



KEEPING AND MAINTAINING RECORDS IN IMAGE SYSTEM

SINGAPORE CUSTOMS

Version 1.2 on 13 May 2016
Version 1.1 on 08 May 2015
Version 1.0 on 28 Dec 2011

Keeping and Maintaining Records in Image System

1 Definition of Terms Used

In this Guide, the terms used, as defined under the Evidence (Computer Output) Regulations and its First Schedule, are as follows:

- (a) **“Audit Trail”** means a computer record of changes to either the data enabling access to images or to the images themselves, where such changes affect the content or availability of images;
- (b) **“Capture”** means the recording of the contents of a document by photographic, electronic or other means;
- (c) **“Committal”** means the introduction of a captured image into the database environment of the image system;
- (d) **“Image”** means a representation of a document generated by photographic, electronic or other means, which is stored in the Image System;
- (e) **“Image System”** means any computer system that is capable of capturing, storing and retrieving Images or generating Image System Output;
- (f) **“Image System Output”** means a computer output from an Image System;
- (g) **“Process”** includes a computer system.

2 Introduction

Pursuant to section 90(1) of the Customs Act (Cap. 70) (**the “Act”**), all importers, exporters and agents (**hereinafter referred to as “traders”**) are required to keep documents and records relating to the purchase, importation, sale or exportation of their goods, for not less than 5 years. Failure to comply with the requirement constitutes an offence under section 90(3) the Customs Act.

Section 87(3) of the Act empowers the Director General to impose reasonable requirements as necessary for securing information as specified in section 87(1) of the Customs Act. The requirements in this Guide shall be considered as an approved means for the preservation of information as specified in section 87(1) of the Act. Traders who wish to use an Image System to store Images without retaining the physical paper document, and comply with section 90 of the Act may follow this Guide. Traders do not need to seek further approval from the Director-General of Customs if they can comply with the requirements in this Guide.

Traders may engage service bureaus to image, store and maintain the

Keeping and Maintaining Records in Image System

documents and records listed in section 90(1) of the Act. Nonetheless, it is still the traders' responsibility to ensure compliance with section 90 of the Act and the requirements in this Guide.

For the avoidance of doubt, this Guide does not replace the requirements of the Evidence Act (Cap. 97) or the Evidence (Computer Output) Regulations (**the "Regulations"**).

Traders who wish to use Image Systems to admit evidence under the Evidence Act or the Regulations should consult their lawyers.

The compliance criteria can generally be divided into 4 categories:

- (a) Document capture;
- (b) Image storage and management;
- (c) Image output; and
- (d) Miscellaneous.

3 Document Capture

3.1 Document Capture -- Image Quality

All information contained in the document (be it graphical, textual, hand written or otherwise) must be capable of being captured in its entirety (except gridlines printed in drop-out ink for image recognition of data) and with a level of accuracy that ensures that no information that can reasonably be expected to form part of any subsequent business processes is lost or altered in any way. Quality assurance procedures consistent with document volumes, the quality of the original documents or any other relevant factor, must be put into place to ensure image quality.

- (a) The scanning system used must include proven hardware and software components reputable for both quality and performance.
- (b) The staff operating the scanner must routinely check the quality of the Images against a set of "benchmark" images and, if necessary, adjust the scanner's settings to ensure that the contents of the document are accurately captured.
- (c) If the volume of documents to be captured is large, staff experienced in quality control should conduct randomised checks on the image quality.

Keeping and Maintaining Records in Image System

3.2 Document Capture -- Image Enhancement

Where there is any doubt that the accuracy of the relevant contents of an original document may be affected by the enhancement technique, then an original, un-enhanced version of the Image must be retained.

- (a) Enhancement tools should be used only for the removal of unwanted elements introduced by the scanning process or for improving the quality or clarity of the Image.
- (b) Control procedures must be put in place to prevent loss or corruption of the original contents of the document during the enhancement process.
- (c) Where an Image has been substantially enhanced, the original un-enhanced version of the Image must be retained. If the original un-enhanced Image is of such poor quality as to be illegible, the original document must be kept.

3.3 Document Capture -- Image Editing

The Image System must not allow erroneous alterations to be made to the Image of an original document, whether through the editing of an Image, the introduction of new Images from another source or the deletion of one or more Images. Where Image Editing forms a part of the normal business process prior to Committal, a full Audit Trail must be maintained. Where there is any doubt that the accuracy of the relevant contents of the original document may be affected by the Image Editing, then, an original un-edited version of the Image must be retained.

- (a) Controls must be put in place to prevent loss of information during any alteration to the original document, whether deliberate or otherwise. .
- (b) A full Audit Trail of any alteration done to the original document must be maintained.
- (c) The original document must be retained if the information contained in the original document could not be properly captured even after any alterations were made to the original document

3.4 Document Capture -- Image Indexing

Where information is required to be assigned to individual images or groups of images in order to facilitate future retrievals, reasonable steps must be taken to ensure that such information is accurate.

