Module Eight of Ten

Microform Quality Control Inspection

TRAINING in PRESERVATION MICROFILMING
Module Eight of Ten

Microform Quality Control Inspection

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National Library of Australia
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Introduction

Welcome to Microform Quality Control Inspection.

This module introduces you to the procedures involved in the quality control of microforms.

Prerequisites

This is the eighth module of training materials about preservation microfilming. In order to work through this module you need to have satisfactorily completed the modules, Preservation Microfilming—Basics and Preservation of Materials.

It will also help if you have completed modules 3, 4, 5, 6 and 7:
- Preparation for Microfilming
- Maintaining Microfilming Equipment
- Operating Microfilming Equipment—Cameras
- Jacketing and Splicing Microfilm
- Processing and Duplicating Microforms.

These will give you useful related information before you start on this module.

Learning outcomes

When you have successfully completed this module, you will be able to:
- inspect completed microforms to determine proper packaging and winding
- make a technical check of completed microforms to determine correct processing, resolution, density and film base
- make a visual check of completed microforms to determine completeness, image legibility and compliance with specifications
- record quality control inspection details
- arrange for the return of originals after filming and checking
- record details of completed microforms for lists.

In competency-based training models, the learning outcomes closely relate to the term elements of competency.

Recognition of current competencies (RCC)

You may already have knowledge, experience and skills which are relevant to this module. This means that if you wish to complete a formal Preservation Microfilming course, you may not have to study all of it.

Please discuss this with your course coordinator, or lecturer. Evidence of your microfilming competence and/or an assessment, such as a practical test, will be required.

Assessment

If you are formally studying the Preservation Microfilming course, you must meet certain performance criteria in order to demonstrate your competency in each unit or module. These criteria form the basis of your assessment. They are listed at the beginning and end of each topic.

As you work your way through the training materials, you will need to keep a record of the performance criteria and other learning activities that you have completed.
Introduction

Conditions
You will also need access to the following, either in your own workplace, or by arrangement with another organisation:
- a densitometer (for measuring density) of test film
- a microscope for checking the resolution of test film
- a 35mm microfilm reader for checking test film.

The following are provided with this module:
- a polarising filter for checking the film base
- a test film which contains some problems and a section for density readings.

Cotton gloves for handling the film were supplied with the module, Processing and Duplicating Microforms.

Contact your lecturer or mentor immediately if you have any difficulty in accessing the equipment or other supplies, so that an alternative can be arranged.

Activities
There are two types of learning activities in this module which are indicated by the icons below:

■ **Activity**
Responses to these activities are written in this book. They are usually short tasks which keep you involved with the issues you are considering and may also require you to apply what you are learning.

Some of the activities in these training materials require you to perform tasks such as loading a camera or operating a processor. A lecturer or assessor will observe you performing the tasks and then examine the results or the product (e.g. the newly processed microfilm) to check that it meets requirements. Major activities are marked with the symbol ✪.

● **Reflect**
Here you will be asked to think about key issues, usually in consultation with workplace colleagues, and come to some conclusions. The purpose of these activities is to allow you to share your understanding with others, and benefit from wider experience than your own.

You will need to be prepared to discuss your findings or conclusions with your assessor or lecturer who will be signing off the relevant performance criteria.

▲ **Submit**
When this icon appears, you are ready to record in the Log book that you:
- can meet the performance criteria
- have satisfactorily completed the activities for a topic.

You can record these in the Log book simply by marking the boxes in the shaded columns with a ✓ yes or ✗ no.

You can then ask your lecturer or assessor to verify that you can meet the performance criteria and that you have satisfactorily completed the activities.
If you work through the various activities along the way, you will find the assessment activities relatively easy to complete.

**Resources**

There are a number of resources available on preservation and preservation microfilming. A librarian can help you find out where these resources are available.

Below are a few:

**Printed materials**


*Microform and Imaging Review* 1972–, (journal), quarterly, K. G. Saur, Munich, Germany.


Saffady, William 1990, *Micrographic Systems*, 3rd edn, Association for Information and Image Management, Silver Spring, MD.


Standards (relevant):

See also the list of international standards in the Learning Guide.

Internet sites
(As internet sites change frequently, you may need to use a search engine to identify the latest location)


G.G. Baker and Associates, <http://www.ggbaker.com>, accessed 15 May 2003. This organisation provides detailed advice about micrographic systems. The web site includes links to suppliers and also provides background information about areas of microfilming from jacketing to linking with electronic document management systems. Address: Saffron Hill, Chedworth, Glos, GL54 4AL UK.


• The IFLA-PAC Centre at the National Library of Australia maintains a Documentary Heritage Preservation Register. This provides information about preservation projects in the Southeast Asian and Pacific regions such as microfilming, training, basic conservation and collection surveys, <http://www.nla.gov.au/dhpr> accessed 15 May 2003.


Address: ISO Central Secretariat PO Box 56 CH-1211 GENF Switzerland.


Introduction

Address: PO Box K36 Haymarket NSW 1238.
(The resource ReCollections is also available online from the Museums Australia website, <http://amol.org.au/recollections/>, accessed 15 May 2003.)

Address: Canberra, ACT 2600, Australia

The National Preservation Office (UK).

Provides a fee-based information service which includes international standards and technical data. Address: Customer Service, American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

PAMBU (Pacific Manuscripts Bureau), <http://rspas.anu.edu.au/pambu/>, accessed 15 May 2003. Based in the Research School of Pacific and Asian Studies, Australian National University, the aim of the Pacific Manuscripts Bureau is to locate and preserve archives, manuscripts and other unpublished or semi-published material through microfilm.
Address: PAMBU, Research School of Pacific and Asian Studies, Australian National University, Canberra, ACT, 0200, Australia.

It offers services such as preservation microfilming to libraries, including duplicating, scanning and polysulfide treatment.

Address: Research Libraries Group 1200 Villa Street Mountain View, CA 94041-1100 USA.

The aim of SEACAP is to encourage and support collaboration amongst libraries, archives and other institutions and interested individuals in order to preserve and provide access to the published and documentary heritage of the region.

The source for information and supply of Singapore Codes of Practice relating to microfilming.
PSB Building, 2 Bukit Merah Central, Singapore 159835.


**General inspection of microforms, packaging and winding**

**Performance criteria**

You will have achieved the performance criteria for this topic when you can:

- check the condition and completeness of the microforms and originals
- check that packaging meets preservation standards
- check that the roll film is wound according to specifications.

**Always check the final product**

This sound piece of advice is especially important in preservation microfilming—where the aim is to preserve knowledge and cultural heritage for the benefit of future generations. Any errors or omissions will limit the usefulness and authenticity of the microfilm copy, and if the original material has deteriorated badly, it may be impossible to copy it again in the future.

Apart from the preservation issues, quality control makes sense from an economic point of view in checking that there is ‘value for money’. After investing all the time, knowledge, skills and work in preparing, filming, processing and duplicating microforms, it makes sense to check that the final product meets the required standards.

Lisa Fox strongly supports full quality inspection:

*The quality of the work performed and the completed microfilm are only as good as the inspection measures you and the filmer take… Good quality control procedures will ensure that the institution’s high expectations are met, and only full inspection can provide that assurance.* (Fox 1996, p. 212)

In essence, a quality inspection program is the test of an organisation’s commitment to preservation microfilming. So, whether the microforms are produced by a separate microfilming organisation, or in-house, a regular quality control inspection program should be established. Inspection should be carried out in a logical, structured manner, with specific levels and criteria that are established before starting the inspection process.

There are three levels of quality control inspection:

- general
- technical
- visual

All three levels of inspections are discussed in this module.

(See Cybulski, Walter 1999.)

**Who should check?**

Checking is the responsibility of both the ordering organisation and the filming organisation.

*The ordering organisation*

Ultimately, the commissioning organisation has the responsibility for ensuring that the microforms meet the preservation standards. This means that the organisation which has ordered the microfilming will need to carry out a range of quality checks that are described in this module.
**The filming organisation**
In addition, most Agreements with microfilming organisations will also require those organisations to make certain quality inspections. Organisations should provide a record certifying that that inspections have been done and also report any problems. (See also *Preservation Microfilming—Basics* for information on Agreements in Topics 4 and 5.)

**Another independent organisation**
In some cases, technical or other levels of inspection may be done by another independent organisation where the specialised equipment is more readily available. (See Arfanis, Peter 2000). Again, the organisation should provide a record certifying that inspections have been done and also report any problems.

Even in cases where inspections are done by other organisations, it is important for microfilming staff to be aware of the steps involved, as this will help in independently assessing the quality of the final product.

