 STATINTL [illegible]

MICROFORM SYSTEM PARAMETERS

1. VOLUME of material in data base

2. RATE OF CHANGES AND ADDITIONS and Revisions in data base

3. Natural BREAKDOWN OF THE DATA BASE into sub-collections; subject, author, time period, equipment, etc.

4. NUMBER OF DECENTRALIZED LOCATIONS requiring access to the data base Around the country or local input

5. DISTRIBUTION-MODE for data base - request vs selective dissemination Do we need the entire file every day

6. ACCESS DYNAMICS, use rate, response time required, simultaneous users, etc. Computer

7. Need for guaranteed FILE INTEGRITY or SECURITY DOD + NSA.

8. The ACCESS MODE, serial access, simple subject access, multi faceted subject access type of indexing setup! inverted or subject

9. Need for HARD COPY ENLARGEMENTS and/or microform duplication (fiche) to be made at point of end use or immediate use Put restrictions on number of copies

Exerpted from a paper presented at the 1969 National Microfilm Association Convention by Joseph E. Poirier and James Forney of Information Dynamics Corporation. (See Bibliography)

OPERATING FACTORS

Features to be scored after comparative evaluations.

		READER A	READER B	READER C
			MANUFACTURER	MANUFACTURER
			STOCK NO.	STOCK NO.
Screen Brightness				
1. Is it comfortably readable regardless of machine's position (front, back or sideways to window or artificial light source)?	Score			
2. Is image brightness adjustable when going from negative to positive microfilm (or vice-versa)?	Score			
Image Sharpness				
3. Does the projection lens have a large aperture and is it anti-reflection coated?	Score			
4. Does it have a flat field without "edge fall-off" of image?	Score			
5. Are there both good depth of focus and depth of field?	Score			
Viewing Convenience				
6. Is there adequate viewing angle to read comfortably from several positions, even 2 or 3 people simultaneously?	Score			
Carrier Design				
7. Is it easy to load and unload various unitized formats efficiently, either of vertical or horizontal material?	Score			
Ease of Scanning				
8. Do controls permit one-hand operations left or right hand? Is image location quick, easy and accurate?	Score			
Operating Noise				
9. Does the reader run noiselessly? If there is a cooling blower, is it quiet?	Score			
Operating Temperature				
10. Does it run cool? Is there any heat apparent to the user?	Score			
Film Protection				
11. Is the film being viewed always protected by glass plates while being indexed or read?	Score			
12. Can film be left in the carrier (light on) for an hour or longer without being appreciably damaged?	Score			
Useful Lamp Life				
13. Which reader has the longest rated lamp? Is there gradual light drop-off. Does the lamp operate at higher than its rated voltage?	Score			
Dust Protection				
14. Rate the readers from the standpoint of design avoidance of potential dust accumulation in the optical system.	Score			
Screen Size				
15. Is the screen at least 11" high to project an 8½ x 11 original same size?	Score			
Note-Taking Convenience				
16. Can you sit comfortably in front of the reader to take notes conveniently?	Score			
TOTAL SCORE (All Factors)				

AF-623, printed in U. S. A

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Microform Systems

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4. Yerkes, C. and Wolf, D.R., AN INTRODUCTION TO MICROFILM EQUIPMENT, MATERIALS, SYSTEMS AND APPLICATIONS. Annapolis, Maryland 1969

5. Tate, V. D. (Editor), PROCEEDINGS OF ANNUAL MEETINGS AND CONVENTIONS, 1966, 1967, 1968. The National Microfilm Association, Annapolis, Maryland

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CAMERA

Flash Cards (To be created as Forms and Stocked)

Form No

62 — Camera Operator Certificate and Inspection

62a — Start of Retake

62b — End of Retake and Certificate

62

+ Retake of Previous Document

— Microfilm Classification Secret
— " " Confidential
— " Unclassified

+ Microfilm Project Number and Title
— Index to Reel No _____
+ Camera Resolution Chart
— Graphic Scale chart
+ Start Reel No.
+ End Reel No.
+ Flash Card Stripes

(OCR)

+ Flash Card for Folder Identification

Other Microfilming Related Forms

Microfilm Box Label.

Project Analysis Form
Film Inventory Form

Cross Reference to Microfilm

ACTIONS

Office Study + Action Forms

Coordination Forms.

Implementation Forms.

MICROFILM SYSTEMS DEVELOPMENT

OFFICE ACTION:

Problem Definition – Office Objectives and Needs
Concept Development – Alternatives Possible to reach Goals
Feasibility Study – Files Information (Form –) Data Flow
System Analysis – User Acceptance – Equipment & Procedures
Preparation of System and Equipment Proposal
Office review and endorsement

Agency Coordination

Development – Records Officers – Component + Directorate
System Review – Directorate Info Processing Coordinator
Equipment Requisition – Records Mgt Staff / SSS
Film Processing – Printing Services Div O/Log
Computer COM System – SIPS/DDS IPC in each Directorate

Office Implementation

Equipment Procurement and Installation
Manpower assignment, space, work schedule and Supervision
Work Flow – File Screening – File Preparation – Filming – Hot File
Processing – Film Deliver – Process – Return – Verification – Corrections
Distribution – File Film master + Copy – Return File
Use of Film – Use Procedures and Film maintenance
Data Security – Authority + Procedure for file + film disposal

2 Forms to be used for Regulation Microfilm Transmittal

CAMERA OPERATOR'S REPORT AND CERTIFICATE

PROJECT

REEL NO.

PRODUCTION DATA		INDEXING DATA
STARTED:	(Date) (Hour)	BEGINS WITH:
FINISHED:	(Date) (Hour)	1.
TOTAL NO. OF HOURS		2.
TOTAL NO. OF IMAGES		3.
APPROVED: _____		4.
		5.
		6.
		ENDS WITH:

CERTIFICATION

I hereby certify that the microphotographs appearing in this reel of film are true copies of the original documents described above.

~~THE DOCUMENTS DESCRIBED ABOVE WERE PHOTOGRAPHED BY:~~

(DATE) (SIGNATURE OF CAMERA OPERATOR)

FORM NO. 62 REPLACES FORM 60-93
1 JUL 54 WHICH MAY BE USED.

(31-36)

REGULATIONS MICROFILM PROJECT DATA

F I L E P R E P A R A T I O N

NAME(S)

BOX NUMBER	CATEGORY NUMBER

REGULATORY SERIES NUMBER (inclusive)

BEGIN WITH	JOB NUMBER	END WITH	JOB NUMBER

TIME SPENT ON FILE PREPARATION

DATE AND TIME STARTED	DATE AND TIME STOPPED	INITIALS OF INDIVIDUAL

APPROXIMATE PERCENTAGE OF MATERIAL LEFT IN BOX AFTER PURGING:

_____%

DATE COMPLETED

SIGNATURE

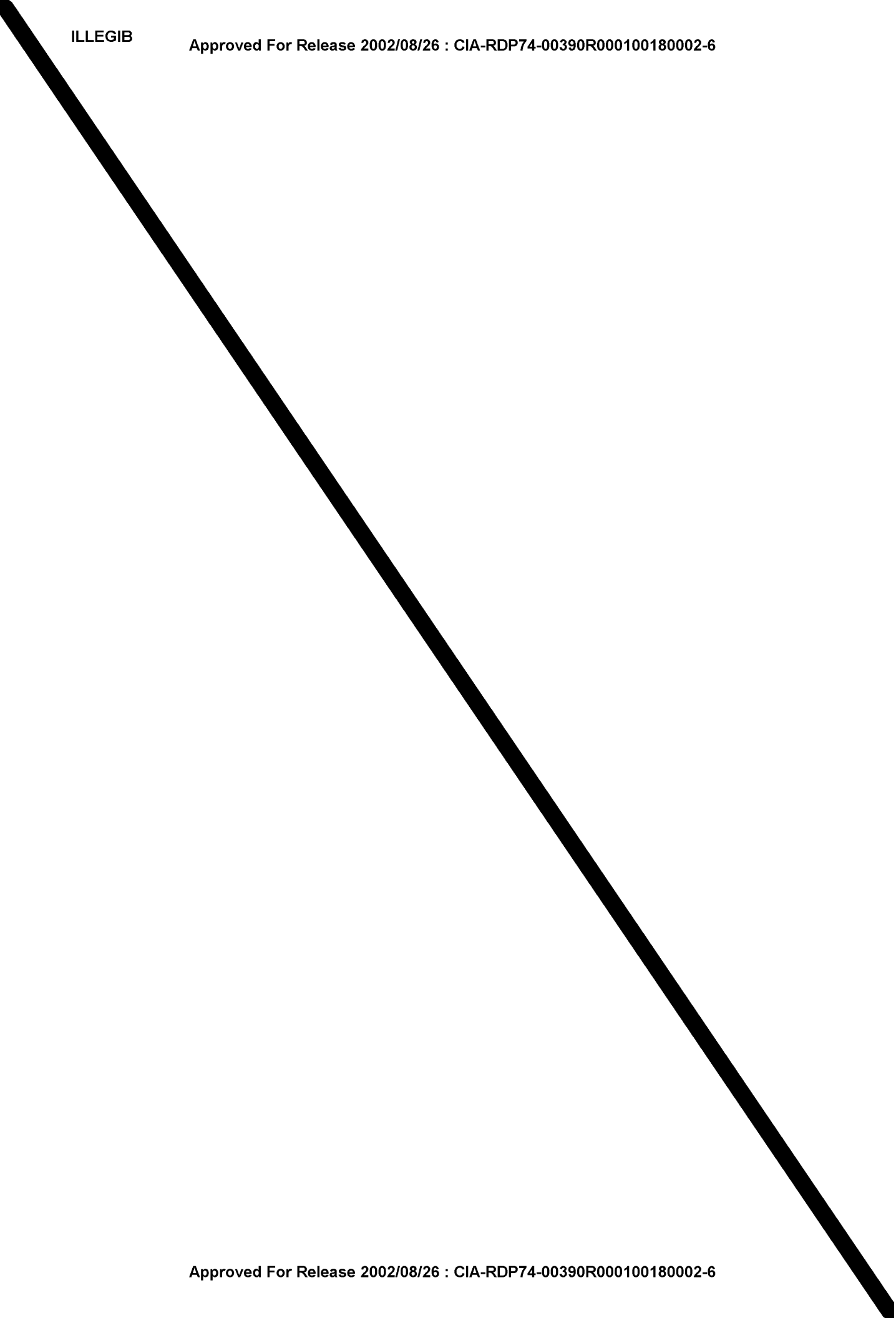
RCB CONTROL OFFICER USE ONLY

THIS BOX COMBINED WITH BOXES _____; _____; _____;

_____; _____; _____; _____; _____ FOR FILMING.

_____
DATE

_____
SIGNATURE, RCB CONTROL OFFICER



PART IV - TARGETS

a. A uniform overall system of targets is recommended as follows:

36" of leader fil m preceding the targets.

Target No. 1 - Classification
" 2 - Start
" 3 - Vital Storage Records Filmed by Printing Services Division.
" 4 - Camera number - Date filmed - Grey Scale
" 5 - Project number - Roll number
" 6 - Office - Division - Branch - Section
" 7 - List of Contents
" 8 - Contents
" 9 - End
" 10 - Project number - Roll number
" 11 - Camera number - Date filmed - Grey Scale
" 12 - Classification

36" of leader film following the last target.

ATINTL

1 June 1971

[redacted]

After reviewing the kit I am convinced

ILLEGIB

a. Each form must have an official Agency form number and not a kit number.
All will be the same 8 x 10 1/2" size.

b. Let's get PSD to furnish a Resolution Target.

c. The wording on the classification forms 2 & 3 should include an explanation and horizontal classification word of Secret or Confidential - Create another for Top Secret.

> This material on this microform has a security Defense Classification of
>
> S E C R E T
>
> This material is in Group 1 and not subject to automatic Downgrading.

d. Item 4 should contain the statement:

> The material on this microform is
>
> U N C L A S S I F I E D

e. Item 5 has worked fine and we can continue to use it.
Where did the design originate?

f. I don't understand 6 & 7.
I feel the File Name or Index are important enough to stand alone and not within a flash card. Let us discuss these two.

g. I would like a lined card and format prepared for File Name and Index.

h. We will have too many flash lines in film and they will no longer alert as intended.
Let the Reel start and end without lines. Items 8 + 9.

i. The same for items 10 and 11 and 12.
They are full page forms.

j. How does 13 and 15 differ from what you have on No. 6?
No. 14 and 17 are too glaring. A simple retake note will suffice.

k. Why do we have No. 16 in addition to the back of Camera certifiers form No. 62?

l. No. 18 reduction ratio should be part of the resolution Chart.

