



Australian Government

PMAOPS319 Adjust batch

Release: 1

PMAOPS319 Adjust batch

Modification History

Release 1. Supersedes and is equivalent to PMAOPS319A Adjust batch

Application

This unit of competency covers the skills and knowledge required to make adjustments to a batch of product to bring into specification. The adjustments may be to the chemical, physical or biological properties of the batch (or some combination of these).

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to interpret test results, estimate and make adjustments, and identify, correct and report operational problems.

This unit of competency applies to a range of manufacturing processes, for example, chemical reaction between materials, dissolution or mixing of materials. It typically applies in batch plants where variability of materials leads to a variability in product which needs to be adjusted for.

In a typical scenario a batch has been made in a batch kettle or vessel.

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.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit does not apply to testing. See relevant testing unit.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Prepare for work	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
2	Estimate required adjustment in accordance with procedures	2.1	Take samples for required test
		2.2	Interpret test results
		2.3	Identify any conflicting or suspicious results and take action
		2.4	Identify required adjustment protocol for this adjustment
		2.5	Estimate amount and type of materials to be added or other adjustments required
		2.6	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 using measured/indicated data and senses
		3.5	Take action specified by procedures
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 action specified by procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through state/territory 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.

Hazards

Hazards include one or more of the following:

- electricity
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)

- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Monitoring

Batch is monitored for one or more of the following:

- product deterioration from extended processing
- kettle/vessel overflows from repeated material additions
- misleading test results causing inappropriate adjustments

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information such as journals, engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other

form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or both of the following:

- manually in the plant
- using local controller in the plant

This competency does not require the operation of a central control panel.

Product

Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Equipment and unit operations

Equipment and unit operations which form part of the product manufacture/adjustment system include two or more of the following:

- 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 include one or more of the following:

- aiming to make a '90% (or other%) adjustment' first time
- aiming to 'hit the target' first time
- under/overshoot the target

- other techniques for achieving optimal adjustment as defined by the organisation

Adjustments required

Adjustments required include one or more of the following:

- 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)

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS319A Adjust batch

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>

Assessment Requirements for PMAOPS319 Adjust batch

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include the ability to:

- analyse and interpret test results
- use data and senses to monitor plant and maximise performance
- apply process knowledge to determine and make adjustments to achieve specifications
- identify hazards and risks and apply risk control procedures
- identify early warning signs of equipment/processes needing attention or with potential problems
- resolve problems.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- systems' operating parameters, integrity limits, including temperature, pressure, flow, pH and concentration
- product specifications and tolerances
- methods of controlling the reaction/or adjustment, including rate and yield and the advantages and disadvantages of each
- routine and non-routine problems that may arise, the range of possible causes and processes to develop solutions
- process-specific science (physics, chemistry and biochemistry) to the level of being able to interpret the science and extract factors controlling the process and product and by-product production rate and quality (e.g. for chemistry interpret the equation for factors controlling rate and yield and also interfering reactions, such as by-products)
- hierarchy of control
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:

- should occur over a range of situations which include typical disruptions to normal, smooth operations
- will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
- must include the use of industrial style vessel allowing for adjustment of contents
- may use industry-based simulation for part only of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - pilot plant operation
 - demonstration of skills
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment

- appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
- appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
 - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
 - conducting on-the-job training/assessments of the type of work being assessed
 - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

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