**Staff**
As with all areas of microfilming, all staff who carry out quality inspection should be properly trained. If microfilming is done in-house, the operators can check quality as part of their regular duties. This gives the operators the opportunity to check the results of their work and to learn from any problems.

**Work area and equipment**
It is useful to have a separate area set aside for quality checking. Enough space is needed around the area for staff to look at the microforms as well as the original documents. Appropriate equipment for quality checking can include:
- clean white cotton gloves
- a pair of film rewinds mounted on a level working surface (approximately 1 metre apart)
- a light box placed or built-in between the rewinds
- an eye loupe
- a microscope with at least 40x, and preferably 100x magnification
- a densitometer
- a microfilm reader
- a microfiche reader.
General inspection: checking the condition

The first stage in general inspection is checking the condition and completeness of the microforms and the originals.
A general inspection means checking for the following features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>condition of originals—damage</td>
<td>• check that original materials have not been damaged during filming and transport (if sent to a microfilming bureau)</td>
</tr>
<tr>
<td></td>
<td>• check that the condition of the returned originals matches the description in any Condition Reports which were prepared during the preparation process—see Preparation for Microfilming, Topic 2)</td>
</tr>
<tr>
<td>completeness of originals</td>
<td>• check that all of the original materials have been returned, or can be located</td>
</tr>
<tr>
<td>condition of microforms and packaging—damage</td>
<td>• check that the microforms and their packaging are in good condition (e.g. not damaged by water, heat, or crushed during transport)</td>
</tr>
<tr>
<td>completeness of filming</td>
<td>• check that all of the items on the list for filming have been filmed</td>
</tr>
<tr>
<td>all generations present</td>
<td>• check that all three generations of film/fiche have been supplied</td>
</tr>
<tr>
<td>correct polarity of each generation</td>
<td>• check that the polarity of each generation matches the specifications</td>
</tr>
<tr>
<td>correct film type</td>
<td>• check that the film type of each generation (silver halide, diazo, vesicular) matches the specifications</td>
</tr>
</tbody>
</table>

When problems arise

If there are problems, you will need to discuss these with your colleagues and your supervisor, especially if the problem is complex or serious. If the microfilming is done in-house, it may be a quick process to sort out problems, such as a missing film. If the microfilming is done by an external organisation, that organisation will need to be contacted.

Most organisations will have procedures in place for dealing with problems arising from filming done by an external organisation, including identifying who is authorised to contact them.

**General inspection: checking the packaging**

All packaging used for storing the film and fiche must be checked to see that it complies with preservation standards. The following are some typical points to check. These features are also discussed in the module, Physical Management and Storage of Microforms, Topics 1 and 2.

<table>
<thead>
<tr>
<th>Packaging feature</th>
<th>Points to check</th>
</tr>
</thead>
<tbody>
<tr>
<td>spools</td>
<td>• only preservation-standard, inert plastic spools should be used</td>
</tr>
<tr>
<td>Packaging feature</td>
<td>Points to check</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>boxes and enclosures</td>
<td>• the core of the spools should fit the organisation’s microfilm readers&lt;br&gt;• should be acid-free and lignin-free&lt;br&gt;• plastic materials must be polyester, polypropylene or polyethylene&lt;br&gt;• enclosures made of metals, cellulose acetate, or papers with waxes or other ingredients that may transfer to the microfilm are unacceptable</td>
</tr>
<tr>
<td>envelopes/sleeves (for fiche)</td>
<td>• should be acid-free and lignin-free</td>
</tr>
</tbody>
</table>
**Packaging feature** | **Points to check**
--- | ---
restrainers
(fasteners used to control or prevent roll film from unwinding) | • should be acid-free and lignin-free
• rubber bands and paper clips should not be used as these will damage the microfilm

labels | • should follow the specifications of the organisation that has ordered the microfilming, e.g. listing reel titles, dates
• labels with unstable adhesives and inks known to bleed must not be used on masters or printing masters
• foil-backed labels can help to overcome these problems

**General inspection: checking the winding**
Check the amount of film on the reel to ensure that it is filled to no more than 5mm from the edge of the spool.

Check the leaders and trailers to ensure that there is an adequate length—at least 500mm in the service copies.
# Winding

Any special winding requirements should be specified in the Agreement with the microfilm organisation.

It is common for organisations to request that reels should be wound in the following way. (See, for example, the standard ANSI/AIIM MS 23 1998.)

<table>
<thead>
<tr>
<th>Generation of film</th>
<th>Common specifications for winding</th>
</tr>
</thead>
<tbody>
<tr>
<td>first generation master</td>
<td>• wind with emulsion out, away from centre of reel, with start target at the outer end (same as third generation)</td>
</tr>
<tr>
<td>second generation printing master</td>
<td>• wind with emulsion side facing in toward centre of the reel, with start target at the outer end</td>
</tr>
<tr>
<td>third generation service or use copy</td>
<td>• wind with emulsion out, away from centre of reel, with start target at the outer end (same as first generation)</td>
</tr>
</tbody>
</table>

Any incorrectly wound film should be returned for rewinding.

---

**Diagram:**

**Master:**
- Emulsion
- Start

**Duplicate:**
- Emulsion
- Start

---
Winding diagrams

● Reflect 8A

General inspection problems
- What kind of problems have you observed in microforms and the original materials at the general inspection stage?
- Have your colleagues experienced any similar problems?
- Check out the examples below and add others from your own experiences.

The following are examples of problems that have been observed by a number of microfilming staff from around Australia:
- the original materials were crushed during transport
- the microfilm boxes were badly crushed
- the wrong type of film was supplied for service copies (e.g. vesicular instead of silver halide)
- the wrong films were placed in the microfilm boxes (dates and titles mixed up)
- microfilm boxes were incorrectly labelled
- printing master copies were not supplied for some films
- films were not wound according to the specifications
- the original materials were damaged by mice.

Other problems
Activity 8.1

A case study in general inspection

A container of microfilm reels and original materials has just been returned by a local microfilming organisation. You have been asked to do a general inspection.

Briefly list the points which you would look for in checking the condition, packaging and winding of the films, and the original materials.

Condition

Packaging
A rigorous quality inspection program is critical to ensure that the microfilm copy is accurate and complete.

The first stage of quality inspection involves checking the condition and completeness of the films and the originals.

Summary
Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer ‘yes’ to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

I can meet the performance criteria
I have satisfactorily completed the activities.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled Resources, talk to your work colleagues or contact your lecturer or mentor.

I can:
I check the condition and completeness of the microforms and originals
I check that packaging meets preservation standards
I check that the roll film is wound according to specifications.

Submit

You are now ready to record in your Log book that you:

I can meet the performance criteria
I have satisfactorily completed the activities for this topic.

You can record these by marking off the boxes in the shaded columns with a ✔ yes or ✘ no.

You can then ask your lecturer or assessor to verify this information.
# Technical inspections of microforms

## Performance criteria

You will have achieved the performance criteria for this topic when you can:

- use a densitometer to check that film density is within specifications
- check the resolution test chart to confirm that a specified level of resolution has been achieved
- calculate the Quality Index level and determine whether this is acceptable
- check that a polyester film base has been used
- interpret the results of a methylene blue test to determine whether this is within recommended levels
- identify the appropriate actions if the methylene blue test results are outside recommended levels.

A number of technical inspections must be carried out to make sure that the microform meets preservation standards. These are testing for:

- density
- resolution and that the required Quality Index has been achieved
- film base
- chemical levels (usually a methylene blue test).

## Density

In the module Preservation Microfilming—Basics, density is described as the degree of darkening of the film emulsion.

Density is influenced by the type of film, the exposure levels and how the film is processed.

Many preservation microfilming projects specify minimum density ranges according to the contrast and type of materials.

### Level of contrast

Density tests measure the level of contrast achieved between the dark and light areas on the film.

On negative films the background density or maximum density (Dmax) is the dark part of the image and the minimum density (Dmin) is the light part.

This is reversed in positive films.

The Guidelines for Preservation Microfilming in Australia and New Zealand specify that the following readings should be taken on every roll of film:

<table>
<thead>
<tr>
<th>Generation</th>
<th>Maximum (Dmax) density</th>
<th>Minimum (Dmin) density</th>
</tr>
</thead>
<tbody>
<tr>
<td>master negative</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>printing master</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>service copy</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>
## Taking a density reading

Taking a density reading of a master negative involves the following steps.