STATINTL

Chief, RAB

(COMPONENT NAME IN FULL)

(FILE TITLE)

(FILE ARRANGMENT)

(INCLUSIVE DATES)

(MICROFILM PROJECT No.)

(FILMING DATE)

Approved For Release 2002/08/26 : CIA-RDP74-00390R000100180002-6

MICROFILM STUDY FACT SHEET

Microfilming Proposal for Evaluation, Form 3239 has been completed. The Directorate RMO and the Agency RMO has reviewed the Evaluation and have concurred.

The following additional information is needed (in narrative form) to complete the final evaluation of the Microfilm Proposal.

File Identification / User Office / To identify with Evaluation

PROPOSAL:

a. Describe contents and purpose, and how the new system would work.

b. Would there be copies of film in central file or elsewhere? If elsewhere, where and what type and form (original silver negative on reel, Diazo or Kalvar on reels, cartridges or cassettes.

c. Arrangement of film.

d. What reduction ratio would be needed.

e. Index -- if one needed, describe.

f. Describe the guides and targets to be used.

g. Disposition Instruction. (Covers, paper copy, and film -- both negatives and work copies).

ADVANTAGES: Describe in detail the advantages to be derived from installation of the proposed system.

✓ a. Operational efficiency

✓ b. Space saving

✓ c. Management improvement

✓ d. Attainment of the objectives

✓ e. Costs

✓ f. Manpower

g. What end products will be provided -- to whom, and for what purpose or tasks?

ALTERNATIVES CONSIDERED

Describe in detail alternative solutions considered and the reasons this proposal was chosen and others were rejected. What are the consequences of doing nothing?

RELATIONSHIP TO OTHER PROJECTS

a. What is the system relationships of this proposal to other projects: on-going; developmental; and planned?

b. How does this proposal fit into the overall plan for your component?

c. What existing projects or activities will it replace or impinge upon?

d. What impact will the development of this project have upon other projects in terms of allocation of manpower and equipment resources; identify all relevant time frames and target dates.

CONVERSION PLANS

a. Describe in detail what will be involved in conversion.

b. Will it be necessary to rearrange material? (if yes describe in full detail).

c. Can the material be screened? If so, what per cent can be destroyed?

d. Who will do the screening and arrangement?

e. Who will do the camera work?

f. What support will PSD/OL be able to give this project?

g. Will the filming be done in the office? If not, where?

PRIORITY: What is your assessment of the priority of this project in relation to other projects in your component -- in the Directorate?

HARDWARE REQUIREMENTS

a. Camera(s)

1. Type, Number, Model etc.
2. Who will furnish?
3. Are they to be purchased or loaned?

b. Readers

1. Type and Numbers
2. Location(s) of each

c. Reader/Printer

1. Type and Numbers
2. Location(s) of each
3. Are they to be purchased or loaned?

ARMY REGULATION
No. 340-22

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *19 July 1968*

MICROFILMING OF RECORDS

CHAPTER 1
GENERAL

1–1. Purpose. This regulation outlines the policy and the responsibilities to accomplish microphotographic operations and prescribes the administrative procedures to be followed to initiate and conduct microfilming projects in the Department of the Army.

1–2. Technical procedures. Technical Manual 12–257 contains the basic technical procedure to accomplish a microfilming project which will result in a file of film rolls containing records organized and indexed in a manner similar to that used for paper records housed in a file cabinet. TM 12–257 does not contain procedures for projects of a more complicated nature such as those involving the use of aperture cards, input to or output from automatic data processing equipment, microfiche, rapid or automatic retrieval of filmed information, data transmission and other sophisticated systems. TM 12–257 may be obtained through normal publications distribution channels and will be requisitioned only for planning a microfilming project or for use on an approved microfilming project.

1–3. Definitions. The following definitions apply when used in these regulations or in any agency or command instructions which supplement these regulations.

a. Microfilming. The technique of producing miniature images on photographic film.

b. Class "A" microfilming. All microfilming activities involving the disposal, preservation or security of records identified as permanent in the files disposition standards contained in regulations governing the disposition of records, and meeting the requirements contained in paragraph 1–5 below. This class also includes microfilming operations performed for procedural purposes as described in paragraph 1–5*d*. It does not include microfilming performed as part of an Automatic Data Processing System wherein microfilming is an integral part of the overall system. All Class "A" microfilming must be approved by The Adjutant General.

c. Class "B" microfilming. All other microfilming activities not covered by *b* above, including, but not limited to, microfilming for the purpose of duplicating records in film or paper form; producing multiple reference copies; collecting intelligence and other information; distributing and exchanging scientific or technical data; and copying or abstracting research material in the field of the arts and sciences.

d. Microfilming equipment. All cameras, readers, and other related equipment required for microfilming operations including equipment needed for the making of reproductions from microfilm but excluding punch card machines (PCM) equipment.

e. Microfilming supplies. All supplies required by the Department of the Army for microfilming operations including film and paper used for making reproductions from microfilm.

f. Responsible headquarters. The use of this term refers to the officials listed in paragraphs *4–2* and *4–3* who are responsible for the supervision of records management activities within their respective areas.

1–4. Legal status of microfilmed records. *a. General.* The introduction of a record as evidence in a court action requires that the original record be produced or that a sound reason be established for the substitution of any type of copy. When a record has been microfilmed and the original has been destroyed, that fact constitutes a sufficient reason for the inability to produce the original paper record. If a record has been microfilmed during its passage through an office, the microfilm becomes the current official record of the transaction. Since no paper record has been destroyed, the admissibility of reproductions from microfilm of this type will be determined by the court on the basis of "best evidence." All reproductions from microfilm must, however, be authenticated to the satisfaction of the trial court.

b. Records destroyed under statutes. The disposal of records of the United States Government is governed by Federal statutes. Substantially, these statutes provide that duly authenticated microfilm reproductions will be treated as the

original paper records for the purpose of their admissibility in evidence. The act of 7 July 1943 (57 Stat. 380, as amended; 44 U.S.C. 366–376, 378–380), and title 28, United States Code, section 1732, concern the disposition of records and admissibility of microfilmed records. Although some State courts may refuse to recognize the provisions of the Federal statutes, they may admit such reproductions after it has been established properly that the microfilming of the original records and their subsequent destruction was made pursuant to the above-mentioned statutes.

c. Microfilms not covered by statutes. When the microfilming was performed to avoid the creation of a paper record, or a duplicate thereof, it may be necessary to submit a reproduction from microfilm as the only available evidence. If it is necessary to explain the failure to produce the paper records, the fact that microfilming was approved by higher authority and assigned a control number is sufficient evidence that microfilming was a routine procedure of the office.

d. Precautions. Much litigation, time, and legal costs will be saved if, at the time of microfilming, records are maintained which will—

(1) Establish the existence, at one time, of the paper record and its competency as evidence.

(2) Show that the reason for its destruction or nonproduction in court is free from suspicion or fraud.

(3) Establish the accuracy of the microphotographic technique.

1–5. Policy on microfilming. All class "A" microfilming must be approved in advance by The Adjutant General. Procedures for the submission of proposed microfilming projects are contained in chapter 5. In general, proposed microfilming projects will be approved only when they meet the following requirements:

a. Disposal microfilming. This type of class "A" microfilming will be authorized only when the cost of retaining a group of records for their established retention period would exceed the initial cost of microfilming and the cost of equipment required to utilize the records in microfilm form. Generally, it is uneconomical to film records which may be destroyed or retired to a records center in 15 years or less.

b. Preservation microfilming. This type of class "A" microfilming will be authorized only for records of established permanent value when they are found to be deteriorating, fading, or becoming brittle to the extent of endangering their record value. In general, this type of microfilming will be limited to records in records centers.

c. Security microfilming. This type of class "A" microfilming will be undertaken only for records which are determined to be *essential to the continuity of operations and the prosecution of a major war effort* (both requirements must be met) provided copies of such records are not already available. Essentiality of records proposed for security microfilming must be certified personally by the head of the agency proposing a project of this nature.

d. Procedural microfilming. This type of class "A" microfilming is performed for the primary purpose of saving labor and time in large-scale repetitive operations. Procedural microfilming will be undertaken only when it will effect a reduction in the cost or, when time is the essential factor, a reduction in time in the performance of repetitive operations. Under some circumstances the use of procedural microfilming may save time and expense in the following respects: expedite the workflow; reduce handling; curtail movement of personnel or materials; reduce requirements for supplies, equipment, space; shorten searching time; eliminate standby or make-ready time; or reduce mailing and transportation costs.

1–6. Microphotographic standards. Microfilming standards for the Federal Government are established in Federal Property Management Regulations entitled "Records Management" issued by the General Services Administration. The standards prescribed in this regulation and TM 12–257 are designed to meet those requirements. The following standards govern the microfilming of permanent records:

a. The integrity of the paper records will be preserved on the microfilm. The microcopies will be so arranged, identified, and indexed that an individual document or component of a records series can be located with reasonable facility, and will contain all significant record detail needed for probable future reference.

b. The film stock used in making microphotographic copies will comply with Federal Standard No. 125a (24 April 1958) and the latest issue of United States of America Standard Specifica-

tions for Archival Film. Accordingly the film will be so processed that after processing it will contain not more than 0.005 milligram of hypo per square inch.

c. The provisions for preserving, viewing, and maintaining micro-copies of the paper records will meet the requirements of TM 12–257.

d. Whenever an agency deems that the master microphotographic copy of permanent records is deteriorating or will deteriorate as a result of use or other causes, the agency will make a duplicate copy for its own use and will request disposition instructions for the master microphotographic copy from The Adjutant General, ATTN: AGAR–P.

1–7. Disposal of records. *a.* The disposal of permanently valuable records will not be approved until disposal authority is received from the Congress of the United States. Accordingly, agencies proposing to microfilm permanently valuable records for disposal purposes will request authority to destroy the records before the microfilming project is actually undertaken. Approval of a microfilming project does not constitute authority to dispose of the paper records. Records which have been microfilmed will be destroyed only upon specific authorization of The Adjutant General.

b. The disposition of records in microfilmed form is governed by the regulations pertaining to the disposition of paper records.

CHAPTER 2
BASIC USES OF MICROFILM

2–1. General. The basic applications of microphotography are listed in *a* through *e* below. A discussion of each of these applications is contained in this section.

a. To save labor and time in performing repetitive operations.

b. To insure the safety of essential records.

c. To duplicate records in microfilm or paper print form.

d. To save space and equipment in storing records.

e. To preserve deteriorating records.

2–2. Microfilming to save labor and time in performing repetitive operations. One of the beneficial uses of microfilm is to save labor and time in performing repetitive operations. In most applications of this type, performing a task by means of microphotography will also effect a monetary savings over other methods. There are many possible beneficial uses of procedural microfilming. A few of these uses are presented below for illustrative purposes.

a. Substitute for "logging." When an operation requires a large amount of conventional "logging" in a chronological, serial, or receipt sequence, and when it is desired to eliminate costly manual transcription of information from one record to another, the use of microphotography as a high speed and accurate substitute for tedious and time-consuming recording should be considered. In such an operation not only may the recording time and personnel requirements be greatly reduced, but microfilm copies can provide complete and accurate information rather than the abstracts or briefs commonly provided by conventional systems.

b. Substitute for filing. Microfilming may be used as a substitute for filing to save time, equipment, and space when the arrangement of the documents is such that filming is practicable and the volume of the material is sufficiently large to result in economical filming operations. Filing operations requiring the retention of record or reference copies of messages, requisitions, receipts, purchase orders, bills of lading, transportation requests, manifests, and other documents arranged serially or chronologically should be considered as potentially beneficial areas for microphotography.

c. Preparing lists and inventories. Where stock inventories have to be prepared at many locations and be forwarded to a central point, it may be found desirable to microfilm the stock control cards at the point of origin and forward a strip or reel of microfilm to the central office rather than prepare a list of items and quantities involved. Such a system will also be found to afford a high degree of accuracy and obviate the necessity for time-consuming, detailed checking.

d. Expediting flow of documents. Operations which require the rapid flow of documents from one point to another, in order to expedite action can, in many instances, be benefited by microfilming the documents and forwarding them to their destination with almost no delay. The retained film copy can then be utilized for future reference.

e. Other uses. Microfilming may also be utilized to furnish detailed "field" reports to "headquarters" offices; to permit the audit of accounts at a central point thereby eliminating the time and expense involved in the travel of auditors; to record checks prior to depositing in a bank; to reduce the weight and bulk of mail; and for industrial uses, such as recording meter and gage readings; and in many other ways.