- (a) Staff involved in classifying and indexing Images ("**Image Indexing**") must be properly trained.

Keeping and Maintaining Records in Image System

- (b) There must be adequate checks or validating procedures to ensure that Image Indexing, be it manual or automated, is accurate.
- (c) Index values should, as far as possible, be automatically assigned by the system rather than be manually typed in.
- (d) The index data must be stored in a secured environment to prevent accidental or deliberate data modification.
- (e) The storage system used must include proven hardware and software components reputable for security, quality and performance.

3.5 Document Capture -- Partial Image Capture

Where partial Images are captured by the Image System for efficiency reasons (e.g. only the data on a standard form, omitting background elements such as pre-printed logos, instructions, lines, shading, etc.), then the Process must be capable of maintaining a record of the separate image elements of a document and their relationships.

- (a) The Image of an oversized document must not be cropped when an Image of it is being captured. However, Images of the separate components of the oversized document can be captured if the relationship between the separate components can be maintained. If the relationship between the separate components cannot be maintained, the original copy of the oversized document must be kept.
- (b) Where certain standard elements of a document are omitted when the Images are captured by the Image System, a separate record of these image elements which are omitted must be kept and properly related to each other so as to allow for subsequent reconstruction of the document if required.

3.6 Document Capture – Committal

The Process must ensure that all valid Images that are captured are correctly committed to the Imaging System.

- (a) Sufficient indexing detail must be assigned to the Image in transitional storage for the identification and retrieval of the Image prior to Committal. Upon successful Committal, full indexing must be done.
- (b) Once an Image is Committed, it should be placed in a secure environment with adequate disaster recovery procedures. This also applies to Images that are pending Committal.

Keeping and Maintaining Records in Image System

3.7 Document Capture – Completeness

Measures must be put in place to ensure that all documents are captured in the event of a system disruption.

- (a) Measures to ensure completeness of information must be instituted throughout the whole image process (“**Image Process**”) ¹ from document preparation for scanning to final Committal to the database.
- (b) In the event of system failure or disruption at any stage of the Image Process, there should be adequate controls or recovery procedures to ensure that information contained in the original document is not lost.

3.8 Document Capture – Additions

Where, as part of a business process, information is added to a document or an Image thereof (either physically or electronically) and the original information and the new information must be distinguished for the life of the document or the Image thereof, then, the new information must be clearly distinguishable from the original information. This may be achieved by the content or context of the new information, its placement, colour (in the case of colour imaging) or any other relevant method.

- (a) Where information needs to be added to the original document prior to scanning, the original contents of the document shall be clearly distinguished from the information that has been added.
- (b) Due care must be exercised when inserting the additional information to ensure that the integrity and accuracy of the original document is not impaired.

4 Image Storage and Management

4.1 Image Storage and Management -- Image Integrity

From the time that Committal of an Image commences until the time that an Image is no longer required to be retained, the Image System must ensure that the Image and any other data associated with that Image can be retrieved. Therefore, reasonable image and data security, backup and recovery measures must be in place.

- (a) The Image System must be able to reproduce the complete information from all the separate components associated with an image.
- (b) All Images and their associated information and index data must be

¹ “Image Process” means the process by which a trader keeps and maintains his records in an Image System.

Keeping and Maintaining Records in Image System

properly backed up for subsequent recovery in the event of system failure or disruption.

- (c) When changing storage media, proper measures must be taken to ensure that index data and images are not lost or corrupted.

4.2 Image Storage and Management -- Image Update

The Image System must not allow changes to be made to the Images after the Committal of that Image.

- (a) After the Committal of an Image, deletion of the Image is strictly prohibited.
- (b) If changes to the contents of an Image are required, they should only be done through the use of a separate edit layer and not directly onto the Image itself. The separate edit layer must also be clearly distinguishable from the original copy of the Image and be capable of being retrieved separately from the original copy.
- (c) A full Audit Trail should be kept of all changes to contents of an Image.

4.3 Image Storage and Management -- Image Index Update

In the event of a change to the image index which may affect the retrieval of the Images, a full Audit Trail must be maintained and a previous unamended version of the image or group of images should be retained.

- (a) Proper control measures must be taken when performing any change to the image index. Examples of such measures include having a senior or properly trained staff to perform any changes to the image index and another officer of similar rank or training to verify it.
- (b) A full Audit Trail must be kept of all changes made to the image index. A previous unamended version of the Image prior to the change(s) should be kept for subsequent retracing if required.
- (c) In the event that a system-generated Audit Trail is not available due to the use of special access facilities, a manual Audit Trail record should be maintained. The use of such special access privileges should be restricted and properly controlled.