<table>
<thead>
<tr>
<th>Step</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. use a densitometer (calibrated)</td>
<td>• use a densitometer which has been properly calibrated</td>
</tr>
</tbody>
</table>
| 2. identify points for background density readings | • select the background density readings (Dmax) from a part of the page without text or illustrations (the black part of the image area)  
• avoid taking readings from inner or outer margins as pages may be discoloured around the edges |
| 3. take at least 3 maximum density readings | • take a minimum of 3 Dmax readings throughout the roll or 1 per fiche  
• (the RLG Preservation Microfilming Handbook requires at least 8 readings per roll) |
| 4. average the readings | • average the result of the readings |
| 5. take at least 1 minimum density reading | • also take at least 1 minimum density reading (Dmin) per roll, or per fiche  
• select the test area from the blank areas of film before and after the exposed frame |

*Taking a density reading using a densitometer*

*Copyright: © Photograph courtesy of State Library of South Australia*
Density levels

The *RLG Preservation Microfilming Handbook* specifies certain background density levels for different types of materials (Elkington 1992). These are reproduced with permission in the table below.

![High Contrast](image1)

![Medium Contrast](image2)

![Low Contrast](image3)

Copyright: Reproduced by permission from *RLG Preservation Microfilming Handbook*, edited by Nancy Elkington, © 1992 by the Research Libraries Group, Inc

### Additional recommendations

The following table shows suggested background density ranges for different types of documents.

<table>
<thead>
<tr>
<th>Generation</th>
<th>Maximum (Dmax) density</th>
<th>Minimum (Dmin) density</th>
<th>Other recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>master negative</td>
<td></td>
<td>Dmin—not higher than 0.10</td>
<td></td>
</tr>
<tr>
<td>printing master</td>
<td>Dmax 1.25</td>
<td>Dmin between 0.10 and 0.20</td>
<td>depending upon manufacturers’ specifications for type of film used</td>
</tr>
<tr>
<td>service copy</td>
<td></td>
<td>Dmin—less than 0.15</td>
<td>within any one frame, the maximum variation should be 0.15</td>
</tr>
<tr>
<td>within any one reel</td>
<td></td>
<td></td>
<td>the average densities should vary by no more than 0.20</td>
</tr>
</tbody>
</table>
Levels are only a guide

In practice, the recommended density levels serve as a guide only. Many original materials are far from ideal, with poor contrast and fine lines. Simply specifying higher background density may produce a dark background, but the image may not be legible. This is one reason why preservation microfilming has been described as ‘an art, as well as a science’.

Other types of problem materials have a number of contrast levels on the one page (e.g. text and photographs) and these may require multiple exposures at different settings. (see, Operating Microfilming Equipment—Cameras, Topic 5)

When filming, it is good practice to carry out step tests to determine the camera settings that best suit the materials that are being filmed. Step tests are discussed in the module, Operating Equipment—Cameras, Topic 5.

The following diagram shows the effects of underexposure and overexposure on density levels and overall image quality.

![Density levels and effects of underexposure and overexposure](image)

© Reproduced by permission AIIM International

Uniform density target

The uniform density target is another of the technical targets that are quality-checked. This target is used to check how well the camera lamps are balanced. The target is nothing more than a uniform white sheet of card stock or heavy paper. This target is filmed twice at the same exposure level—immediately before the start and before the end targets.

After processing, the density values of both the uniform density targets are compared for any significant variations that may indicate lighting, camera or processing problems.

The RLG Preservation Microfilming Handbook also specifies the following (Elkington 1992, pp. 36–37):

<table>
<thead>
<tr>
<th>Feature of uniform density target</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>areas to be tested</td>
<td>• all four corners plus the centre</td>
</tr>
<tr>
<td>generation to be tested</td>
<td>• master negative</td>
</tr>
<tr>
<td>levels</td>
<td>• density of all areas tested should lie</td>
</tr>
<tr>
<td></td>
<td>between 0.90 and 1.30</td>
</tr>
</tbody>
</table>
Feature of uniform density target | Details
--- | ---
differences | • density of any two areas should not differ more than 0.10 density units
area to be tested | • any 1mm diameter site accessible to a densitometer that is wholly within the filmed uniform density target
| • test point should not contain any printed information

Activity 8.2

Taking a density reading

For this activity you will need access to a densitometer.

A test film is supplied with this module with a section marked *density reading* and cotton gloves were supplied with the module, *Processing and Duplicating Microforms*.

You will also need to make advance arrangements so that your lecturer or assessor can be present to observe you taking the density reading, and sign off your performance in the table below.

(Your lecturer or assessor will also need to be present for Activity 8.4.)

Using a densitometer, take the background (Dmax) density of the sample negative film supplied.

Follow the steps listed below.

1. First calibrate (check the readings of) the densitometer according the manufacturer's instructions.
2. Handle the film very carefully with cotton gloves, to avoid scratching it.
3. Find the sections in the test film which are marked *density reading* then select test areas from the black part of the image area (without text or illustrations).
4. Take the test readings from a minimum of three different parts of the *density reading* section.
5. Average the readings.
6. Record your result on the dotted line below.
7. Dmax = .........................
8. Using the RLG chart in the section, *Taking a density reading*, is this reading within acceptable levels, if the original is high contrast?  □ yes or □ no
Steps Lecturer/assessor to verify that each step has been performed correctly

<table>
<thead>
<tr>
<th>Steps</th>
<th>Correct yes</th>
<th>no Asessor signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>operator first calibrates the densitometer according to the manufacturer’s instructions</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator handles the film carefully with cotton gloves to avoid scratching it</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator selects test areas from the black part of the image area (without text or illustrations)</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator takes the test readings from a minimum of three different parts of the film</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator averages the readings</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator records the results</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>operator determines whether reading is within acceptable levels using the RLG chart</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Resolution**

Resolution is introduced in, *Preservation Microfilming—Basics* as the degree to which fine details can be distinguished. The higher the resolution, the finer the detail that will be reproduced. The resolution test chart appears in the targets. (See examples in, *Preservation Microfilming—Basics*, Topics 4 and 5, and the test film supplied.)

The resolution target has five charts. One is in the centre and four are placed in the corners so that they correspond to the corners of the largest documents being photographed. Each pattern on the resolution chart has a rating.
Calculating the resolution

To find the resolution, follow the steps below. The first stage is checking the resolution test chart, which should appear in the microfilm targets.
## Summary

To calculate the resolution you will need to check the resolution target to identify the *smallest image size* in which you can clearly distinguish the *finest pattern of lines*.

<table>
<thead>
<tr>
<th>steps</th>
<th>comments and examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. inspect under a microscope</td>
<td>• inspect the filmed image of the resolution chart under a microscope</td>
</tr>
<tr>
<td></td>
<td>• handle film carefully with cotton gloves</td>
</tr>
<tr>
<td>2. examine pairs of line patterns and move from larger to smaller</td>
<td>• make sure that both horizontal = and vertical ( | ) lines can be clearly distinguished</td>
</tr>
<tr>
<td></td>
<td>• keep on moving down to the smallest pairs of line patterns, until it is no longer possible to clearly distinguish separate line pairs</td>
</tr>
<tr>
<td>3. select the smallest pair of line patterns that can be resolved</td>
<td>• the fine lines should be visually separated</td>
</tr>
<tr>
<td>4. calculate resolution</td>
<td>• calculate the resolution, in line pairs per millimetre</td>
</tr>
<tr>
<td></td>
<td>• the resolution is the number linked with the smallest pattern size in which the lines are just visually separated—multiplied by the reduction ratio</td>
</tr>
<tr>
<td>example</td>
<td>For example:</td>
</tr>
<tr>
<td></td>
<td>• smallest pattern size is identified = 8</td>
</tr>
<tr>
<td></td>
<td>• reduction ratio = 1: 18</td>
</tr>
<tr>
<td></td>
<td>• resolution = 8 x 18 = 144 line pairs per millimetre</td>
</tr>
<tr>
<td>5. check all 5 charts</td>
<td>• this provides information on the resolution value out in the corners where the lenses begin to get a little fuzzy</td>
</tr>
</tbody>
</table>
Resolution levels

In preservation microfilming, a maximum level of resolution is often specified. The project manager or supervisor should discuss with the curator or owner of the records what quality level is required. The following are levels that are commonly recommended.

<table>
<thead>
<tr>
<th>Generation</th>
<th>Recommended resolution levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>master negative</td>
<td>• between 120 to 150 line pairs per millimetre</td>
</tr>
<tr>
<td>2nd generation printing master</td>
<td>• should not fall more than one level below the first generation master</td>
</tr>
<tr>
<td>3rd generation service copy</td>
<td>• should not fall more than one level below the second generation printing master</td>
</tr>
</tbody>
</table>

Quality Index

The Quality Index (QI) system takes account of the level of detail in the original, which is added to the resolution measurement. This is a measurement of type size in millimetres (or point size) of the lower case letter ‘e’ in the original document. This measurement is then multiplied by the smallest resolution pattern that is resolved on the film. The number is then used as the Quality Index.