2–3. Microfilming to insure safety of essential records. Records which have been determined to be essential may be microfilmed as insurance against loss through the hazards of war. The paper records then may be retained at the point of origin and the microfilm stored at a more secure location. Because microfilm can reduce the bulk of a given quantity of records by as much as 98 percent, this process is particularly beneficial when storage space is critical at the alternate storage location. One cubic foot of storage space will house 108 reels of 16-millimeter film or 72 reels of 35-millimeter film. This condensed volume of files can easily be accommodated in a vault area or in a safe file.

2-4. Microfilming to duplicate records in microfilm or paper print form. The advantages of using microfilm to duplicate records are the speed with which they may be copied, the comparatively low cost of the film, and the compactness of the microfilm file. Generally, all microfilming results in the duplication of paper records in film or reproduced paper form. This use of microfilm, however, is distinguished from space and equipment savings projects by the fact that no destruction of the paper records is contemplated at the time the records are photographed.

a. Duplication of records on film. Portable microfilm equipment is frequently used for the rapid collection of intelligence and other data. Conversely, microfilm is also employed to distribute technical data, such as articles in medical journals and bulky engineering drawings. Careful planning of this type of work is as essential as when records are being microfilmed for other purposes. The ease with which microfilm copies can be made frequently leads to overproduction of nonessential material with the result that genuinely useful data are difficult to find. Indexing should be simple, but adequate. The reduction ratios and placement of images must be such that the film may be read on the simplest types of viewing devices which are frequently the only types available for field use.

b. Multiple reference copies. Where a considerable volume of paper records must be used in more than one location, microfilm may be an economical solution. This differs from the type of duplication mentioned in *a* above only in the number of microfilm copies made. This use of microfilm may consist of negative film in roll form or "unitized" negative film in strips of several images or a single frame mounted in an aperture card. Additional copies of the original film negative can be made by several different processes for distribution to other locations or users.

c. Duplication of records on paper. Where duplicate copies of records are required in paper form, microfilming can be used as an intermediate step in the duplicating process.

(1) *Continuous enlargements.* Enlarged paper prints can be produced at relatively low cost and high speed in several types of continuous printers. The advantages of this method are the speed of reproduction, the relatively low cost, and the ease of collating the finished prints. Its most economical use is in cases where the quantity to be reproduced exceeds 5,000 sheets of paper.

(2) *Standard photographic enlargements.* Where only a limited number of paper prints are required, paper reproductions can be made from the film by the use of certain 16-mm and 35-mm microfilm reader-printers, a microfilm enlarger, and several other methods.

(3) *Substitute for other duplicating methods.* Microfilm may be used as a substitute for other "quick copy" methods of reproducing records. When large quantities are involved, a paper copy produced from microfilm has a lower average cost than many other methods. Where microfilm cameras and reproduction equipment capable of large volume are available, this method of producing copies of records should be investigated with a view to reducing unit cost.

2-5. Microfilming to save space and equipment in storing records. The desirability of microfilming to save the cost of space and filing equipment must be judged on the basis of savings in space and equipment costs after the cost of microfilming has been deducted. Detailed discussion of these costs will be found in chapter 6. Prompt disposal of valueless records and prompt retirement of other records in compliance with disposition standards contained in regulations governing the disposition of records are the two major means for reducing recordkeeping costs to a minimum. Approximately 200 file drawers of letter size material can be stored on microfilm in one 9-drawer film file cabinet. Floor space requirements can be reduced from 300 square feet for paper records to 6 square feet for microfilmed records—a floor space saving of 98 percent.

2-6. Microfilming to preserve deteriorating records. When records of permanent value are found to be deteriorating or becoming brittle because of poor quality paper stock or fading because of the use of fugitive inks such as that used in "ditto" or other "spirit" duplicators, microfilming may prove to be one of most economical methods of preserving the information contained in the records. Permanent records which are becoming badly mutiliated through constant use may also be preserved on microfilm.

CHAPTER 3
DISADVANTAGES OF MICROFILM

3-1. General. Microfilming has disadvantages which must be taken into account whenever the application of this technique to records is considered. The common disadvantages are—

a. Necessity for perfecting the arrangement of files before filming.

b. Necessity to overcome photographic difficulties caused by the physical characteristics of the records.

c. Inability to conveniently interfile material after filming if the film is kept in rolls.

d. Difficulties of utilizing microfilm records for reference.

3-2. Perfecting arrangement of files. *a.* A certain amount of rearrangement is frequently necessary when a paper file is microfilmed. This is usually because variations in the standard pattern of filing are not reflected in the finding media and all the finding media in a paper file cannot be transferred to microfilm without excessive indexing cost. The searcher normally has no way of quickly recognizing deviations from the standard filing pattern on microfilm. If a file contains many special folders, then interfiling may be necessary. In such cases a special target may also be photographed at the beginning of the file section calling attention to the fact that special folders will follow the general folders. When images of the paper records are spread out on a ribbon of microfilm in alphabetical, chronological, or other sequence, searching of the film will be costly where there are exceptions to the standard sequence. Such problems do not make the conversion to microfilm impossible. They merely emphasize the importance of advance planning and thorough understanding at the operating level of this essential difference between paper and microfilm files.

b. One of the advantages of a file on microfilm rolls is that once the records are in order they will remain in order. The inability, however, to alter the arrangement of the microfilmed records becomes a disadvantage when the paper records were not in order before they were filmed. Changes cannot be made economically after the paper records have been destroyed. A file that does not have some misfiled material or some peculiarity of file arrangement will be found to be a rare exception. It has been the experienced of all well-organized microfilming projects that the handling of records, paper-by-paper, will bring many errors to light. In a large alphabetical file, for example, material belonging under A will be found in the files from B to Z. Since perfection rarely exists in a paper file because of misfiling, failure to return withdrawn material, and other factors which will continue as long as the file is in paper form, complete perfection on microfilm is not normally essential. It is usually not practical to perfect the files in their entirety before microfilming is undertaken. The degree to which the files should be perfected will depend on the importance of the records and the probable frequency of reference. Projects requiring an extensive amount of rearrangement or improvement will prove correspondingly expensive.

3-3. Photographic difficulties. Wide variations in physical characteristics, particularly in colors of paper and amount of contrast between the legend and the paper color, make the production of good quality microfilm difficult. A good film image normally can be produced when the amount of exposure is adjusted accurately for each document. However, when large numbers of documents must be filmed each day the precise adjustment of exposure for each document is not practicable. Further, wrinkled and folded documents must be smoothed and flattened and the filing sequence of documents must be maintained. In view of the many difficulties normally encountered, the microfilming of the typical file is far from an automatic process of feeding papers through a high-speed camera. Experience has shown that trained personnel and technically competent supervisors are required to produce quality microfilm.

3-4. Interfiling difficulties. Once a file has been microfilmed, it is very difficult and costly to add, in its normal sequence, material subsequently received. If a chronological correspondence file is

to be microfilmed, for example, the files must be cut off on a predetermined date and the microfilm should not include material received subsequent to that date. This creates difficulties with replies or indorsements received after the cutoff date of the basic communication. The usual solution to this problem is to postpone microfilming until the files are closed completely. An alternate method of solving this problem is to microfilm additional papers on a supplemental reel and to cross-index to the original film. This system, however, necessitates reference to two or more film reels when information from the file is required.

3–5. Reference difficulties. *a. Comparative searching time.* The time required to find a record on rolls of film may take longer than would be required if the records were available in a paper file. The basic reason for this is that once the file drawer of paper records is opened, the search is quickly localized by easily recognized file guides and no more time is required to reach to the rear than to the front of the drawer. On a microfilm reel containing the equivalent of almost a drawer of records, the time required to hand wind the film to the 75th foot will be three times as long as for a record at the start of the reel. Conversely however, much travel time from the working area to the files area can be saved by having on microfilm reels the equivalent of many file cabinets in close proximity to the searcher.

b. Comparing documents. Comparing documents on a microfilm reader can become a difficult and time-consuming operation. The reason for this difficulty is that the image of one document disappears from the reader screen when the film is moved forward or backward to the photographic image of another document. Unless the searcher's memory is exceptionally good, a notation of the data appearing on the first record will have to be made before winding the film to the second document. This is less convenient than having the paper records side by side.

c. Fixed location of viewers. The fixed location of viewers is another disadvantage which must be considered. When records have been mircofilmed, the user must go to the microfilm reader. The number of readers must be sufficient for the peak use of the records. Two searchers cannot refer simultaneously to two files on the same reel of film. The only way to prevent this disadvantage is to refrain from microfilming records requiring frequent references at scattered locations.

3–6. Balancing advantages and disadvantages. The above disadvantages are listed in detail, not to discourage the use of microfilm, but to forewarn the prospective user of the inherent problems encountered in many files. Against these disadvantages must be balanced the known economy of space and physical convenience of compact files preserved on microfilm. The more permanent the paper file, the more costly it is to the Army to preserve, and for relatively inactive files some inconvenience to the user may be more than offset by savings in maintenance costs.

CHAPTER 4
RESPONSIBILITIES

4–1. General. This chapter establishes the responsibilities of officials of the Department of the Army for microfilming.

4–2. The Adjutant General. The Adjutant General is responsible for—

a. Formulating the policy for and the staff direction of microfilming management in the Department of the Army.

b. The supervision, centralized control, and final approval of all class "A" projects and assignment of project control numbers thereto.

c. The conduct of all negotiations with the Archivist of the United States, The Comptroller General, and the heads of other Government agencies as required by law, Executive Order, or regulation.

d. Determining the technical feasibility, the administrative desirability, and the economical soundness of proposed class "A" microfilming projects.

e. The continuing review of approved class "A" projects to assure their operation in an efficient and economical manner and to insure compliance with statutory requirements for microfilmed records.

f. The responsibilities defined in paragraph 4–3 for the installations and activities under his records management supervision.

4–3. Officials responsible for microfilming. *a.* Officials responsible for the supervision of records management are also responsible for the following actions concerning microfilming:

(1) Initiation of microfilm project proposals within their assigned jurisdiction.

(2) Review and *thorough evaluation* of proposed class "A" microfilm projects submitted to them.

(3) Submission of proposed class "A" microfilm projects to The Adjutant General, ATTN: AGAR.

(4) Review and final approval of proposed class "B" microfilm projects submitted to them and assignment of control numbers thereto.

(5) Notifying the activity concerned of the final approval or disapproval of proposed microfilm projects.

b. Additional administrative responsibilities are prescribed in paragraph 4–4.

4–4. Collective responsibilities. The responsible officials identified in paragraphs 4–2 and 4–3 exercising records management supervision over the proposing or operating agency are responsible for—

a. Funds and personnel. Insuring that agencies proposing microfilming projects budget and provide funds for the cost of microfilming and related equipment, supplies, film, and paper and insuring that personnel required to operate the project are available. A statement on the availability of funds and personnel will be incorporated in the application for approval of a project.

b. Project planning. To enable the programming of proposed microfilming projects prior to the time for submitting budget estimates, plans for proposed projects will be completed and submitted in accordance with procedures set forth in paragraph 5–1.

c. Designation of a microfilming project monitor. A knowledgeable and competent individual will be designated to direct the planning and coordination of each proposed class "A" microfilming project and to investigate its technical feasibility and economic soundness. This person will be sufficiently conversant with microfilming techniques and the capabilities of modern equipment to insure the production of quality microfilm after the project is in operation.

d. Training of personnel. Because of the high cost and difficulty of correcting errors on microfilm, adequate training of personnel is essential. The sources of training material are the instruc-

tions in the operation of the cameras and readers given by the vendor's representative; TM 12-257; and demonstrations by the supervisor or, when practicable, by representatives of the responsible headquarters.

e. Utilization of equipment and supplies. Action will be taken to assure that microfilming equipment is utilized to the fullest extent and that stocked quantities of perishable items are kept at a level not exceeding operating needs.

f. Reports. Obtaining such reports as may be necessary for proper supervision and continuing evaluation of projects on a cost and efficiency basis from agencies operating class "A" or class "B" projects when required.

g. Requirements. The submission of requirements will be governed by the procedures set forth in paragraph 5-4.