5 Image Output

5.1 Image Output -- Image Integrity

Reasonable measures must be in place to ensure that, once output by the Image

Keeping and Maintaining Records in Image System

System (i.e. when the Image is no longer under the control of the Image System database environment), the Images cannot be tampered with (e.g. in the case of printed output, the print spool must be secured).

- (a) When an Image and its related data are placed in a transitional environment pending Image System Output, the transitional environment must be properly secured to prevent tampering of the contents of the Image and its related data.

5.2 Image Output -- Completeness

Where data has been captured during the life of the Image, which may reasonably be expected to form a part of the information relating to that document (e.g. annotations, notes, overlays, etc.), then the Image System must be capable of accurately reproducing that information together with the output Images.

- (a) The Image System must be capable of printing and displaying or indicating all the information that is associated with the Image.

5.3 Image Output -- Changed Images

Where an image or group of images have been amended or erroneously tampered with, the Image System must be capable of producing an Audit Trail together with the Image System Output.

- (a) The Image System must be able to indicate that amendments or updates have been made to an Image during Image System output.
- (b) The Audit Trails of changes/amendments or updates made to the index data or Images must be capable of being printed for subsequent verification.

5.4 Image Output -- Composite Images

Where an Image System Output is generated as a result of the combination of two or more separate Images (through techniques such as overlaying) particularly when one or more of these separate Images were not directly generated from the original document, then adequate procedures must be in place to ensure that the combined output accurately represents the original document.

- (a) When combining Images for an Image System Output, due care must be taken to ensure that the original contents of the respective individual Images are not impaired.

Keeping and Maintaining Records in Image System

6 Miscellaneous

6.1 Computer Applications

Where computer applications or programs are developed to automate any of the document capture, storage and management or output procedures, they must not contravene any of the compliance criteria specified in the First Schedule to the Evidence (Computer Output) Regulations (**the “First Schedule”**).

- (a) All programs or computer applications, whether directly or indirectly linked to the Image System, must comply strictly with all the provisions of the First Schedule.
- (b) A general control framework should be put in place to ensure that the whole Image Process is conducted within a secure environment.
- (c) Images must remain retrievable in the event of system change, computer upgrades or change of software or hardware vendors.

6.2 Physical and Environmental Security

Reasonable physical and environmental measures must be in place to protect the equipment and storage media from unauthorised access and excessive environmental levels.

- (a) Adequate physical and environment security measures should be taken to prevent the risk of accidental or malicious damage to, or theft of, computer equipment or media.
- (b) Routine checks should be made of media and backup copies of files to prevent the loss of data through media deterioration.

6.3 System and Application Security

Security controls must be implemented to prevent unauthorised access and modifications to the Image file, the index file containing descriptive information about the image file as well as the Audit Trail. Physical security of the data including backup and recovery must be addressed.

- (a) Access to Image files, index files containing descriptive information about the Image files and the Audit Trail log should be adequately secured to prevent unauthorised access and modifications.

6.4 Independent Record Keeper

Where a trader chooses to have a copy of each Image kept by an independent record keeper for the purpose of complying with the relevant criteria relating to

Keeping and Maintaining Records in Image System

security, integrity and back-up of Images, the trader must ensure that the copy of each Image kept by the record keeper is complete, accurate and retrievable.

7 Retention of Original Paper Documents

All original documents must be kept unless the Image storage of the business records has been carried out in accordance with all the requirements set out in this Guide.

8 Penalties for Non-Compliance

Failure to keep documents and records in a proper manner would constitute an offence under section 90(3) of the Act. If convicted, the offender would be liable to a fine not exceeding \$10,000 or imprisonment for a term not exceeding 3 years or both.

9 Storage Media & File Format for Customs Audit Purposes

When imaged documents are required by the customs officers in the course of an audit, the trader should have facilities to produce the Image in both hard and soft copies. Soft copies of the documents should be made available on any of the following media options and graphic file formats:

- (a) Saved in Compact Disc (CD), Digital Video Disc (DVD), Thumb Drive or External Hard Disk Drive; and
- (b) Graphic files should be recorded in GIF, TIF or JPG formats.

The above media and data formats are specified because they are common media and data formats which Singapore Customs has the facilities to handle. Singapore Customs may consider other media and data formats on a case by case basis, provided Singapore Customs has the facilities to handle such media or data formats.

10 Amendments

Singapore Customs reserves the right to add to, delete, modify or otherwise change any of the terms and criteria set out in this Guide as and when necessary.

11 Clarification

For clarification on this Guide, you may contact Policy & Research Branch, Singapore Customs at Email: customs_documentation@customs.gov.sg.

Keeping and Maintaining Records in Image System
