedures

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 plant 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 of 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 the process control system and its integral 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 responses. 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:

- estimates and protocols used are appropriate
- potential problems are recognised and appropriate action taken

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 the past incident history of the plant, incidents on similar plants around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to a batch plant where adjustments are done 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.
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 italicized 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 of 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 product manufacture/adjustment system. This may include (select relevant items): • kettle or mixing vessel • heating and or cooling • material addition equipment • pumps, valves and pipes • mixers • fume/vapour extraction • reflux systems • emergency shutdown systems • communications systems.
Adjustment protocol	Adjustment protocols may include: • aiming to make a '90% (or other%) adjustment' first time • aiming to 'hit the target' first time • under/overshoot the target • other techniques of achieving optimal adjustment.
Adjustments required	Adjustments required may include: • adding more of some of the original materials • adding some additional materials • continuing to heat/stir or otherwise process the batch (with or without material addition)
Likely problems from adjustment process	Likely problems from adjustment process include: • product deterioration from extended processing • kettle/vessel overflows from repeated material additions • misleading test results causing inappropriate adjustments
Appropriate	Appropriate action includes:

RANGE STATEMENT	
action	• 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 • 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	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		
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