Quality index levels

The Australian Guidelines recommend that, ideally, QI levels should be as follows:

<table>
<thead>
<tr>
<th>Generation</th>
<th>Minimum QI level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>10.0</td>
</tr>
<tr>
<td>2nd</td>
<td>9.0</td>
</tr>
<tr>
<td>3rd</td>
<td>8.0</td>
</tr>
</tbody>
</table>

A Quality Index table can be used to determine the resolution required to reach a particular QI level.
Activity 8.3

Resolution and Quality Index

Resolution
Calculate the following resolutions, and comment on whether you see the resolution as average, poor or high in comparison to the information provided in Resolution levels above.

<table>
<thead>
<tr>
<th>Smallest recognisable pattern</th>
<th>Reduction ratio</th>
<th>Comment (average, poor or high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1:16</td>
<td></td>
</tr>
<tr>
<td>7.1</td>
<td>1:15</td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>1:17</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1:20</td>
<td></td>
</tr>
</tbody>
</table>

Quality index
Calculate the following Quality Index (QI) levels for a first generation microfilm. Does the QI level fall within the minimum acceptable levels for first, second and third generations of microforms? Indicate ✔ Yes or ✘ No.

(pt = point size, which refers to the size of the type or font)

<table>
<thead>
<tr>
<th>Type size small ‘e’ in original</th>
<th>Resolution</th>
<th>Generation</th>
<th>QI</th>
<th>Acceptable minimum QI level achieved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 pt = 1.0mm</td>
<td>10.0</td>
<td>1st</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>14 pt = 3.5mm</td>
<td>2.0</td>
<td>2nd</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>8 pt = 2.0mm</td>
<td>5.6</td>
<td>3rd</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
Activity 8.4

These are major activities which require the lecturer/assessor to observe and/or sign off performance details.

Calculating resolution

For this activity you will need access to a microscope.

A sample film with resolution targets is supplied with this module, and cotton gloves were supplied with the module, Processing and Duplicating Microforms.

You will also need to make advance arrangements so that your lecturer or assessor can be present to observe you taking the density reading, and sign off your skills in the table below.

Calculate the resolution in the sample film supplied, using a microscope.

1. Follow the steps listed above under, Calculating the resolution.
2. For this activity, use the centre pattern of the 5 patterns on the resolution target.
3. The reduction ratio is 1:16.

Give details of your calculations in the spaces provided below.

**Calculation**

1. Smallest pattern size identified = ........
2. Reduction ratio = 1: 16
3. Resolution = .... X .... = .... line pairs per millimetre.
<table>
<thead>
<tr>
<th>Steps</th>
<th>Lecturer/assessor to verify that each step has been performed correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td>operator inspects the filmed image of the resolution chart under a microscope</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
<tr>
<td>operator handles the film carefully with cotton gloves to avoid scratching it</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
<tr>
<td>operator examines pairs of line patterns and moves from largest to the smallest, until it is no longer possible to clearly distinguish separate line pairs</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
<tr>
<td>operator selects the smallest pair of line patterns that can be resolved (the fine lines should be visually separated)</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
<tr>
<td>operator calculates the resolution as the number linked with the smallest pattern size in which the lines are just visually separated—multiplied by the reduction ratio</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
<tr>
<td>operator records the results</td>
<td>Correct: ✔️ yes ✗ no  Assessor signature:  Date:</td>
</tr>
</tbody>
</table>

**Film base**

Microfilm is available in both polyester and acetate base.

Only polyester basefilms are suitable for preservation microfilming. Cellulose acetate and triacetate bases have a much shorter lifespan and generally deteriorate as a result of the ‘vinegar syndrome’.

As part of quality inspection, it is important to make sure that only polyester-base film has been used on all generations of film.

**Testing film base of a master negative**

A number of tests can be carried out to determine the base of a microform master negative. Two simple ones are described below.

**Tear test**

Acetate film tears more easily than polyester film.

1. Tear a small piece from the leader of the acetate base film supplied with this module.
2. Repeat this with the polyester base film—also supplied.

As tear tests damage the film, the polarising test below is widely used.
### Polarising test

<table>
<thead>
<tr>
<th>Step</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>take test card</td>
<td>• use the polarising test card</td>
</tr>
<tr>
<td>hold master negative film and card to light</td>
<td>• hold negative to the light and view it against the window in the card</td>
</tr>
<tr>
<td>check for rainbow effect</td>
<td>• check for a rainbow effect in the window</td>
</tr>
<tr>
<td></td>
<td>• where there is a rainbow effect, polyester film has been used</td>
</tr>
<tr>
<td></td>
<td>• where there is no rainbow, the film is likely to be acetate</td>
</tr>
</tbody>
</table>

✔ rainbow = polyester  ✗ no rainbow = acetate

Using a polarising test card to test the film base
© Photograph courtesy of State Library of South Australia

When checking film base it is always a good idea to unwind the roll film and test a point in the main film sequence, past the leader. This is because the leader may have been spliced on, and may be a different film base from the main film.

Further information about cellulose acetate is available from a number of organisations, such as the Image Permanence Institute (IPI) and the National Library of Australia.
If you have access to the internet you can check for information from the Image Permanence Institute (IPI) and the National Library of Australia’s website under its cellulose acetate project.

■ Activity 8.5

Film base
A polarising filter for checking the film base has been supplied with this module.

Test the film samples supplied to find out which are on polyester base and which are on acetate base.

I use the polarising test card
I follow the steps listed above under Polarising test
I record your answer by ticking the correct box below for each sample.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Polyester</th>
<th>Acetate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample A</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Sample B</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Sample C</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Why is acetate base film unsuitable for preservation microfilming?

Testing chemical levels
The processed silver halide microfilm must be tested to make sure that the chemicals used in developing and fixing the images have been removed from the film by proper washing. If these chemicals remain on the film, they will cause the images to fade and discolour in the longer term.

Methylene blue test
One of the most common methods of testing for residual (left over) chemicals is the methylene blue test.

I This test measures the levels of residual thiosulfate in the processed film.
I The test is done on a portion of the processed film taken from the trailer.
I The operator must handle the test film carefully at all times with clean white cotton gloves to prevent contamination.
I The operator must individually identify test samples (eg title/date). This will assist in following up any problems.
Frequency of testing
As methylene blue tests are expensive, testing every single film or fiche is not practical.

Identifying batches for testing can also be difficult, in organisations where automatic processors are used. These commonly-used processors run continuously with programmed levels of chemical replenishment, so here it is difficult to isolate discrete batches.

The following suggestions are adapted from the Australian and New Zealand Guidelines (National Library of Australia 1998) and the RLG Handbook (Elkington 1992).

- For small microfilming operations, test a small number of samples selected randomly from daily samples collected, (e.g. over a week). Australian Guidelines

- For large microfilming operations, test one sample of master film every day that master film is processed. RLG Handbook
### Requirements of testing

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Comments</th>
</tr>
</thead>
</table>
| specified level              | • the maximum permissible concentration of thiosulfate is 1.4 micrograms per square centimetre  
                                 | • this is often written as 1.4 µg/cm² (where µg = micrograms)                                                                     |
| certification of testing     | • the testing organisation must give a written report confirming the test results                                                        |
|                              | • an example of a certification report is given in Activity 8.6 below                                                                  |
| problem (requiring rewash)   | • if one sample fails the test, then all other films which were processed at the time (for example, on that day) must be rewashed  
                                 | • this is another reason why accurate processing records need to be kept (see, Processing and Duplicating Microforms) |
| time frame (within 2 weeks)  | • it is a common requirement for methylene blue tests to be carried out within a maximum time frame of 2 weeks after the film has been processed  
                                 | • accurate details of when films were processed will help to identify samples for testing well within this time frame  
                                 | • the module, Processing and Duplicating Microforms described the need for accurate processing records to make sure that methylene blue tests are carried out promptly |
| who performs the test?       | • some organisations have the equipment and chemicals necessary to do their own testing                                                |
|                              | • it is also common to find that organisations arrange to have their methylene blue testing carried out independently by another organisation  
                                 | • ideally, the testing should be done by an independent accredited laboratory to the standard ISO 18917 |

### Who can do the methylene blue tests?

It can be difficult to find organisations which will conduct methylene blue tests. If you need to find an organisation that will do the test, ask your colleagues and contacts within the microfilming industry, especially film suppliers.

