



Australian Government

Department of Education, Employment and Workplace Relations

MSS405050A Determine and improve process capability

Release: 1

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Modification History

New unit, superseding MSACMT650A Determine and improve process capability* - Equivalent

* New prerequisite *MSS404052A Apply statistics to operational processes* superseding MSACMT452A Apply statistics to processes in manufacturing

Unit Descriptor

This unit of competency covers the skills and knowledge required to determine the actual (as distinct from design) capability of a process and then to analyse that process to remove assignable causes and reduce random causes. This would typically be done by a manager or technical expert support person either working in a team, or in close liaison with key stakeholders. Process capability is typically calculated using standard deviations.

Application of the Unit

This unit applies to an individual (who may be a production manager, plant/process engineer, technical specialist or similar) who is responsible for developing plans to stabilise and then improve process capability and following agreement the implementation of the plans to improve process capability. The organisation may use either a six sigma or three sigma process.

This unit primarily requires the application of skills associated with communication in gathering and analysing data and consulting with relevant personnel. Teamwork, problem solving, initiative and enterprise, and planning and organising are required to determine causes to variations and implement solutions. This is done in an environment using computer technology and also requires aspects of self-management and learning to ensure feedback and new learning is integrated into process improvements and operations management control systems.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MSS404052A Apply statistics to operational processes

Employability Skills Information

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

1	Obtain data for process capability study	1.1	Identify the process requiring capability analysis including relevant procedures
		1.2	Identify customer specifications for product or service
		1.3	Obtain process capability data
2	Analyse data	2.1	Identify assignable causes of variation in liaison with relevant personnel
		2.2	Develop solutions to eliminate variation due to assignable causes in liaison with relevant personnel
		2.3	Analyse random variations for possible causes in liaison with relevant personnel
		2.4	Confirm causes of random variation
		2.5	Develop solutions to reduce random variations in liaison with relevant personnel

- 3 Take action to improve process capability
 - 3.1 Develop plans to implement solutions
 - 3.2 Liaise with relevant personnel to implement solutions
 - 3.3 Gain necessary approvals, as required
 - 3.4 Monitor implementation and make adjustments, as required
 - 3.5 Determine new/revised process capability
 - 3.6 Implement revised process capability regime

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- using a variety of statistical methods and calculations
- communicating and negotiating at all levels in the organisation and value stream and with individuals of different levels of literacy and numeracy
- negotiating with employees, suppliers and customers, where necessary, to achieve access to, or collection of, data
- planning process and data collection changes required for process improvement, including:
 - objectives
 - performance indicators to be monitored to indicate success of change
 - resources required
 - training required
 - communication and liaison required with employees, suppliers and customers
 - implementation period required
- analysing variations and categorising into assignable and random cause
- undertaking self-directed problem solving and decision-making on issues of a broad and/or highly specialised nature and in a wide variety of contexts
- working in and leading teams for data collection and process improvement
- using software computers and terminals, as required, to collect and analyse data

Required knowledge

Required knowledge includes:

- data collection methods
- data processing techniques required to establish variability and normal distribution
- calculate three sigma or six sigma processes, as relevant
- random and non-random results and processes for recognition of assignable causes
- causes of different types of non-random results
- causes of random variation
- process understanding sufficient to translate the data into variations in the process and determine methods of controlling them

Evidence Guide

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>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>A person who demonstrates competency in this unit must be able to provide evidence of their ability to:</p> <ul style="list-style-type: none"> • collect or obtain data relevant process capability data from a variety of sources data • work with people and analyse data to determine assignable causes • plan and prepare improvement proposals • monitor implementation of improvement proposals.
<p>Context of and specific resources for assessment</p>	<p>Assessment of performance must be undertaken in a workplace using or implementing one or more competitive systems and practices.</p> <p>Access may be required to:</p> <ul style="list-style-type: none"> • workplace procedures and plans relevant to work area • specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the assessee • documentation and information in relation to production, waste, overheads and hazard control/management • reports from supervisors/managers • case studies and scenarios to assess responses to contingencies.
<p>Method of assessment</p>	<p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> • demonstration in the workplace • workplace projects • suitable simulation • case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on) • targeted questioning • reports from supervisors, peers and colleagues (third-party reports) • portfolio of evidence. <p>In all cases it is expected that practical assessment will</p>

	<p>be combined with targeted questioning to assess underpinning knowledge.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p>
Guidance information for assessment	<p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.</p>

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.

Competitive systems and practices	<p>Competitive systems and practices may include, but are not limited to:</p> <ul style="list-style-type: none"> • lean operations • agile operations • preventative and predictive maintenance approaches • monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), kanban and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • overall equipment effectiveness (OEE) • takt time
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	<ul style="list-style-type: none"> • process mapping • problem solving • run charts • standard procedures • current reality tree <p>Competitive systems and practices should be interpreted so as to take into account:</p> <ul style="list-style-type: none"> • the stage of implementation of competitive systems and practices • the size of the enterprise • the work organisation, culture, regulatory environment and the industry sector
Six sigma	<p>Six sigma refers to:</p> <ul style="list-style-type: none"> • a statistical tool for recording defects and determining capability which equates to only 3.4 defects per million opportunities for each product or service transaction <p>Six sigma is also used as a general term covering a competitive systems and practices approach. Six sigma training typically covers several units of competency in this Training Package</p>
Three sigma	<p>Three sigma refers to:</p> <ul style="list-style-type: none"> • a traditional statistical process control uses three sigma limits which equates to 3 defects per thousand opportunities for each product or service transaction
Process capability data	<p>Process capability data includes:</p> <ul style="list-style-type: none"> • customer requirements for product or service • process stability (control chart) performance • other charts and data
Procedures	<p>Procedures may include:</p> <ul style="list-style-type: none"> • work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions and similar instructions provided for the smooth running of the plant • good operating practice as may be defined by industry codes of practice (e.g. good manufacturing practice (GMP) and responsible care) • government regulations

	Procedures may be: <ul style="list-style-type: none">• written, verbal, computer-based or in some other format
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Unit Sector(s)

Unit sector

Competitive systems and practices

Custom Content Section

Not applicable.