4-5. Microfilming service on a reimbursable basis. The General Services Administration provides a microfilming service which includes preparing, indexing, and filming records; inspecting film; and labeling film containers. Department of the Army agencies are encouraged to avail themselves of this service and those desiring to do so should contact the appropriate GSA Regional Director listed below. Preliminary discussions with GSA personnel for the purpose of obtaining advice, cost estimates, and other pertinent information is authorized. However, actual microfilming operations will be undertaken only AFTER obtaining approval for the proposed microfilming in accordance with chapter 5, and provided that funds are available as required in paragraph 4-4. The address and area served by each GSA office are listed below.

GSA Regional Offices, Addresses, and Area Served

Region number	Address	Area served
1	Post Office and Courthouse Boston, Mass. 02109	Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island.
2	30 Church Street New York, N.Y. 10007	New York, New Jersey, Pennsylvania, Delaware, Puerto Rico, Virgin Islands.
3	Center Manager Washington National Records Center, GSA Washington, D.C. 20409	District of Columbia, Maryland, West Virginia, Virginia.
4	1776 Peachtree St. N.W. Atlanta, Ga. 30309	North Carolina, South Carolina, Tennessee, Mississippi, Alabama, Georgia, Florida.
5	219 Dearborn St. Chicago, Ill. 60604	Kentucky, Illinois, Wisconsin, Michigan, Ohio, Indiana.
6	1500 East Bannister Road Kansas City, Mo. 64131	Missouri, Kansas, North Dakota, South Dakota, Minnesota, Iowa, Nebraska.
7	819 Taylor Street Fort Worth, Tex. 76102	Texas, Arkansas, Louisiana, Oklahoma.
8	Building 41 Denver Federal Center Denver, Colo. 80225	Colorado, Utah, Wyoming, New Mexico, Arizona.
9	49 Fourth Street San Francisco, Calif. 94103	California, Nevada, Hawaii, Philippines.
10	6125 Sand Point Way Seattle, Wash. 98115	Washington, Oregon, Montana, Idaho, Alaska.

CHAPTER 5
ADMINISTRATIVE PROCEDURES

5–1. Planning and establishing a project. *a. General.* The planning of microfilming projects will be untertaken only after consideration has been given to the several factors discussed in this regulation. Elements of the Department of the Army proposing class "A" microfilming projects will submit their plans and estimated requirements for microfilming equipment and supplies to the responsible headquarters at least 6 months in advance of the fiscal year in which operation of the project will begin. Class "B" projects will be planned similarly and submitted at least 5 months in advance of the fiscal year in which operation of the project will begin. If favorably considered and funds and personnel are available (para 4–4), the responsible headquarters will forward class "A" project proposals to The Adjutant General, ATTN: AGAR, Department of the Army, Washington, D.C. 20315, for final determination. Class "A" project operations will not be initiated until the project has been approved by The Adjutant General.

b. Application for project approval. Each class "A" microfilming project proposal will be prepared on DA Form 1500 (Records Analysis Sheet for Proposed Microfilming Project) (fig. 5–1) and will be submitted *in duplicate* to The Adjutant General, ATTN: AGAR, through the responsible headquarters concerned. This form is available through normal AG publications channels. Separate sheets will be submitted for each file series. The purpose of the records analysis sheet is to provide commanders exercising supervision of records management and The Adjutant General with a clear statement of the primary purpose of the proposed microfilming and sufficient data to permit the evaluation of the project. For projects involving the destruction of records, all the information required by paragraph 5–3 will be supplied with the application for project approval. The "Records Analysis Sheet for Proposed Microfilming Projects" should be used to the maximum extent practicable for submitting class "B" project proposals. The transmission of the records analysis sheets is exempt from reports control under the provisions of paragraph 39*b*, AR 335–15.

c. Notification of class "A" project approval. If, after review of the data contained on the records analysis sheet, it is determined that the project is justified and funds are available to the proponent element (para 4–4) The Adjutant General will approve the project and notify the requesting office of the approval through channels. Final determination on a microfilming proposal will be based on its *primary* purpose. The secondary purpose of a proposed project, if any, will be given collateral consideration but will not be the determining factor. Applications for projects involving the microfilming and destruction of permanent records will require approximately 120 days for processing if the Congress of the United States is in session; if not in session final action will be delayed pending the reconvening of Congress.

d. Project control. Each approved class "A" project will be assigned a microfilming job number by The Adjutant General and all communications relating to the project will contain a reference to this number.

e. Shipment and installation of equipment. In the continental United States microfilming equipment is sometimes rented on a contract service basis. All shipments of rented equipment will be made in special containers furnished by the vendor. All unpacking, initial installation, and repacking for return of rented equipment is the responsibility of the vendor.

f. Forms and indexing devices. Forms, standard targets, and indexing devices required for the operation of approved microfilming projects are discussed in chapter 1, section II, TM 12–257.

5–2. Samples and descriptive information required for disposal of paper records. *a. Samples.* Representative samples of records proposed for destruction after microfilming will be furnished to The Adjutant General, ATTN: AGAR, with the application for project approval. If the records cannot be charged out of file for a minimum

of 120 days, *good quality* reproduced copies may be furnished in lieu of the sample records.

b. Descriptive information. Paper records recommended for destruction must be described in such a manner as to avoid any misunderstanding as to their identity and the disposition standard should be cited. The physical characteristics of the paper records such as, correspondence, reports, or tabulations will be given, followed by a further breakdown. Correspondence files, for example, may be described as incoming and outgoing, or both, and as chronological files, program files, policy files, etc. Reports will be identified by their nature (such as statistical, narrative) by their content (such as progress, survey, inspection) and by their frequency (such as daily, monthly, quarterly, annually). Engineering drawings and similar type records will be identified specifically by the materiel to which they pertain. Files of this type also will be identified as to their current status; for example, engineering drawings may be active, inactive, superseded, obsolete, or revised. Form records will be identified by form number and title with an additional description of the purpose and use of the form if the title is not self-explanatory. If the number and titles of forms are subject to frequent change, it is desirable to state simply the transaction to which the forms relate. *For example,* if records are identified as "Form 109, Requisition for Supplies" and this form is later replaced by "Form 27, Request for Office Supplies," the term is no longer applicable; but an item describing the records as "Forms used for the requisitioning of office supplies" would still be applicable. Physical duplication will be indicated by specifying the type of copy proposed for disposal; e.g., ribbon copy, carbon copies, mimeographed copies. Content duplication will be indicated by specifying the records that contain essentially the same information as that contained in the records proposed for disposal. The function served by the records will be stated since this information is helpful in determining if they are essential to the documentation of the function. Information will also be supplied on the relationship of the records proposed for disposal to other records that are kept. It is very important to identify the records clearly and to distinguish them from other records, however similar.

c. Additional information. Any additional information that will assist in making an appraisal of the records will be provided. Statements justifying disposal of items will be supplied to facilitate appraisal and expedite action.

5–3. Requirements for equipment. *a.* Microfilming equipment (as defined in para 1–3) required for the operation of, or used in conjunction with, approved projects will be authorized for procurement (i.e., purchase or lease) by the responsible official (para 4–3). Such equipment, however, will be funded for and will be obtained by the agency operating the project.

b. An agency which does not have an approved microfilming project may at times need microfilming equipment to read or otherwise use microfilm received from outside sources. In such cases the responsible official (para 4–3) will evaluate the requirements of the requesting agency and, if the request is determined to be justified, may authorize the purchase or lease of the needed items *provided* funds are available.

c. Requirements for unforeseeable emergency projects will be filled only at the expense of other approved projects under the control of the same responsible headquarters. The responsible headquarters concerned will determine which approved project will be deferred or canceled to meet emergency needs.

d. Requisitions for microfilming supplies (para 1–3*e*) for use on or in conjunction with approved projects will be submitted through normal supply channels to the Commanding General, Defense General Supply Center, Richmond, Va. 23212. Each requisition submitted will contain a citation of funds chargeable. Each requisition will also cite the assigned project control number. All requisitions will contain the complete shipping address, the quantity and full description of items requisitioned. A minimum of 60 days will be allowed for delivery.

e. Army-owned microfilming equipment and expendable supplies found to be excess during the operation of a project, or no longer required upon completion of a project, will be reported in accordance with the AR 755-series on disposal of supplies and equipment. An information copy of this report will be furnished to the responsible headquarters concerned, ATTN: Records Administrator.

f. Service and repairs to Government-owned equipment will be obtained through normal maintenance channels with funds provided by the using agency.

5–4. Operating procedures. *a. Standing operating procedures.* The standing operating procedures contained in TM 12–257 will be followed on class "A" microfilming projects unless specific exception thereto is authorized by The Adjutant General. These procedures should also be followed to the maximum extent practicable on class "B" projects.

b. Special procedures. When procedures contained in TM 12–257 require modification for operation of a class "A" microfilming project, special operating procedures will be prepared by the agency operating the project and submitted for approval through records management channels to The Adjutant General.

5–5. Precautionary measures to be taken with film. *a.* In producing microfilm, unnecessarily high densities will not be sought for the sake of appearance; the density should only be adequate for the intended purpose.

b. Film should be processed carefully and washed thoroughly to eliminate residual chemicals. All water droplets should be removed before the film is dried. Also film should not be exposed to dust, gases, or fumes of any kind not found in normal clean air.

c. The use of paper, string, adhesive, or pressure-sensitive tape and rubber bands to bind film rolls will be avoided.

d. Archival (permanent) film should be stored in sealed metal or plastic containers on metal or plastic spools. *Film will not be stored in cardboard boxes.* Such boxes contain resins that generate peroxide which may cause film to develop undesirable aging blemishes where temperature and humidity are uncontrolled.

e. Film should not be stored in areas of high temperature (above 70°F.) and high humidity (40 percent or more).

f. Film should be handled carefully to prevent fingerprints, scratches, and tears and handled only in clean and dust free areas.

g. Film should be inspected periodically, at least every 2 years, for possible deterioration effects. If blemishes or other defects are found, consideration should be given to producing a new negative to replace the damaged film.

h. When special security measures are justified to prevent any possible loss of information, consideration should be given to retaining a duplicate film copy (positive, diazo, or kalvar) in addition to the permanent negative. The copy should be used for reference purposes instead of the original negative.

5–6. Administration of approved class "A" projects. The Adjutant General will review approved class "A" projects as follows:

a. Sample reels. A sample reel of film will be submitted to The Adjutant General, ATTN: AGAR, immediately after the start of each class "A" project and as often thereafter as may be required by The Adjutant General. This sample reel of film will be accompanied by a statement from the custodian of the records that the microphotographs will meet the legal and administrative uses of his office. Through the examination of such sample reels The Adjutant General determines the adequacy of the indexing and arrangement of the records on microfilm, the degree of compliance with standing or special operating procedures, the quality of the photographic film images, and the amount of residual hypo on the processed film.

b. Subsequent samples. For microfilming projects of a continuing nature, sample reels will be required periodically for specific approval of additional units of completed work. The frequency of submission of sample reels will be established at the time of project approval. *Disposal authorization will be granted only for that portion of the entire file being microfilmed which is represented by the sample reels submitted for examination and approval.*

c. Return of sample reels. All sample reels will be returned to the custodian of the records after review by The Adjutant General. Sample reels will be returned approximately 60 days after receipt of the film in The Adjutant General's Office.

d. Technical assistance. Upon request, The Adjutant General will provide such technical assistance as may be practicable.

5–7. Disposal of paper records. Records which have been microfilmed will be destroyed or salvaged *only* upon specific authorization of The Adjutant General. Initial approval of a micro-

filming project does *not* constitute authority to dispose of the paper records. Authority to destroy the records will be withheld when inspection of the sample reels submitted reveals excessive residual hypo content; improper photographic exposure; distorted or unreadable microfilm images; or evidence that the integrity of the files has not been maintained because of inadequate identification, lack of proper indexing, or rearrangement of papers in such a manner that their original identity or usability is lost. Requests for disposal authorization will specify, in terms of linear feet, the quantity of paper records proposed for destruction. The volume of letter and legal size material will be determined by straight linear measurement. Quantities of card records, maps, drawings, and other odd-size materials will be measured in the same manner.