You can also contact a major library or archives in your country, or other microfilming organisations, national libraries or archives in the region, for suggestions.
Activity 8.6

Methylene blue test

MBT (Methylene Blue Testing) Services Pty. Ltd.

Analysis of microfilm for residual thiosulfate

METHOD: ISO 18917 Methylene blue test

RESULTS:

Test on batch received 7/4/2001

<table>
<thead>
<tr>
<th>Sample no.</th>
<th>Number/title</th>
<th>Date processed</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRG 30/2 Lien family records</td>
<td>3/04/2001</td>
<td>&lt;0.1 µg/cm²</td>
</tr>
<tr>
<td>2</td>
<td>GRG 43 Cambodian historical records</td>
<td>2/04/2001</td>
<td>&lt;0.1 µg/cm²</td>
</tr>
<tr>
<td>3</td>
<td>Mount Fuji Courier 1932</td>
<td>5/04/2001</td>
<td>&lt;0.1 µg/cm²</td>
</tr>
</tbody>
</table>

The above methylene blue test result has been returned from MBT testing laboratory. Use the earlier information under, Testing chemical levels, to answer the following:

a) What is the maximum level of thiosulfate allowed on preservation master microfilm?

b) What does this mean?

1.2µg/cm²

c) Are all tested samples within the maximum specified level? □ Yes □ No

d) Were all samples tested within a two week period of being processed? □ Yes □ No

e) Why is it important to do methylene blue tests on master film?
f) What happens if a sample fails the test?

---

Summary

A number of technical inspections must be carried out to ensure that the microfilm meets preservation standards.

Technical inspections include the following:

- testing for density using a densitometer—this is a check that density levels fall within the specified levels
- testing resolution using a resolution chart—this tests the resolution and Quality Index levels
- testing for film base, for example, using a polarising filter—this is to check that the film base is polyester
- testing for residual chemicals—using the methylene blue test.

Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer 'yes' to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- can meet the performance criteria
- have satisfactorily completed the activities.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled Resources, talk to your work colleagues or contact your lecturer or mentor.

I can:

- use a densitometer to check that film density is within specifications
- check the resolution test chart to confirm that a specified level of resolution has been achieved
- calculate the Quality Index level and determine whether this is acceptable
- check that a polyester film base has been used
- interpret the results of a methylene blue test to determine whether this is within recommended levels
- identify the appropriate actions if the methylene blue test results are outside recommended levels.
Submit

You are now ready to record in your Log book that you:

- can meet the performance criteria
- have satisfactorily completed the activities for this topic.

You can record these by marking off the boxes in the shaded columns with a yes or no.

You can then ask your lecturer or assessor to verify this information.
Topics 3 & 4

Visual inspections of microforms and records

Performance criteria
You will have achieved the performance criteria for this topic when you can:

- check a third generation service copy visually for defects affecting:
  - completeness
  - legibility
  - compliance with project specifications
  - suitability for future digitisation
  - physical condition
- maintain records of quality control inspections.

Unless the microform is a complete, accurate and legible copy of the original material, it fails to meet preservation requirements, even if its technical quality is excellent. Guidelines for Preservation Microfilming in Australia and New Zealand, p.64.

If the microfilm meets all the technical standards, it should be visually checked for defects. This involves placing the film on a reader and inspecting it, frame-by-frame. The film should be compared with the original text.

Visual inspection
Which generation to inspect?

Microfilmmers around the world have differing views about which generation of film should be inspected frame-by-frame. A summary of the arguments for and against inspecting the master (first generation) or a copy (second or third generation) is provided below.

The example is taken from information posted to MICROLINK-L, an international preservation microfilming discussion list. See Resources list at the front of this module. It is reproduced with permission of MICROLINK-L and the writer.

Ultimately, the decision about which generation(s) to check must be made by the project manager or supervisor.
How many and how much should be checked?

Do you really have to do 100 percent inspection on every completed film? Lisa Fox answers, ‘Yes you should’.
(Fox 1996, p. 212)

The Australian and New Zealand Guidelines add that:

*Experience suggests that the only reliable method of confirming that the microfilm is a complete and accurate record is to carry out a frame-by-frame inspection of the third generation service copy against the original material.*
(National Library of Australia 1998, p.64)

As many organisations do not have the resources to do frame-by-frame checking, the question of how many should be checked becomes a risk management issue. The following table gives suggestions on levels of checking. It has been adapted from the Australian and New Zealand Guidelines (National Library of Australia 1998) and the RLG Handbook (Elkington 1992).

<table>
<thead>
<tr>
<th>Level of checking</th>
<th>Category</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>lower level (spot checks)</td>
<td>1 in 10 reels (10%)</td>
<td>RLG Handbook</td>
</tr>
<tr>
<td></td>
<td>100 reels or fiche have been fully checked, with few quality problems</td>
<td>RLG Handbook</td>
</tr>
<tr>
<td>higher level (detailed checks)</td>
<td>check all reels frame-by-frame (100%)</td>
<td>RLG Handbook</td>
</tr>
<tr>
<td></td>
<td>if collation has not been detailed</td>
<td>RLG Handbook</td>
</tr>
<tr>
<td></td>
<td>if originals are in another alphabet/script</td>
<td>RLG Handbook</td>
</tr>
<tr>
<td></td>
<td>if film is to be used as evidence</td>
<td>Australian &amp; NZ Guidelines</td>
</tr>
<tr>
<td></td>
<td>if the film includes a declaration that it is a complete and accurate copy</td>
<td>Australian &amp; NZ Guidelines</td>
</tr>
<tr>
<td></td>
<td>if film is to be supplied commercially and purchasers believe they are paying for a complete/accurate copy</td>
<td>Australian &amp; NZ Guidelines</td>
</tr>
<tr>
<td></td>
<td>if the film will take the place of an original of national significance</td>
<td>Australian &amp; NZ Guidelines</td>
</tr>
<tr>
<td></td>
<td>if there is no chance of redoing the work (e.g. original is in fragile condition)</td>
<td>Australian &amp; NZ Guidelines</td>
</tr>
</tbody>
</table>

Checking for completeness and compliance

The film should be checked for completeness, legibility, physical condition and compliance with the Agreement. It should be a complete, accurate and legible copy. It should also meet the specifications of any Agreements. (See, Preservation Microfilming—Basics, Topics 4 and 5.)
Checklist

The following is a typical list of features to check in a detailed visual inspection. It has been adapted from *Guidelines for Preservation Microfilming in Australia and New Zealand* (National Library of Australia 1998, pp. 66-67). Adapt the list to your own needs. Add to the list in the spaces below.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>completeness</td>
<td>• the complete list of the original material has been filmed</td>
</tr>
<tr>
<td></td>
<td>• there are no missing pages</td>
</tr>
<tr>
<td></td>
<td>• information has not been lost due to gutter shadow</td>
</tr>
<tr>
<td>targets</td>
<td>• all of the technical and bibliographic detail targets have been filmed</td>
</tr>
<tr>
<td></td>
<td>• all of the targets appear correctly and in the correct orientation</td>
</tr>
<tr>
<td></td>
<td>• all of the targets are in the right order</td>
</tr>
<tr>
<td>alignment</td>
<td>• the image is aligned correctly within the frame, with no more than 10% skew</td>
</tr>
<tr>
<td></td>
<td>• from the vertical</td>
</tr>
<tr>
<td>orientation</td>
<td>• image orientation is according to specifications e.g. single or double</td>
</tr>
<tr>
<td></td>
<td>• frame, comic or cine</td>
</tr>
<tr>
<td>reduction ratio</td>
<td>• the reduction ratio used nearly fills the frame, with all the edges of the</td>
</tr>
<tr>
<td></td>
<td>• document visible</td>
</tr>
<tr>
<td>legibility</td>
<td>• all of the information is easy to read (regardless of resolution and</td>
</tr>
<tr>
<td></td>
<td>• density levels)</td>
</tr>
<tr>
<td>density</td>
<td>• there are no major variations in density</td>
</tr>
<tr>
<td></td>
<td>• photographs or other features are neither too light nor too dark</td>
</tr>
<tr>
<td></td>
<td>• multiple exposures are used to film originals with variations in density</td>
</tr>
<tr>
<td>focus</td>
<td>• there are no blurred images—especially near splices</td>
</tr>
<tr>
<td></td>
<td>• pages have been filmed flat—the original has not been distorted</td>
</tr>
<tr>
<td>foreign objects</td>
<td>• there are no additional objects in the images e.g. operator’s hands, tape,</td>
</tr>
<tr>
<td></td>
<td>• pencils</td>
</tr>
<tr>
<td>fogging</td>
<td>• there is no fogging or extra light which may cloud the image</td>
</tr>
<tr>
<td>splicing</td>
<td>• only the master has been spliced</td>
</tr>
<tr>
<td></td>
<td>• splices have been made using an ultrasonic splicer</td>
</tr>
<tr>
<td></td>
<td>• adjacent frames are not badly scratched or blurred</td>
</tr>
<tr>
<td></td>
<td>• there are no more than 6 splices</td>
</tr>
<tr>
<td></td>
<td>• there are no splices between the technical target and the first ten frames</td>
</tr>
<tr>
<td></td>
<td>• of the text</td>
</tr>
<tr>
<td></td>
<td>• defective frames have been removed</td>
</tr>
<tr>
<td></td>
<td>• at least two pages before and after the page being refilmed are included</td>
</tr>
<tr>
<td></td>
<td>• in the retake</td>
</tr>
<tr>
<td>scratching</td>
<td>• the film is free from scratching (see below for what is acceptable and</td>
</tr>
<tr>
<td>(physical</td>
<td>• unacceptable)</td>
</tr>
<tr>
<td>condition)</td>
<td>marks</td>
</tr>
<tr>
<td></td>
<td>defects</td>
</tr>
</tbody>
</table>
Suitability for digitisation

