Australian Standard™

Guidelines for implementation of statistical process control (SPC)

Part 1: Elements of SPC

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PREFACE

This Standard was prepared by the Australia members of Joint Standards Australia/New Zealand Committee QR-008, Quality Systems. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australia/New Zealand Standard.

This Standard is identical with, and has been reproduced from ISO 11462-1:2001, *Guidelines for implementation of statistical process control (SPC),* Part 1: *Elements of SPC*.

The objective of this Standard is to provide analysts with the elements for implementing an SPC system to increase knowledge about a process, steer a process to behave in a certain way, reduce variation of final-product parameters or in other ways improve performance of a process in order to guide an organization in planning, developing, executing or evaluating an SPC system.

The term ‘normative’ has been used in this Standard to define the application of the annex to which it applies. A ‘normative’ annex is an integral part of a Standard.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover

(b) In the source text ‘this part of ISO 11462’ should read ‘this Australian Standard’.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian Standard/New Zealand*	
ISO		AS/NZS ISO	
9000	Quality management systems—Fundamentals and vocabulary	9000	Quality management systems—Fundamentals and vocabulary

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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INTRODUCTION

ISO 11462 provides guidelines for the implementation of a statistical process control (SPC) system. These guidelines are aimed primarily at increasing production efficiency and inherent capability, and reducing interval and cost.

This part of ISO 11462 provides *elements* to guide an organization in planning, developing, executing, and/or evaluating a statistical process control system. By implementing those elements deemed applicable and appropriate by customer and supplier, an organization may satisfy a requirement to adopt a comprehensive and effective SPC system. By also deploying a quality system with the aim of ensuring that products and services meet customer requirements (such as the system defined by ISO 9001), an organization can improve the infrastructure so as to help hold the gains from its SPC system.

This part of ISO 11462 extends the definition of process control to integrate the traditional definitions of statistical process control, algorithmic process control, and model-based control methods. These are different approaches with the same purpose of reducing variation in both products and processes.

This part of ISO 11462 also extends the definition and usage of the term *parameter* to apply to a process parameter or a product parameter; and to recognize that a product parameter can be either an in-process product parameter or a final-product parameter. Under specified conditions of measurement, a product parameter can be equivalent to a product characteristic.

Some considerations given in the formulations of ISO 11462 are the following:

a) Elements of part 1 of ISO 11462 guide an organization in how to implement an SPC system. Specific tools and techniques that experience has shown useful in applying these elements within processes will be listed in part 2 of ISO 11462.

b) Users of ISO 11462 should be aware that the use of “should” throughout both parts of ISO 11462 indicates that

   1) among several possibilities, one or more are recommended as being particularly suitable and effective, without mentioning or excluding others;

   2) a certain course of action is preferred but not necessarily required for a process in order to gain the economic control of production.

   This choice of language does not indicate requirements which are to be strictly followed in order to conform to this International Standard and from which no deviation is permitted.

AUSTRALIAN STANDARD

Guidelines for implementation of statistical process control (SPC) —

Part 1:
Elements of SPC

1 Scope

Statistical process control (SPC) concerns the use of statistical techniques and/or statistical or stochastic control algorithms to achieve one or more of the following objectives:

a) to increase knowledge about a process;

b) to steer a process to behave in the desired way;

c) to reduce variation of final-product parameters, or in other ways improve performance of a process.

These guidelines give the elements for implementing an SPC system to achieve these objectives. The common economic objective of statistical process control is to increase *good* process outputs produced for a given amount of resource inputs.

NOTE 1 SPC operates most efficiently by controlling variation of a process parameter or an in-process product parameter that is correlated with a final-product parameter; and/or by increasing the process's robustness against this variation. A supplier's final-product parameter may be a process parameter to the next downstream supplier's process.

NOTE 2 Although SPC is concerned with manufactured goods, it is also applicable to processes producing services or transactions (for example, those involving data, communications, software, or movement of materials).

This part of ISO 11462 specifies SPC system guidelines for use

— when a supplier's capability to reduce variation in processes associated with design or production needs to be proven or improved; or

— when a supplier is beginning SPC implementation to achieve such capability.

These guidelines are not intended for contractual, regulatory or certification use.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11462. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11462 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3534-1:1993, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms.*

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