5–8. Disposal of microfilm produced on class "A" projects. Records in microfilm form are subject to the same regulations which govern the disposal of paper records. When the microfilm has served the purposes of the office having custody of the film records, disposal authorization will be requested from The Adjutant General, ATTN: AGAR. The microfilming job number will be cited to assist in proper identification of the records. The quantity and size (16-mm or 35-mm) of the film reels will be indicated. Instructions regarding the mutilation of the film before disposal will be furnished at the time disposal authorization is granted.

RECORDS ANALYSIS SHEET FOR PROPOSED MICROFILMING PROJECTS
For use of this form, see AR 340-22; the proponent agency is The Adjutant General's Office.

THRU: Commanding General, Fifth US Army
Ft. Sheridan, IL 60037
ATTN: Records Administrator

TO: The Adjutant General, ATTN: AGAR-P
Department of the Army
Washington, D. C. 20315

FROM: (Full name and address of office or activity proposing project)
Office of Fictitious Affairs
Engineering Division
Room 1224, Union Trust Building
Peoria, IL 61611

A. RECORD SERIES

1. PERIOD COVERED BY THESE RECORDS
FROM 1 January 1961 THRU 31 December 1965

2. DESCRIPTION OF RECORDS AND SECURITY CLASSIFICATION
Consolidated notices of engineering changes, discontinued automotive equipment, DA Forms 1234 and 567A. Security classification: CONFIDENTIAL.

3. LOCATION AND CUSTODIAN OF RECORDS
Office of Fictitious Affairs, Engr Div, Drawings Branch, Prints Section, Room 53, Union Trust Bldg, Peoria, IL 61611, Custodian: LTC R. H. Lang

B. PURPOSE OF MICROFILMING

4. INDICATE ORDER OF IMPORTANCE BY 1, 2, 3, ETC., IN SQUARES BELOW. (Indicate primary purpose by 1.)

☐ SECURITY	1 DISPOSAL (To reduce cost of space or equipment)	☐ PRESERVATION OF DETERIORATING RECORDS	☐ TO SAVE LABOR AND TIME IN REPETITIVE OPERATIONS	☐ TO PRODUCE FILM OR PAPER COPIES	2 OTHER (Describe below)

5. INDICATE BELOW EXACT NATURE OF PRIMARY PURPOSE, IF ABOVE DESCRIPTION IS NOT ADEQUATE. (Also indicate proposed disposition of paper records after filming. If records are to be disposed of cite established disposal authority, appropriate regulation and paragraph number.)

a. To avoid transportation charges and possible loss or disarrangement of records incidental to moving from present location which must be vacated within 8 mos.
b. To avoid possible loss of records due to fading of spirit duplicating ink.
c. Records will be destroyed after microfilming has been accomplished. Governing directive: Par 65f, AR 123-345.

C. USES OF RECORDS

6. DESCRIBE BRIEFLY ADMINISTRATIVE, HISTORICAL OR LEGAL USES OF RECORDS
These records are the consolidations of directives to manufacturing facilities for all discontinued items of automotive equipment. Since they contain basic information as to usage, authority and reasons for change, this will be an important file for research and development purposes.

7. NUMBER OF YEARS RECORDS MUST BE RETAINED	8. NUMBER OF REFERENCES PER MONTH	9. TYPE OF FILES
Perm	50-75	☒ CLOSED FILES NO FUTURE INTERFILING ☐ OPEN FILES ADDITIONS EXPECTED

D. ARRANGEMENT OF RECORDS

10. PRESENT ARRANGEMENT
By drawing and revision number.

SAMPLE

11. IF REARRANGEMENT IS NECESSARY, DESCRIBE FULLY PROPOSED METHOD BELOW
No rearrangement necessary. Records will be microfilmed in the order they are presently maintained.

SURVEY MADE BY (Name and Date)
S. D. Pinkham
7 Aug 1968 S. D. Pinkham

SURVEY AND REQUEST APPROVED BY
R. H. Lang
R. H. Lang, LTC, CE

DO NOT USE THIS SPACE

Approved for the Adjutant General by

SIGNATURE TITLE

CUSTODIAN'S SIGNATURE

Chief, Engineering Division, OFA
TYPED TITLE

DA FORM 1 JUL 55 1500 REPLACES AGO FORM 0746, 1 JUL 52, AND AGCZ FORM 60, 1 OCT 54, WHICH ARE OBSOLETE.

Figure 5-1.

E. PHYSICAL CHARACTERISTICS

12. SIZE OF PAPER	UNIFORM	VARIES X	MAXIMUM SIZE 12 x 10 INCHES					MINIMUM SIZE 10½ x 8 INCHES				
13. PAPER STOCK	UNIFORM X	VARIES	BOND	TISSUE	MIMEO	CARDS X	PHOTOSTATS	PHOTOGRAPH	OTHER (Specify in 17 below)			
14. PAPER COLOR	UNIFORM	VARIES X	WHITE X	YELLOW	BLUE	GREEN X	PINK	CHERRY	OTHER (Specify in 17 below) X			
15. LEGEND	ORIGINAL	CARBON	INK	PENCIL	DITTO X	OTHER (Specify in 17 below)		ONE SIDE ONLY	PERCENT 15	% BOTH SIDES		
16. FASTENERS	PRONG	CLIPS	PINS	COMPRESSOR	PASTE	STITCH	STAPLES X	FREQUENT	RARE X	NONE	OTHER (Specify in 17 below)	

17. OTHER FACTORS WHICH MAY AFFECT MICROFILMING COSTS

Also "light salmon" paper stock.
Uniformity of card stock and presently readable ditto legend should result in a low cost project.

F. FILE EQUIPMENT AND SPACE

18. EQUIPMENT NOW OCCUPIED BY RECORDS				19. COST OF SPACE OCCUPIED BY RECORDS			20. VOLUME AND GROWTH		
FILE CABINET	TRANSFER CASE (1 Dr Unit)	SAFE FILE	OTHER (Specify in 21 below)		RENTED	GOVERNMENT OWNED		NO. OF DRAWERS	LINEAR FEET
X *				SQ FT OCCUPIED	606		PRESENT VOLUME OF RECORDS	504	
LETTER X	LEGAL	4 DRAWERS	5 DRAWERS X	ANNUAL COST PER SQ FT	$3.50		RATE OF GROWTH PER MONTH	None	
STEEL X WOOD	FIBER	FIBERBOARD (Cardboard)	OTHER (Specify in 21 below)	TOTAL ANNUAL COST	$2121				

21. EXPLAIN ANY OTHER FACTORS RELATED TO FILE EQUIPMENT, SPACE, VOLUME AND GROWTH

Salvage value of cabinets released by microfilming is $4545. Emptied cabinets will be used for expansion of files on current equipment records.

* Equipped with bar locks.

SAMPLE

G. MICROFILMING EQUIPMENT AND PERSONNEL

22. NO. OF DRAWERS OR LINEAR FEET IN JOB	23. ESTIMATED DRAWERS OR FEET THAT CAN BE FILMED PER CAMERA PER DAY	24. NUMBER OF CAMERAS REQUIRED	25. TOTAL FILMING DAYS REQUIRED TO COMPLETE JOB	26. MAN DAYS REQUIRED TO PREPARE RECORDS FOR FILMING	27. MAN DAYS REQUIRED FOR FILM INSPECTION, EDITING, INDEXING, ETC.	28. CHECK TYPE OF CAMERA TO BE USED			29. FILM (100 ft rolls)				30. NO. OF FILM READERS REQUIRED FOR REFERENCE PURPOSES AFTER JOB IS COMPLETED
						ROTARY	FLAT-BED	OTHER	NO. OF ROLLS	16 MM	35 MM	OTHER	
504	4	3	(22) / (23) X (24) = 42	22	25	X			625				One
									SIZE (Check one)	X			

31 OTHER BASIS OF ESTIMATING REQUIREMENTS, IF ABOVE IS NOT SUFFICIENT, AND EXPLANATION OF "OTHER" ITEMS IN 28 AND 29 ABOVE.

It is intended to utilize a filming reduction ratio of 24 to 1 and a Model XYZ reader with a magnification ratio of 30 to 1 to produce an oversize reference image. Cameras will be rented and reader purchased.

32. NUMBER OF PERSONS REQUIRED TO ACCOMPLISH PROJECT BY OPERATION, GRADE AND ANNUAL SALARY

RECORDS PREPARATION PRIOR TO FILMING			CAMERA OPERATION			FILM INSPECTION, EDITING AND INDEXING		
NO. OF PERSONS	GRADE	ANNUAL SALARY	NO. OF PERSONS	GRADE	ANNUAL SALARY	NO. OF PERSONS	GRADE	ANNUAL SALARY
1	GS-2	$4108	1	GS-2	$4656	1	GS-4	$5991
1	GS-2	$4519	1	GS-3	$4913			
			1	GS-3	$5360			

PROJECT SUPERVISION	GRADE GS-5	ANNUAL SALARY $6495	PERCENT OF TIME DEVOTED TO PROJECT 85 %

H. INSTRUCTIONS

Section A. A separate Records Analysis Sheet will be prepared for each series or group of records proposed for microfilming.

Section B. If the primary purpose of microfilming is disposal or preservation of deteriorating records, the information required by paragraph 5-2 AR 340-22 will be furnished in detail on an attached sheet.

Section C. In addition cite in this section the appropriate AR and paragraph governing the maintenance, disposition, and utilization of the records proposed for microfilming.

Section D. If present arrangement of records is other than a simple alphabetic, numerical or chronological arrangement, describe in detail the method under which these records are maintained.

Section E. Check all appropriate boxes and explain in Item 17 any other factor which may increase or decrease the microfilming cost. Also explain all "other" checked items in detail.

Section F. If file equipment is of a "nonstandard" variety, give make, model, capacity, size, estimated salvage value, etc. of file equipment presently housing records proposed for microfilming. Cost of space whether rented or Government-owned must be assigned a dollar-value.

Section G. Include all personnel and cost of such personnel which will be directly engaged in any operation required on this project. The following are examples of various costs which should be included in this section, e.g. cost of completing a file by obtaining missing documents or documents out of file; assembling documents; repairing records; insertion of targets; filming, inspection and splicing of retakes; preparing and affixing film carton labels; preparing service prints from master negatives, etc. If the project supervisor does not devote his full time to the supervision of the microfilming operation, indicate the percentage of his time which will be devoted to the project.

Figure 5-1—Continued

CHAPTER 6
COSTS

6–1. General. Microfilming operations which have been well planned and efficiently executed can result in substantial economies to the Department of the Army. The cost of microfilming a selected series of records is an important factor in determining whether or not a project should be undertaken. The cost factors discussed in this section are based on *assumed* figures and are presented solely as a *guide* for estimating the cost of a microfilming project. Because salary rates, costs of leased or purchased equipment and prices of film and supplies change constantly, these sample costs *do not represent actual costs.* Firm estimates or current actual costs should be used in determining the economical feasibility of a project.

6–2. Costs of storing records. When the primary objective of microfilming is to reduce the cost of storing records, the desirability of the project normally is based on the difference between microfilming costs and the costs of storing the records in paper form. In general, if space and filing equipment savings are the prime consideration records which are to be destroyed after retention for 15 years or less should not be microfilmed.

6–3. Cost of space. The annual cost of floor space varies greatly, ranging from approximately 50 cents per square foot in a few installations to more than $4 per square foot in some headquarters offices and off-post activities. The cost of $2.50 per square foot per year is used as the basis of computations in this chapter. This figure includes the cost of heating, lighting, guard service, and maintenance. Since the space occupied by a file cabinet and access space required in front of a cabinet averages 6 square feet, the annual cost per file cabinet ranges from $3 to more than $24 with an average of $15.