If the microfilm is to be digitised, this information should already appear in the Agreement, as digitising requirements will have an impact on the filming arrangements and image quality.

When checking suitability for digitising a number of additional factors should be checked. These are listed as **Factors which impact on the quality, rate and cost of digital image** in the module, *Preservation Microfilming—Basics*, Topic 6.

Another way of checking on suitability for digitising is to ask the filming organisation to supply test scans from selected images for checking.

Quality inspection records

Any quality problems that have been identified should be recorded systematically. Clear and accurate records of problems will help in the next stage of deciding on the actions to take. Most organisations create their own quality inspection record sheets.

Two examples are provided below.

The example from Library and Information Services of Western Australia is a *birth certificate* which is kept with the records for each film.

Many organisations use a job record which follows a microfilming job from all stages from preparation and filming through to quality checking. The quality inspection records then become part of the overall job records.
QUALITY CONTROL REPORT

Date: ___________ Job No: ___________
Client: 
Job Name: 
Period Covered: 
Density (black area): ___________ Density (clear area): ___________
No. of Splices: ___________ Reduction: ___________ Resolution: ___________

Blip: ☐
Target Order Correct: ☐
All documents/pages present: ☐
Index/Title: ☐
All duplicates present: ☐

Condition of Items/Defects – Comments:
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

METHYLENE BLUE TESTING

M.B.T. No: ___________
Allen Processor: ___________
Cordell Processor: ___________

(<) 0.7 micrograms/cm² indicates Kodak Archival quality
(>) 0.7 micrograms/cm² indicates Kodak NON-Archival quality

Signed: ___________
Quality Certificate

Roll Number | Archival Number
--- | ---
Camera Number | Working Number
Operator | Date Filmed

<table>
<thead>
<tr>
<th>Item</th>
<th>Start</th>
<th>End</th>
<th>EXP</th>
<th>FRAMES</th>
<th>Duplicate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

**TEST**

<table>
<thead>
<tr>
<th>REQUIREMENTS</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction Ratio</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
</tr>
<tr>
<td>Quality Index (QI)</td>
<td>No greater than 0.06</td>
</tr>
<tr>
<td>D-Min (Base plus fog)</td>
<td></td>
</tr>
<tr>
<td>D-Max (Image Background)</td>
<td></td>
</tr>
<tr>
<td>Residual Thiosulphate (SDM)</td>
<td>No greater than 0.03</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Archival Neg.**

<table>
<thead>
<tr>
<th>FILM TYPES</th>
<th>A.D. TESTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetate</td>
<td></td>
</tr>
<tr>
<td>Polyester</td>
<td></td>
</tr>
</tbody>
</table>

**Working Neg.**

<table>
<thead>
<tr>
<th>FILM TYPES</th>
<th>AD TESTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetate</td>
<td></td>
</tr>
<tr>
<td>Polyester</td>
<td></td>
</tr>
</tbody>
</table>

**PHYSICAL DEFECTS**

<table>
<thead>
<tr>
<th>DEFECT</th>
<th>MAJOR</th>
<th>MINOR</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film Moiré</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fingerprints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frilling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure Marks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Dye back</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reticulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scratches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Spots</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONDITION REPORTS**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Dates:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Save | Print | Enter Another | Exit no save
Problems: causes and actions

Once problems have been identified, the next stage is identifying the causes. This will help in determining what to do next. The original text should always be checked in this process. For example, what may appear to be a problem of a large mark on an image may turn out to be simply caused by a stain on the original. No further action can be taken in this case.

In other cases where the cause is likely to be a problem with the equipment or the operator, further action needs to be taken to prevent the problem recurring.

Acceptable or unacceptable?

A decision also needs to be made as to whether the problem is acceptable or unacceptable, and any actions required.

<table>
<thead>
<tr>
<th>Type of problem</th>
<th>Acceptable/unacceptable</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>minor</td>
<td>error accepted</td>
<td>none</td>
</tr>
<tr>
<td>major</td>
<td>unacceptable</td>
<td>a complete refilm, or a retake of sections</td>
</tr>
<tr>
<td>combination of minor problems</td>
<td>unacceptable</td>
<td>a complete refilm, or a retake of sections</td>
</tr>
</tbody>
</table>

Ultimately, the decision to accept or reject a problem, and on any actions such as refilming, will need to be made by the supervisor or project manager.

A number of the microfilm handbooks and guidelines can assist in decision-making. For example, the Australian Guidelines suggests the following actions for scratches.

<table>
<thead>
<tr>
<th>accept scratches if</th>
<th>correct scratches if</th>
</tr>
</thead>
<tbody>
<tr>
<td>• the scratches are outside of the frame</td>
<td>• there is major scratching e.g. deep scratching in which the emulsion is scratched</td>
</tr>
<tr>
<td>• the scratches do not damage the film</td>
<td>• scratching is across the frame or text</td>
</tr>
<tr>
<td></td>
<td>• there is a significant number of out-of-frame scratches</td>
</tr>
</tbody>
</table>

Another useful source for decision-making is the ANSI/AIIM MS23 - 1998 standard. This has a table of defects classification and source guide which classifies defects as major or minor and identifies the possible source. (Table 7).

A comprehensive table which is a guide to problems, causes and actions has been compiled by Robert Mottice in the RLG Preservation Microfilming Handbook (Elkington 1992).

The Guide to defects on first-generation camera negatives—and appropriate corrective actions is reproduced below, with permission.

The right-hand side column advises when corrective action is required. This column is titled If found on inspection.
Guide to Defects on First Generation Camera Negatives

