



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM15007B Conduct product and/or process capability studies**

**Release: 1**

## MEM15007B Conduct product and/or process capability studies

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers conducting process capability studies, setting control limits and selecting sampling plans.
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to the analysis of data from a production section or processes using appropriate statistical techniques. Consultation may be required with production or process personnel and is undertaken within the enterprise's total quality plan.</p> <p><b>Band: B</b></p> <p><b>Unit Weight: 6</b></p>
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		
<b>Path 1</b>	MEM12024A	Perform computations
	MEM12025A	Use graphical techniques and perform simple statistical computations
	MEM15001B	Perform basic statistical quality control

<b>Prerequisite units</b>		
	MEM15008B	Perform advanced statistical quality control

## Employability Skills Information

<b>Employability skills</b>	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. Conduct process capability studies	1.1. Procedure for conducting capability study is determined. 1.2. Instructions for personnel conducting trial run are prepared. 1.3. Data from trial run is analysed and the process capability is calculated. 1.4. Possible number of product defects from a particular process is estimated. 1.5. Optimum target mean to suit process capability data is determined. 1.6. Reports listing various options from process capability studies are prepared. 1.7. Design specifications based on an analysis of data are recommended.
2. Set control limits	2.1. Control limits for sample/subgroup average, range and standard deviation are calculated. 2.2. Warning limits for subgroup average, range and standard deviation are calculated. 2.3. Course of action resulting from out of control situation is determined and documented to standard operating procedures.
3. Select sampling plans	3.1. Appropriate sampling plan to suit production schedule is selected and acceptable quality limits are determined, taking into account specified producer and consumer risks. 3.2. Sampling plan is documented including implementation strategy.

## Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>
Look for evidence that confirms skills in: <ul style="list-style-type: none"> <li>• collecting and collating data</li> </ul>

**REQUIRED SKILLS AND KNOWLEDGE**

- analysing data, identifying solutions and developing recommendations
- preparing reports listing the various options identified from the process capability study
- determining process design specifications from process capability data
- documenting sampling plan and implementation strategy

**Required knowledge**

Look for evidence that confirms knowledge of:

- the process to be studied
- the procedures for conducting process capability studies
- the data used to calculate the process capability
- the procedures for estimating the possible number of product defects
- options for improving the process and benefits of each
- the procedures for determining the optimum target mean
- the procedures for setting control limits
- numerical operations and calculations/formulae for process capability, control limits and other outcomes within the scope of this unit
- the procedures for setting warning limits
- the concept of 'out of control' situations
- the action to be taken when an 'out of control' situation is detected
- the procedures for documenting 'out of control' situations
- the acceptable level of quality
- a variety of sampling plans and their application
- the sampling plan to be applied to a given situation
- the reasons for selecting the chosen plan
- the acceptable quality limits
- the risks associated with identifying acceptable quality limits for the producer and customer
- the procedures for documenting and implementing sampling plans
- hazards and control measures
- use and application of personal protective equipment
- safe work practices and procedures

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to conduct product and/or process capability studies. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with conducting product and/or process capability studies or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p><b>Method of assessment</b></p>	<p>Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**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. 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) may also be included.

<b>Procedure</b>	Frequency of sample, sample size
<b>Data</b>	From periodic samples drawn from a trial run of the process
<b>Process capability</b>	The natural tolerance of the process which may be calculated at 3 sigma/standard deviations
<b>Product defects</b>	From a consideration of 3 or 6 sigma standard deviations compared to specification requirements etc.
<b>Various options</b>	Adjustment of process to move average; improvements to reduce process capability; changes to reduce assignable causes
<b>Appropriate sampling plan</b>	Plans within the adopted quality system, sample size, frequency of sample etc.

**Unit Sector(s)**

<b>Unit sector</b>	
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## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Quality
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