6–4. Cost of equipment. When filing equipment can be emptied and reissued as a result of microfilming, the value of the equipment will help to offset the cost of microfilming. The following approximate costs of new equipment may be used as a guide in evaluating equipment savings:

Type of equipment (steel)	*Approximate cost*
File cabinet, letter, 4 drawers	$48
File cabinet, letter, 5 drawers	57
File cabinet, legal, 4 drawers	52
File cabinet, legal, 5 drawers	60

6–5. Direct microfilming costs. *a. General.* The direct cost of microfilming the letter-size records contained in a 4-drawer cabinet may vary considerable as illustrated in table 6–1. The basis of the example used in this chapter is the file drawer or cabinet of letter size records. Lower or higher cost projects would result from deviations from the factors presented here. For purposes of illustration assume that a camera operator can photograph 1.5 drawers or 27 linear inches of records per day; that labor cost is $2.00 per hour; that equipment cost is $3.00 per day and that the cost of 16-mm film is $4.00 per 100-foot roll. For each day of camera operation, an additional one-half man-day will be required for inspection and indexing of the film. Unless the file is in unusually good condition and free of wire staples, which must be removed before the papers are introduced into the camera, the services of an additional person will probably be required to prepare the papers for the camera. Total personnel requirements would therefore amount to 2.5 persons per camera per day. At this rate 2.66 days will be required to complete the contents of one 4-drawer cabinet. These costs may be summarized as follows:

Equipment cost 2.66 days at $3.00	$7. 98
Film, 6 reels at $4.00	24. 00
Labor, records preparation, 2.66 days at $16.00	42. 56
Labor, camera operation, 2.66 days at $16.00	42. 56
Labor, Film inspection, indexing, labeling 1.33 days at $16.00	21. 28
	138. 38

b. Basis for calculation of the example. The assumed direct cost of microfilming one 4-drawer cabinet of letter-size records is based on hand-feeding the documents in a rotary type camera and

using 6 reels of 16-mm microfilm. The cost of supervision and of sick and annual leave is not included. The film cost per cabinet is based on an average of 6 reels per cabinet. If additional film is required per cabinet, this cost should be added at the rate of $4.00 per reel. If less film is required, a like amount should be subtracted for each reel under 6 required. A local table similar to table 1 can therefore be prepared by calculating costs as follows:

File drawers microfilmed per day	1. 5
Number of days required to film one 4-drawer file cabinet	2. 66
Persons required to keep one camera busy	2. 5
Daily personnel cost at $16.00 per day for number of persons required (2.5)	$40. 00
Personnel cost per 4-drawer file cabinet (40.00×2.66 days)	$106. 40
Equipment cost at $3.00 per day per unit for 2.66 days	$7. 98
Film cost: 6 reels at $4.00	$24. 00
Total Cost	$138. 38

6–6. Storing and microfilming costs compared.
a. Margin for indirect costs. The direct costs of microfilming a cabinet of records, as indicated in table 6–1, do not include supervisory costs, nor such indirect costs as annual and sick leave. The cost of microfilm storage cabinets, the space they occupy, and the cost of microfilm viewers for reading the microfilm are not included, although the latter cost might be significant where only a small body of records had been microfilmed. In order to provide a safe margin, therefore, about one-half of the assumed direct cost of $138—namely $69—is added in the chart (fig. 6–1) to cover these items. This chart is presented as a guide only.

b. Explanation of cost chart. The chart in figure 6–1 is designed to show the approximate number of years records normally must be retained to justify the cost of disposal microfilming under two sets of variables, space costs and microfilming costs. The diagonal lines, representing the cost of storing a cabinet of paper records occupying 6 square feet of space, all start from the salvage value of the 4-drawer cabinet estimated at $48. Allowing 6 square feet per cabinet, the cost of storage increases annually at the rate of $6, $9, $15, and $24 for space valued at $1, $1.50, $2.50, and $4 per square foot, respectively. Microfilming costs are plotted on the dollar axis at one and one-half times the average direct assumed cost per cabinet ($207). Vertical lines drawn from the intersection of the microfilming and storage cost line to the base line indicate the number of years required to justify disposal microfilming. Similar graphs can be constructed when all specific costs are known. In estimating space costs, allowance should be made for light, heat, maintenance, cleaning, and guard service. When this allowance is made, the range in annual space costs from $1 to $4 per square foot will cover most space utilized in the Department of the Army for housing records.

6–7. Cost of microfilming with flat-bed cameras. The cost of microfilming with flat-bed cameras utilizing 35-mm film is extremely difficult to determine accurately because the film consumption (governed by the various sizes of the records) and the production rates (governed by the dexterity and the industriousness of the camera operator) vary widely. The cost of flat-bed microfilming must, therefore, be determined on known factors or carefully arrived at detailed estimates.

6–8. Additional tables. Tables 6–2 and 6–3 indicate the principal physical characteristics of records and the principal operations which affect the cost of microfilming activities. The typical example presented in table 6–3 is based on a large number of drawers of mixed letter-size documents presenting a microfilming problem of moderate difficulty. The assumed cost estimates include cost of leave and supervision, and are for 1,000 microfilm images using factors considered under the "More costly" type of operation. These tables do not attempt to be all inclusive and they are presented only to serve as guides in preparing similar tables where costs and other factors are known or can be estimated with a fair degree of accuracy.

SAMPLE TABLE SHOWING ASSUMED DIRECT COST OF MICROFILMING ONE FOUR-DRAWER FILE CABINET REQUIRING 6 REELS OF FILM *(16 mm X 100 Ft)* AND USING A ROTARY OR FLOW TYPE MICROFILMER

DRAWERS PER CAMERA PER DAY	PERSONS REQUIRED TO KEEP ONE CAMERA BUSY								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
4.0	$43	$51	$59	$67	$75	$83	$91	$99	$107
3.5	46	55	64	73	82	91	100	110	119
3.0	49	60	71	81	92	102	113	124	134
2.5	54	67	80	93	106	118	131	144	157
2.0	62	78	94	110	126	142	158	174	190
1.5	75	96	117	138	160	181	202	224	245
1.0	100	132	164	196	228	260	292	324	356
0.5	176	240	304	368	432	496	560	624	688

BASIS OF COMPUTATION

LABOR: $16.00 per day.

EQUIPMENT: Cost $3.00 per day per unit. *(Unit consists of one rotary type camera and one reader)*

FILM: $4.00 per reel of 16mm X 100 ft.

NOTE: Amounts in table rounded out to nearest dollar.

Table 6–1

Table 6-2. Principal Physical Characteristics of Records Affecting Microfilming costs

(Arranged in normal order of increasing costs)

Characteristic	Least costly	More costly	Most costly
Stock	Card stock	Normal letter stock	Engineering drawings.
		Tissues	Hectograph (ditto) copies.
		Mixed documents	Ozalid copies.
		Photostats	
Size	Card	Letter	Oversized.
		Legal	
Color of print	Black type on white paper	Black or blue ink	Red or faded ink.
		Purple or violet ink	
		Penciled entries	
Condition	Loose flat papers	Acco-fastened papers	Mutilated documents.
		Stapled papers	Pasted attachments.
		Curled papers	
Arrangement	Numerical	Chronological	Geographic.
		Alphabetical	
		Subject	
Special Problem		Both sides to be photographed	
		Bound volumes	Maps or charts.
		Folded papers	Color keyed records.

Table 6-3. Principal Items Affecting Costs of Microfilming Operations

Operation: 1. Prepare documents.

Least costly: Check order of containers and order of filing guides if any.

More costly:
a. Check and refile as necessary by an established system.
b. Check mixed files to identify documents requiring filming on both sides.
c. Remove specified folders for immediate disposal.
d. Remove staples, paper clips, fasteners, pins and other devices.

Most costly:
a. Collect essential documents in sequence according to an established system.
b. Remove specified units of material within folders for immediate disposal.
c. Segregate administrative and program records by predetermined categories.
d. Search for and transcribe data to documents before filming.
e. Repair mutilated documents and arrange pasted attachments.

Typical example: Check file sequence and remove fasteners. (Based on 4,500 papers per man-day). Assumed cost $4.00 per M images.

Operation: 2. Messenger—labor service.

Least costly: Filming with flatbed or planetary type camera (1 man per 8 cameras).

More costly: Filming with hand fed rotary or flow type camera (1 man per 6 cameras).

Most costly: Filming with an automatic feed rotary or flow type camera (1 man per 4 cameras).

Typical example: Rotary hand fed camera. Assumed cost 75¢ per M images.

Operation: 3. Camera Activities.

Least costly:
a. Using automatic feed camera.
b. Documents card size and uniform in color.

More costly:
a. Using hand feed rotary type camera.
b. Documents letter to legal size with an average variety of colors.

Most costly:
a. Using a flatbed camera.
b. Documents oversize.
c. Faded writing and variable colors.
d. Exacting technical requirements such as positioning of image frame on film and close tolerances.

Typical example: Using hand feed rotary type camera, letter-size documents with average color variations and mixture of paper stock. (Based on 4,500 images per man-day.) Assumed cost $5.00 per M images.

Operation: 4. Inspection of developed film.

Least costly: Check for average density using light box method.

More costly: Spot check of image frames.

Most costly: Frame by frame inspection of each image.

Typical example: Comprehensive spot check of image frames. (Based on 12,000 images per man-day.) Assumed cost $1.75 per M images.

Table 6–3. Principal Items Affecting Costs of Microfilming Operations—Continued

Operation: 5. Retake, splicing, and mounting.

Least costly:	a. Documents uniform in color and legend. b. Minimum legibility requirements. c. Retakes spliced at beginning of reel.
More costly:	a. Mixture of letter- and legal-size documents, originals and carbons, variety of paper colors. b. Average legibility requirements. c. Retakes spliced at beginning of reel.
Most costly:	a. Documents many different sizes, difficult color and ink problems. b. Exacting legibility and definition requirements. c. Film cut for aperture card mounting or filmstrip jackets.
Typical example:	Average of one retake per 1,000 images. (This operation involves withdrawing and preparing documents; preparing retake targets; refilming, reinspecting, splicing and refiling documents.) Assumed cost 75¢ per retake.

Operation: 6. Indexing, boxing, and labeling.

Least costly:	Numerical file.
More costly:	Alphabetical.
Most costly:	Subject or geographic file.
Typical example:	Simple alphabetical file. Cost 7¢ per M images.

Operation: 7. Supervision. (One supervisor per 5 cameras.)

Least costly:	Automatic feed rotary or flow type camera.
More costly:	Hand feed rotary or flow type camera.
Most costly:	Flatbed or planetary type camera.
Typical example:	Hand feed rotary or flow type camera. Assumed cost $1.00 per M images.

Cost: Film. (Processing included in cost of film.)

Least costly:	a. 16-mm permanent record film. b. Reduction ratios from 40 to 1 to 24 to 1.
More costly:	a. 16-mm permanent record film. b. Reduction ratios from 23 to 1 to 17 to 1.
Most costly:	a. 35-mm permanent record film. b. Reduction ratios 16 to 1 or less.
Typical example:	16-mm permanent record film at 24 to 1 reduction ratio. Assumed cost $1.50 per M images.

Cost: 2. Equipment.

Least costly:	Automatic feed rotary or flow type camera.
More costly:	Hand feed rotary or flow type camera.
Most costly:	Flatbed or planetary type camera.
Typical example:	Hand feed rotary or flow type camera. Assumed cost 25¢ per M images.

Cost: 3. Supplies and contingencies ..... 10¢

Summary for typical example.