Compiled by Robert Mottice

<table>
<thead>
<tr>
<th>DEFECT/DESCRIPTION</th>
<th>POSSIBLE CAUSES</th>
<th>CORRECTIVE ACTION</th>
<th>IF FOUND ON INSPECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive bleed-through; ink showing through from succeeding pages</td>
<td>Thin paper and/or overinking combined with possible under exposure</td>
<td>More exposure until text starts gaining density</td>
<td>Retake if bleed-through causes severe loss of contrast between text and paper</td>
</tr>
<tr>
<td>Images grossly out of focus</td>
<td>Film not threaded properly in camera; film platen not seating properly; vacuum hold-down system not functioning properly</td>
<td>Troubleshoot and repair or correct</td>
<td>Retake affected section</td>
</tr>
<tr>
<td>Portion of image out of focus</td>
<td>Page movement during exposure</td>
<td>Hold page motionless during exposure. Use a glass platen to hold pages motionless if needed</td>
<td>Retake affected section</td>
</tr>
<tr>
<td>Pages appear on film from right to left</td>
<td>Camera head turned wrong</td>
<td>Rotate camera head 180°</td>
<td>Retake affected section</td>
</tr>
<tr>
<td>Occasional skewed page</td>
<td>Camera operator error</td>
<td>Instruct camera operator</td>
<td>Retake if skew guidelines exceeded</td>
</tr>
<tr>
<td>All pages skewed</td>
<td>Camera head misaligned; internal finder device out of adjustment</td>
<td>Align camera head; calibrate finder device</td>
<td>Retake if skew guidelines exceeded</td>
</tr>
<tr>
<td>Shadows (low density areas) in image</td>
<td>Head, hands, shoulders or other object interfering with camera lights</td>
<td>Instruct camera operator</td>
<td>Retake if shadow causes severe loss of contrast between text and paper</td>
</tr>
<tr>
<td>Shadows (low density areas) in gutters</td>
<td>Camera lamp angle too low</td>
<td>Reposition lamps at a higher angle</td>
<td>Retake if there is text in shaded areas</td>
</tr>
<tr>
<td>Shadows (low density areas) due to and adjacent to wrinkles and creases</td>
<td>Uneven paper surface casting shadows</td>
<td>Hold page flat under glass. Ironing may help but can only be done ONLY if permission has been received from owning institution</td>
<td>Retake if shadow causes severe loss of contrast between text and paper</td>
</tr>
<tr>
<td>Reflection (high density areas) in image</td>
<td>Shiny hard copy not held flat on camera bed. Lamps not at proper angle</td>
<td>Flatten hardcopy under glass. If appropriate AND permission has been received from owning institution, raise gutter with dowel rods</td>
<td>Retake if reflections cover text</td>
</tr>
<tr>
<td>Nonuniform density throughout image area that is not related to variations in paper reflectivity</td>
<td>Lamps out of balance; obstruction within lens</td>
<td>Balance camera lighting; inspect and clean lens; review ANSI uniform illumination standard (ANSI/ Illuminaire MS26-1990)</td>
<td>Retake if density exceeds guidelines</td>
</tr>
<tr>
<td>Foreign objects on camera bed: pencils, string, tape, scissors, paper, dust, etc.</td>
<td>Camera operator oversight</td>
<td>Instruct camera operator to keep camera bed clean</td>
<td>Retake if aesthetics are a concern and/or this defect occurs in combination with other, less serious defects</td>
</tr>
<tr>
<td>Small non-text areas of high density</td>
<td>Bits or scraps of paper covering text</td>
<td>Instruct camera operator to watch for debris</td>
<td>Retake</td>
</tr>
</tbody>
</table>

Guide to defects on first generation camera negatives—and appropriate corrective actions

<table>
<thead>
<tr>
<th>Small areas of low density</th>
<th>Ink blotch on hardcopy</th>
<th>No correction possible</th>
<th>Review with filming agent. Retake if replacement (unmarked) page is available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image of a hand</td>
<td>Camera operator’s hand in view of camera lens</td>
<td>Instruct camera operator</td>
<td>Retake if hand image passes through text and diminishes contrast</td>
</tr>
<tr>
<td>Folded pages</td>
<td>Pages folded over</td>
<td>Unfold and rephotograph</td>
<td>Retake</td>
</tr>
<tr>
<td>Cressed pages with text obscured</td>
<td>Paper is cressed</td>
<td>Uncress and rephotograph. Ironing may help but can be done ONLY if permission has been received from the owning institution</td>
<td>Retake</td>
</tr>
<tr>
<td>Torn portions of a page not matched</td>
<td>Two possibilities: 1) camera operator broke embossed pages while filming and did not realign properly; 2) library did not repair the item prior to submitting for filming</td>
<td>Repair if legibility is hindered (ONLY if owning institution has given permission to do so; otherwise, return to owning institution)</td>
<td>Repair (see note at left) and retake if legibility is hindered</td>
</tr>
<tr>
<td>Overlapping frames</td>
<td>Camera film advance not adequate</td>
<td>Adjust camera advance mechanism</td>
<td>Retake if any portion of the images overlaps</td>
</tr>
<tr>
<td>Static discharge marks (high density marks shaped like tree branches)</td>
<td>Relative humidity too low, film wound too rapidly in camera or processor</td>
<td>Raise relative humidity to 50-60%; instruct camera operator to slow winding process</td>
<td>Retake if static marks raise text density</td>
</tr>
<tr>
<td>Fob marks (areas of unwanted nonimage density)</td>
<td>Light leak in camera head. Door opened accidentally. Light leak in darkroom. Not advancing the film far enough after loading or before unloading</td>
<td>Advance film in camera by adequate amount to prevent fog; check camera and darkroom for light leaks</td>
<td>Retake if fog increases text density</td>
</tr>
<tr>
<td>Water spots, small crystalline deposits</td>
<td>Final processor squeegee not working properly; water contains excessive amount of solids</td>
<td>Adjust or repair squeegee; install photo-flo rinse</td>
<td>Rewash and check for scratches</td>
</tr>
<tr>
<td>Light scratches</td>
<td>Dirty or stuck camera, processor or reader rollers; dirt caught in processor squeegee; foreign object in processor; improper camera or processor threading; footage counter with burned counter roller, etc.</td>
<td>Check all potential sources</td>
<td>Retake if scratches show up objectionably or if they interfere with legibility of subsequent generations</td>
</tr>
<tr>
<td>Deep scratches</td>
<td>(see above)</td>
<td>(see above)</td>
<td>Retake if gouges penetrate image layer</td>
</tr>
<tr>
<td>Fingertips</td>
<td>Touching film with bare fingers</td>
<td>Instruct inspectors to wear clean, lint-free gloves</td>
<td>Retake; some body chemistries cause film deterioration and silver tarnishing</td>
</tr>
<tr>
<td>Pressure marks (small, randomly occurring areas of high density)</td>
<td>Film kinked or buckled before or during development (rough)</td>
<td>Instruct camera operator</td>
<td>Retake if marks occur in text areas</td>
</tr>
<tr>
<td>Handling</td>
<td>Instruct camera operator; check film path for signs of scraping, etc.</td>
<td>Retake, since emulsion layer may separate from base upon aging</td>
<td>Retake if marks occur in image area</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td>--------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Torn or nicked film edge</td>
<td>Rough handling, coming in contact with sharp edge in camera or processor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeating marks (surface damage)</td>
<td>Burns, nicks, scratches, dirt, or grit on camera rollers or processor rollers</td>
<td>Polish or replace metal rollers; clean or replace rubber rollers</td>
<td></td>
</tr>
<tr>
<td>Foreign material on film</td>
<td>Slime or gelatine from processor wash tanks; oil or grease from roller bearings and chains, etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity 8.7

Visual inspection

For this activity you will need access to a 35mm film reader.

A test film, which contains some problems, is supplied.

a) Carry out a visual inspection on the film sample supplied to identify any problems. You will need to check the film using a reader.

b) Note any problems and record them in the Visual inspection section of the Quality Report Form provided. Also, comment on the Targets and Other problems. Do not fill in the technical section.

c) Briefly make suggestions for corrective actions in the space provided. (Use the information from the Guide to defects table to help in making your suggestions.)

Note that Activity 8.8 also uses the information from this Activity.

Quality Report Form

<table>
<thead>
<tr>
<th>Title:</th>
<th>Dates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality checked by:</td>
<td>Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical inspection:</th>
<th>Requirements</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduction ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resolution pattern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lines (ratio x resolution)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>background density (clear)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>film base</td>
<td>polyester</td>
<td></td>
</tr>
<tr>
<td>residual thiosulfate test</td>
<td>less than 1.4 mg/cm2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual inspection</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Targets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>start</td>
<td></td>
</tr>
<tr>
<td>uniform density</td>
<td></td>
</tr>
<tr>
<td>resolution</td>
<td></td>
</tr>
<tr>
<td>reduction ratio</td>
<td></td>
</tr>
<tr>
<td>title/bibliographic detail target</td>
<td></td>
</tr>
<tr>
<td>filmed by</td>
<td></td>
</tr>
<tr>
<td>copyright</td>
<td></td>
</tr>
<tr>
<td>list of irregularities</td>
<td></td>
</tr>
<tr>
<td>end</td>
<td></td>
</tr>
</tbody>
</table>
### Activity 8.8

**Actions to correct defects**

a) Use the information from the Quality Report Form in Activity 8.7 above for this activity.

b) Complete the **Summary of actions required to correct defects** in the table below.

c) List the details of which pages need retakes. (Remember to take into account the recommended limit on the maximum number of splices.)