Personnel cost	$13.25
Film, equipment, supplies, and contingencies	1.85
Total per 1,000 images	$15.10

Disposal Microfilming

Total Assumed Cost-$207 Per Four-Drawer File Cabinet

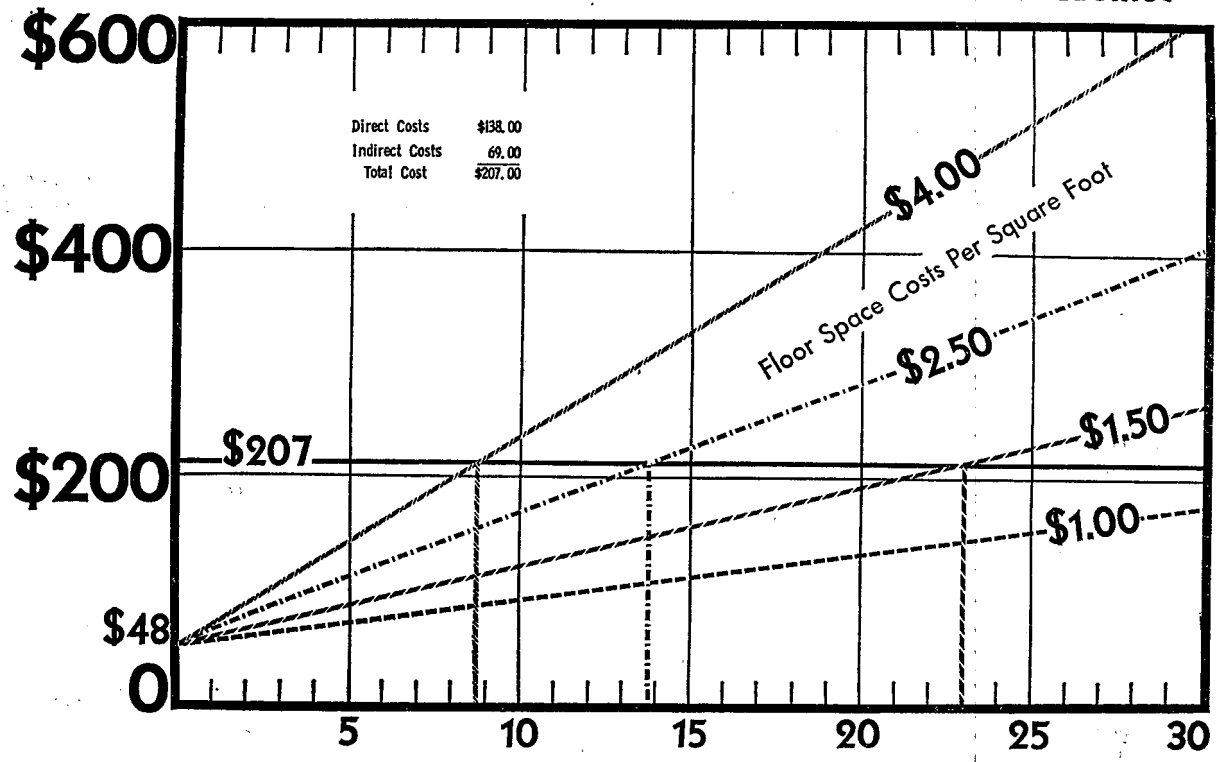


Figure 6-1.

19 July 1968

AR 340–22

The proponent agency of this regulation is The Adjutant General's Office. Users are invited to send comments and suggested improvements to The Adjutant General, ATTN: AGAR–P, Department of the Army, Washington, D.C. 20315.

By Order of the Secretary of the Army:

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Active Army: D. *NG: None.* *USAR:* D.

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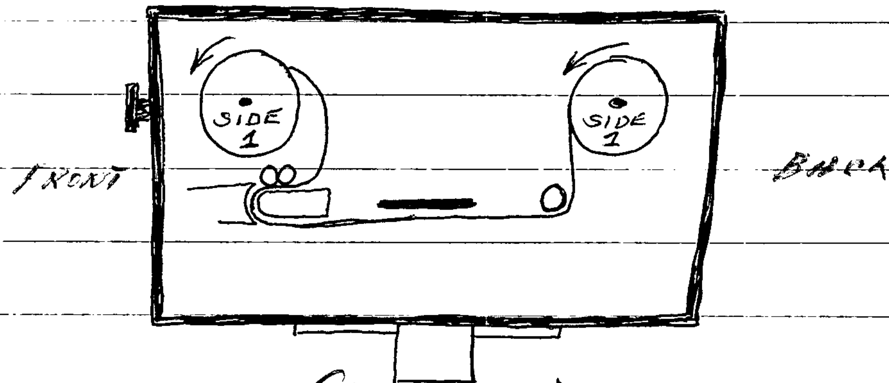
Microfilming Procedure (Conversion Phase)

1. Camera

A. Set up satisfactorily camera on tripod and plug in.

B. Load film in camera.



(Slide viewer)

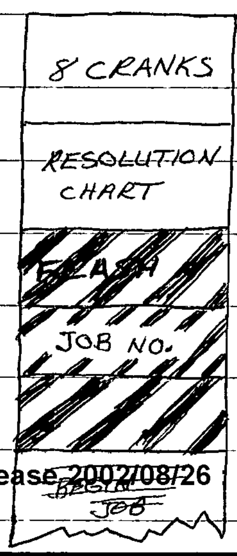
C. Close camera and crank film clockwise eight turns.

D. Check tripod (camera legs) to ensure that they set for proper reduction ratio, i.e. 18 X 1. Follow this procedure when securing camera head in the evening or changing the film, and periodically during the filming process.

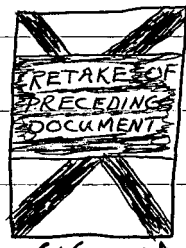
E. (See attached)

2. Begin Filming

A.



B. If a mistake is realized in filming a ~~page~~ (5), before reshooting it, shoot a "retake of preceding document card."



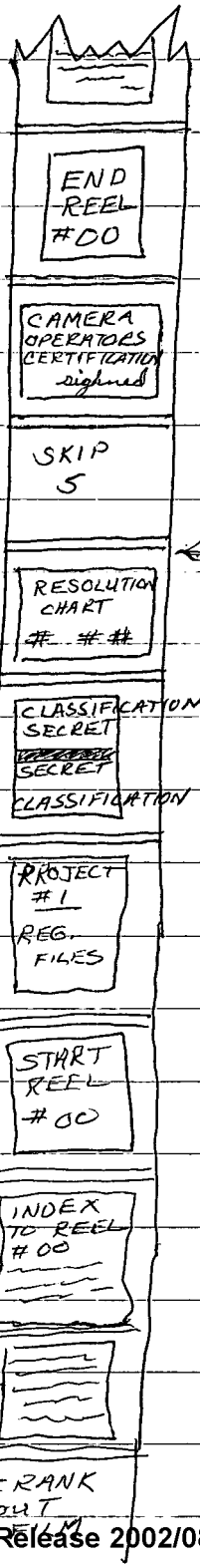
(#6, 15)

C. When ending a box in the middle of a reel continue new box ~~with a book between~~ as though it were part of the last.

D. When ending a reel in the middle of a box continue box on new reel as though it were the start of a new box.

E. When ending a reel in the middle of a folder start folder ~~a new~~ a on new reel. Watch film footage indicator so as not to let this happen if possible. If indicator shows twelve feet left and a folder with more than about thirty pages is next end reel there.

3. Ending Reel



A. After all cords and documents have been filmed crank film clockwise until tension releases.

← Classification

4. All folders in the boxes ~~you are working with~~ must be kept ~~should be kept~~ in the order in which they are ~~you~~ received. ~~them~~. This is very important.

1. Verifying

A. Read operating instructions on reader front.

B. Once film cartridge is in machine start counter at first page of the index

C. Have box of folders for reel and the index beside you.

D. Write beside each job number the meter reading when job number is centered on screen.

2. Bad Copy

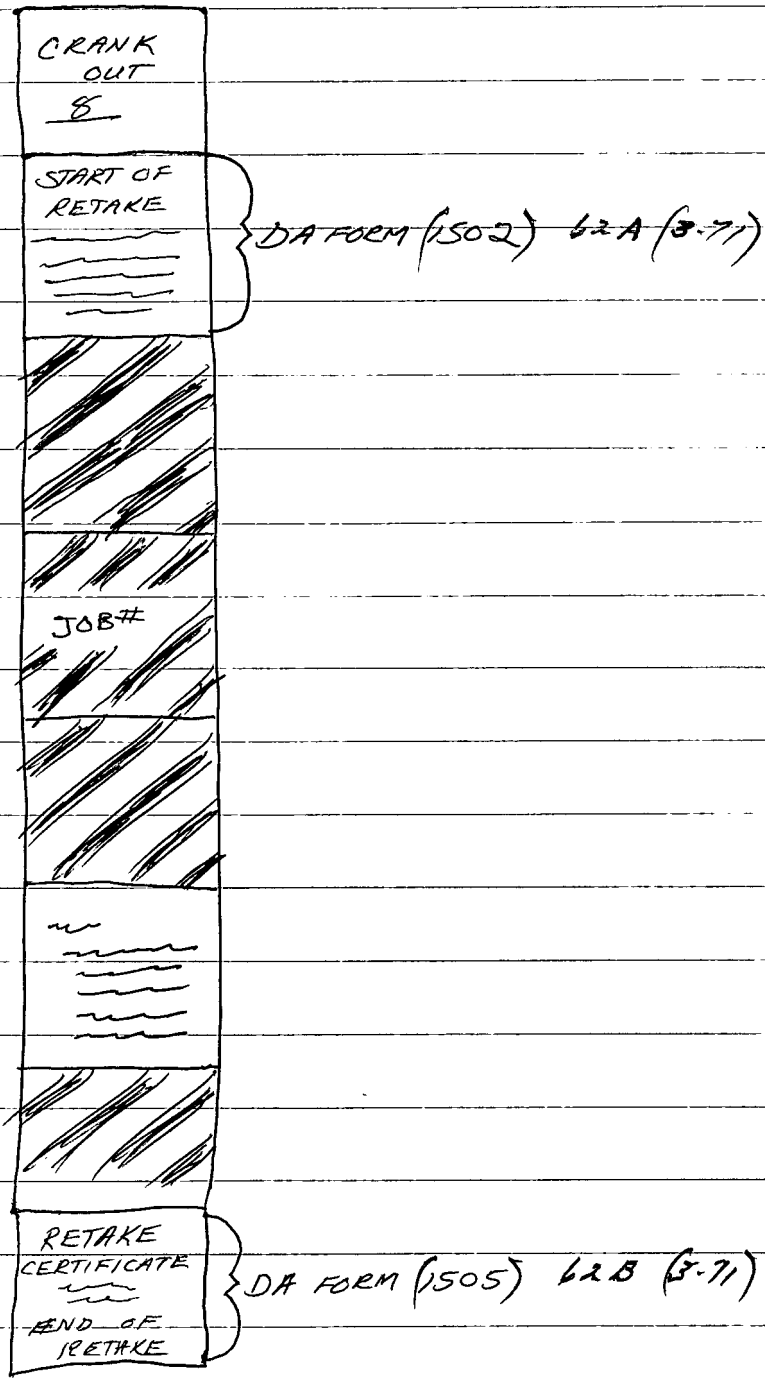
A. When copy is absolutely unreadable pull the copy from the folder for retake.

B. Staple a piece of paper to following page and write, "page or pages precede."

C. Paperclip with the pulled bad copy the card with the job number on it and write on the card the reel number.

3. Keep all folders and pulled "copies" in proper sequence.

Retakes of Bad Copy



SECRET
(When Filled In)

MICROFILM MASTER INDEX	PROJECT NO.
	DATE FILMED
PROJECT AND/OR FILE TITLE	REEL NO.
	TOTAL IMAGES

BEGINS - 0	

CONTINUED ON REVERSE SIDE

CERTIFICATION

I hereby certify that the documents indicated above, and on the reverse side, were photographed by: _____.
NAME