---

**Visual inspection**

<table>
<thead>
<tr>
<th>Present</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Targets**

<table>
<thead>
<tr>
<th>resolution</th>
<th>other (specify):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Are all targets present?**

**Other problems**

<table>
<thead>
<tr>
<th>Page/frame reference</th>
<th>Corrective actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- alignment problems (skew)
- orientation
- does image fill total area?
- missing pages (list)
- focus defects
- images too light
- images too dark
- obstruction in frame
- finger prints
- water spots
- scratches
- more than 6 splices

**Other comments:**

---

<table>
<thead>
<tr>
<th>Refilm whole title:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retake of pages (list):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

- Unless the microform is a complete, accurate and legible copy of the original material, it fails to meet preservation requirements, even if its technical quality is excellent.
- If the microfilm meets all the technical standards, the film should be visually checked for defects. This involves placing the film on a reader and inspecting it, frame-by-frame. The decision as to which generation(s) should be checked should be made by the project manager or supervisor. The film should be compared with the original text.
- The question of how much to check is a risk management issue. The project manager or supervisor needs to decide on the level of visual inspection that is needed—according to the nature of the material and the level of risk.
- Checklists of typical features and problems to look for are a key to systematic visual inspection. They include factors such as completeness and legibility.
- Quality inspection records give a summary of the problems and the corrective actions required.
- A sound knowledge of
  - microfilming specifications
  - the causes of problems and corrective actions
  is essential when making decisions about whether or not to refilm all or part of a reel.

Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer ‘yes’ to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- can meet the performance criteria
- have satisfactorily completed the activities.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled Resources, talk to your work colleagues or contact your lecturer or mentor.

I can:

- check a third generation service copy visually for defects affecting:
  - completeness
  - legibility
  - compliance with project specifications
  - suitability for future digitisation
  - physical condition
- maintain record of quality control inspections.
Submit

You are now ready to record in your Log book that you:

I can meet the performance criteria
I have satisfactorily completed the activities for this topic.

You can record these by marking off the boxes in the shaded columns with a ✔ yes or ✘ no.

You can then ask your lecturer or assessor to verify this information.
Post-inspection steps and microform lists

Performance criteria
You will have achieved the performance criteria for this topic when you can:
- identify steps which need to be followed after quality checking has been completed
- record titles/details of completed microforms for stock lists, sales catalogues etc.

After quality inspection
After filming and quality inspection of films and originals has been completed a number of final steps need to be carried out. These steps include:
- the physical removing of flags and other information from the originals
- updating records
- arranging for the originals to be returned to their correct location.

Good communication skills, good record keeping and attention to detail are all needed in this process.

Physical removal of items
This may include:
- removing flags, targets and other markers in the originals
- replacing original fasteners etc. in archival items, as required.

Updating records
Typically, this can involve updating or deleting notes in catalogue records, finding aids and location files, or asking other staff to make the changes.

Arranging the next stage
There are a number of options for the next stage which include arranging to:
- return the originals to their original owners
- send them for further conservation treatment
- withdraw them from use, and/or house them in preservation level enclosures (e.g. wrapping, boxes).
Decisions about where to send the originals should have already been made at the stage when the item was selected for microfilming. This information should have been recorded by the supervisor or project manager and kept with the records of the microfilming job.

In cases where a ‘best microfilm copy’ has been created from a number of individual copies, staff will need to arrange for all the individual copies to be returned to their correct owners.

To avoid future misunderstandings, many organisations keep records of when items have been returned to their original owners, as in the following example of Filming instructions and record of items sent and returned, reproduced by permission of Artlab Australia.
### Filming Instructions and Record of Items Sent and Returned

<table>
<thead>
<tr>
<th>Item</th>
<th>Instructions</th>
<th>Target</th>
</tr>
</thead>
</table>
| Book 10  | • Film whole book in sequence. Except film 4 pages of additional materials after p. 90 and before p. 91.  
  • Do not film blank pages.  
  • Film the 5 pages at the end of the book. | Field Diary  
  13 February to 31 December 1953.          |
| Book 11  | • Film title page  
  • Film whole book in sequence.  
  • Do not film blank pages.  
  • Film 2 pages of expenses at the back of the book.  
  • Film label on envelope at back of the book. | Field Diary  
  2 January 1954 - 29 October 1974          |
| Book 12  | • Film title page  
  • Film whole book in sequence - except final 3 pages of additional material after p31 and before p 32.  
  • Do not film blank pages. | Field Diary  
  31 October 1974 - 31 December 1976       |

Delivered to SLSA: 21/01/01  
Received by: **Ines Mill**

Returned to Artlab: 21/02/01  
Received by: **Vicki Humphrey**
Activity 8.9

Post inspection checklist

a) Prepare a checklist of tasks which need to be done in your organisation after the microforms have been quality-checked. Use the spaces below.

b) Your checklist should include the physical removal of items from the originals, updating records and arranging for the originals to be returned to their owners or their correct location.

Post inspection checklist

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Microform lists

Lists of what microforms have been produced help to keep track of issues such as:
- what has been filmed, and what is yet to be filmed
- how many reels or fiche cover a particular title
- what titles may be available for sale.

Individual microfilming organisations will have their own methods for listing their products, depending on needs. In some organisations, these lists are integrated into library catalogues. Other organisations keep brief records that are enough to identify titles and prevent duplication (refilming of the same originals).

Some lists are kept on computers, some are on web sites and others are simple hand-written or typed lists. Whatever the format, in order to be useful the list needs to be continually updated as new microforms are produced.

Microform numbers

To assist in keeping track of microforms it is common for organisations to give them identifying numbers. There may be unique numbers for a series such as a newspaper title (e.g. Micronesian Times MF 108) and individual reels or fiche within a series may be numbered as Reel 1, Fiche 1.

The number also assists in filing the microforms on the shelves. This is discussed further in the module, Physical Management and Storage of Microforms, Topics 1 and 2.
Stock lists
Stock lists or holdings lists are complete and detailed records, reel-by-reel, of microform stock—the reels and fiche produced.

For example:
Banyan Library—Stock list

Title: Asian Pacific Records
1836-1840 reel 1
1841-1844 reel 2
1845-1850 reel 3
1851-1854 reel 4
1855-1860 reel 5

Example of stock list details
© Photograph courtesy of State Library of South Australia

Sales catalogues
These are lists of microform products for sale. Usually, sales catalogues are not as detailed as stock lists. They give summaries of the total number of reels or fiche covered by a particular title (as compared with a reel-by-reel breakdown).
For example:

**Banyan Library—Sales catalogue**

Title: Asian Pacific Records
1836–1860  5 reels
Price per reel = W$ 50 (world dollars)  Total for set = W$ 250

Income from the sale of microforms can be used to support further microfilming projects.

Sales catalogues can be found at the web sites of major libraries, archives and microfilming organisations, for example:


State Library of Queensland. *Commercial Microfilming Services Catalogue*,

Pacific Manuscripts Bureau. *Catalogue of Films*,

### Activity 8.10

**Microform lists**

a) Find an example of a microform list that is produced by your own organisation, or another microfilming organisation of your choice, and answer the questions below. (Some lists are available on the internet—see the examples above.)
Topics 5 & 6

Name of organisation

a) Details about items included in the list (e.g. title, number of reels, dates covered by reel etc).

b) What is the list used for?

c) How frequently is the list updated?

d) Suggested improvements
### Activity 8.11

#### Recording details

<table>
<thead>
<tr>
<th>Series Number: 0129</th>
<th>Series Number: 0129</th>
<th>Series Number: 0129</th>
<th>Series Number: 0129</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentosa News</td>
<td>Sentosa News</td>
<td>Sentosa News</td>
<td>Sentosa News</td>
</tr>
<tr>
<td>Produced in Singapore</td>
<td>Produced in Singapore</td>
<td>Produced in Singapore</td>
<td>Produced in Singapore</td>
</tr>
</tbody>
</table>

Add the details of the above titles to the stock list below.

**Stock list**

- **Series number:**
- **Title:**
- **Place:**
- **Reel details:**
- **Reel number** | **Dates**

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### Summary

Lists of what microforms have been produced help to keep track of issues such as:

- what has been filmed, and what is yet to be filmed
- how many reels or fiche cover a particular title
- what titles may be available for sale.

### Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer ‘yes’ to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- can meet the performance criteria
- have satisfactorily completed the activities.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled **Resources**, talk to your work colleagues or contact your lecturer or mentor.
I can:
- identify steps which need to be followed after quality checking has been completed
- record titles/details of completed microforms for stock lists, sales catalogues etc.

▲ Submit
You are now ready to record in your Log book that you:
- can meet the performance criteria
- have satisfactorily completed the activities for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ yes or ✘ no.

You can then ask your lecturer or assessor to verify this information.
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Background
The training materials have been developed by the National Library of Australia, in collaboration with the State Library of South Australia and under the auspices of IFLA PAC, and will be provided to people within the Asia and Pacific regions as a training resource. The materials will also be used within Australia as part of an accredited TAFE training course.

The training materials consist of 10 modules, 6 wall charts, a Log Book, a Learning Guide and a Glossary/Index. We expect that users will both read a printed version of the materials and download them as PDF files from the National Library of Australia’s website – www.nla.gov.au