DATE	SIGNATURE OF CAMERA OPERATOR

Guide Book

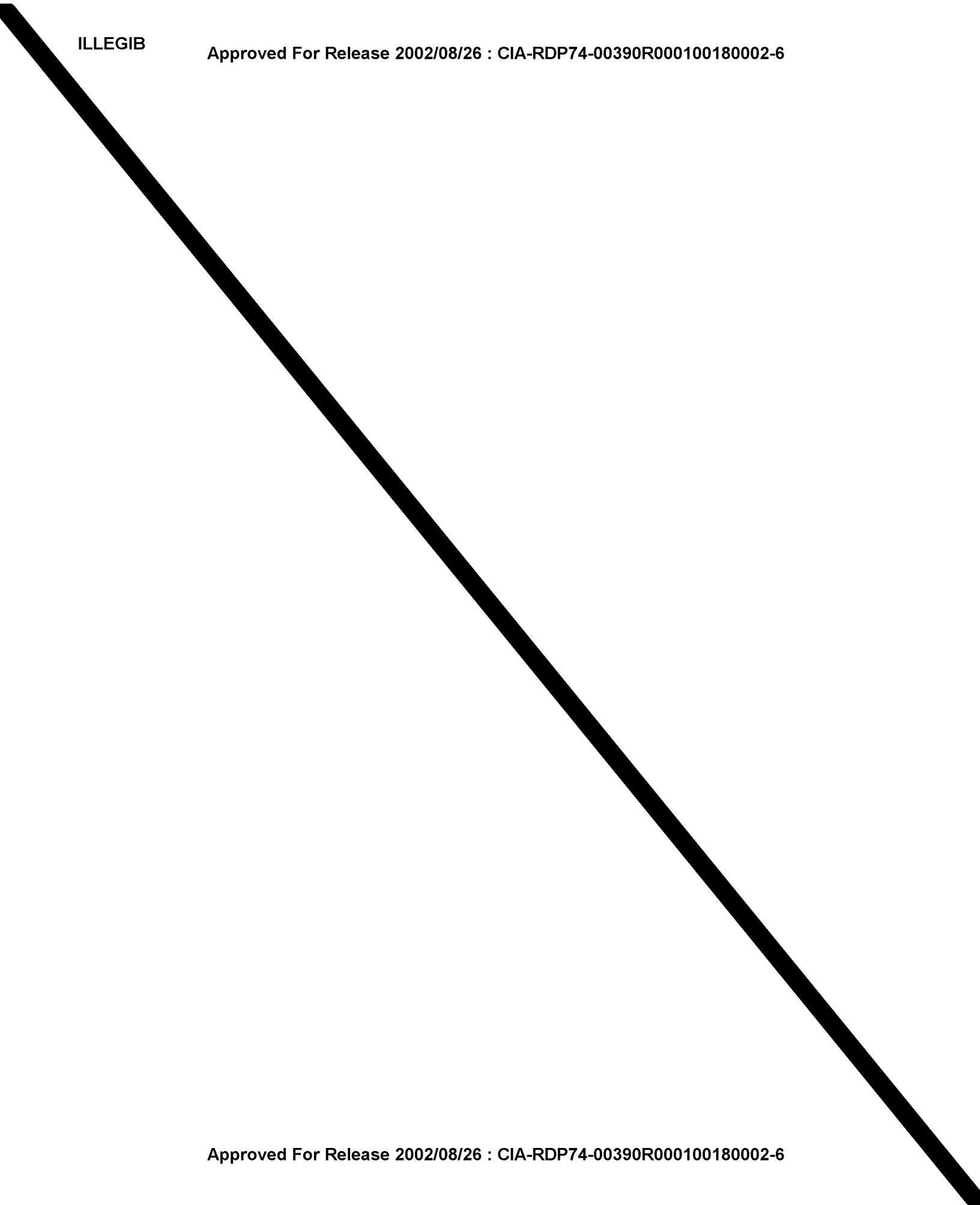
Reduction Ratio

Index to Reel #22 (Check this out)

~~Start of~~
Retakes of Reel # 22 (5/5)
Resolution Chart I. Study period
~~Retake instructions~~ 62 a. II. Conversion
~~End of retake~~ 62 a. III. Maintenance
Beginning of reel
End of reel
15 pages

Negative retake procedure:
Retakes
No retakes required
End of retakes

Dismissing record



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NAVY MANAGEMENT REVIEW

Making Money with Microfilm

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The Aviation Supply Office (ASO) does not propose that the Navy usurp a function of the Treasury Department as the above title implies. However, money can be made, or saved if you prefer, through the use of microfilm instead of hard-copy documents for many types of applications.

Common Uses For Microfilm

Microfilm is widely used by industry, and by federal, state, and local governmental agencies. The most frequent applications are the microfilming of records which must be retained indefinitely and which are not subject to frequent change. Some examples are: canceled checks; mortgages, deeds, and other property records; insurance policies; published books and papers; technical documents such as drawings and standard specifications; patents; and completed and compiled census records. One of the most common reasons for microfilming records is to reduce the amount of space occupied by the records. Other important reasons are savings in the handling of documents and increased capability to provide reproduced copies of documents rapidly and frequently.

ASO Experience

ASO has achieved substantial cost reductions by adopting use of microfilm. In one application drawings in microfilm aperture card form are furnished to prospective bidders with bid requests (See Navy Management Review of April-May 1964). Since December 1963, savings of over $288,000 have resulted from reproduction of drawings in aperture card form instead of on full size blueprints. Since the cost of aperture card reproduction has been reduced, additional savings are anticipated. The use of aperture cards reduced the bulk of invitations for bid sent to prospective suppliers, which saved an additional $8,500 in mailing costs. An intangible saving, but important in terms of procurement lead time, was a reduction from 30 days to 8 days in the time required to reproduce drawings.

In another application, a special microfilm technique is used to print certain ASO catalogs. This reduces the size to about one-half that of the conventionally printed catalogs. During 1964, about $40,000 in printing costs were saved when this technique was used to publish the Price and Management Data Sections of the Navy Stock List and the Master Repair List. It is anticipated that eventually most of the catalogs which ASO prints and distributes to field activities will be produced by this technique.

Criteria for Establishing Microfilm Records

With the idea in mind of making money with microfilm, ASO took a hard look at other internal operations. The result was certain procedural improvements and the determination of the feasibility of converting specific records to microfilm. Equally important, however, the research produced a greater understanding of the entire subject of microfilm and its uses. Of particular interest was the ASO development of an original set of criteria for determining the feasibility of using microfilm equipment and techniques for a given application. No record could be found of a previous attempt to develop criteria by anyone in private industry or government circles.

ASO's criteria specify that a microfilm application should have one or a combination of the following characteristics to a significant degree:

- The records must be of a relatively permanent and stable nature. A frequent and high rate of change may result in an unacceptable cost because updating the microfilm file is an expensive process.
- The number of records in the file must be large – on the order of tens of thousands. The feasibility of the application increases if the file is an expanding one.
- There is a frequent reference to the file by many users. The number of references should be on the order of 3000 to 4000 a month. This criteria

becomes more important if referrals are so frequent that an "out of file" situation hampers the operations of the users.

- There is a frequent need for speed in providing copies of records in the file. This should be on the order of at least 300 records reproduced per month.
- The physical size of the file is large. In conjunction with this, the space available for the file is limited and/or is needed for an office rather than file operation.
- The nature of the file is such that it would not acquire an elaborate and expensive record locator system if the file were converted to microfilm. Location systems which require only a single reference to an index, with a search lasting not more than a minute, would generally be acceptable.
- The data in the file is not at present, readily accessible from some form of mechanized data retrieval system.

Living With A Microfilm File

In determining the feasibility of a microfilm application which meets the criteria stated above, consideration must be given to the conditions which must be accepted when the file is converted to microfilm. Acceptance of these conditions frequently govern a decision to convert hard-copy records into microfilm. Some examples of these factors are:

- The file must be maintained in an inviolate condition, closely controlled to prevent loss, damage, or mishandling.
- Information included in the file must be accurate, to minimize changes or need for correction. High frequency of change to records is an obstacle to an efficient microfilm system.
- There must be a means automated if possible, for detecting errors in input.
- An accurate and variable cross-reference index system must be established for any form of roll or cartridge-type file, as well as for several of the strip, sheet, and chip file systems.
- The application must include the capability to update the file in a timely manner.
- A need and ability to provide rapid information retrieval from the file.
- The file must provide multiple accessibility and should be designed to provide service for the maximum number of users.
- The facility must exist for purging obsolete information.
- A need to expand, with available file space considered to be at a premium.

Type of Equipment and Systems

There is a wide range of microfilm equipment and systems commercially available for both simple and complex applications. The microfilm industry is highly competitive, and producers of equipment, film, and related products are constantly seeking to improve their products and services. Several of the producers offer microfilm feasibility study service without charge.

Microfilm systems are keeping pace with advancements in automatic data processing techniques. There are certain computer-related systems which produce film showing an English language translation of data contained in magnetic tapes. Other systems convert microfilm images of operational documents into electrical impulses which are recorded on magnetic tape for input to computers. These systems have been highly developed but their use requires complicated and costly equipment, specially trained personnel, and a superlative quality control program.

The Various Forms of Microfilm

Microfilm is available in various forms, each designed for specific types of applications. The optimum type of film for an application frequently dictates which type of equipment or system will be purchased. Thus, an application might be feasible if aperture cards are used, but not if roll film is used. Therefore, only aperture card systems would be considered.

- *Roll Film* which is commonly used for storage of records which must be retained indefinitely. In this application changes to the records should seldom, if ever, occur.
- *Cartridges* are basically rolls of film contained in devices which can be inserted into special viewers having powered film advance features for rapid winding of film.

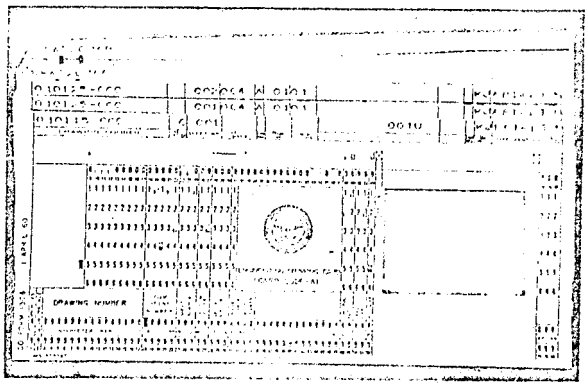


Fig I. Microfilm Aperture Card

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON 25, D.C.

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. GOVERNMENT PRINTING OFFICE

• *Sheets, chips, or strips* of microfilm usually require complex and costly devices for retrieval of information from the microfilm file. Tailored mechanized image systems employing these forms of microfilm are the most expensive to install, and range in cost from $40,000 to $1,500,000.

• *Card-mounted film* applications (commonly known as *aperture cards)* require the least maintenance effort. Use of aperture cards permits changes, deletions and additions to be made to the microfilm file with minimal effort. Unlike previously described forms of microfilm, elaborate indexing is not necessary since each card carries its own identification as shown in Figure I. Highly skilled operators are not required for production of duplicate cards or hardcopy.

• *Microfiche* (pronounced "microfeesh"). Microfiche cards are transparencies on which 16mm or 35mm film frames, or a combination of both, are mounted for viewing or reproduction purposes, as shown in Figure II. These cards can be almost any size, but are usually a standard 3x5, 4x6, 5x8 or EAM card size. Up to 140 micro-images can be recorded on one microfiche card. In general use, microfiche permits greater file compression than is possible with aperture cards due to the greater number of images which can be included in a single microfiche card. When the maximum number of images are contained in one microfiche card, the cost per image is substantially less than it is for an aperture card where the number of images is limited to 16. This is valid only if the total capacity of each microfiche card is used.

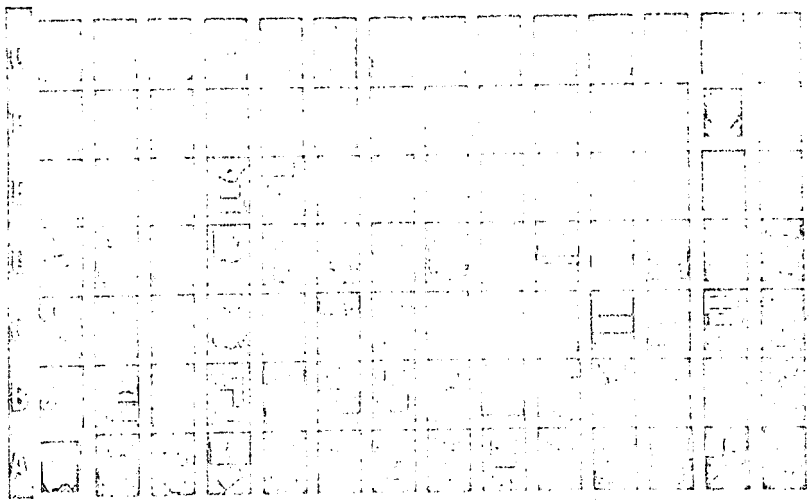


Fig II. A 4" x 6" Microfiche Card (¾ actual size)

Cost of Microfilm Applications

There is a wide range of equipment available for microfilm applications and the variations in cost are equally wide. For complex systems which require mechanized and sophisticated equipment, the total installation cost may be over $1.5 millions. On the other hand, for a relatively simple application the cost of equipment and material may be less than $1,000. All you need is a viewer-printer, if you subscribe to one of the many microfilm services now available commercially. These commercial organizations offer a variety of services ranging from the filming of records to providing engineering and technical data in convenient microfilm forms.

You Can Lose Money Too

Obviously, care must be exercised in selecting uses for microfilm. Many systems are expensive, and sometimes potential applications simply will not provide an adequate return on the investment.

The conditions necessary for a successful application, can only be ignored at considerable risk. For example, a microfilm application which is predicated solely upon the expectation of savings on file space for *completed* or *retired* records may prove a great disappointment. The savings in space will compensate for the cost of the microfilm system only if the space cost is very high and this condition usually exists only when *active* records are maintained in highly desirable space and competition for occupancy is keen or when the size of the file is truly massive.

This caution against the possibility of unprofitable applications should not discourage careful consideration to the use of microfilm systems. Money can be made from microfilm and the initial investment doesn't necessarily have to be large.

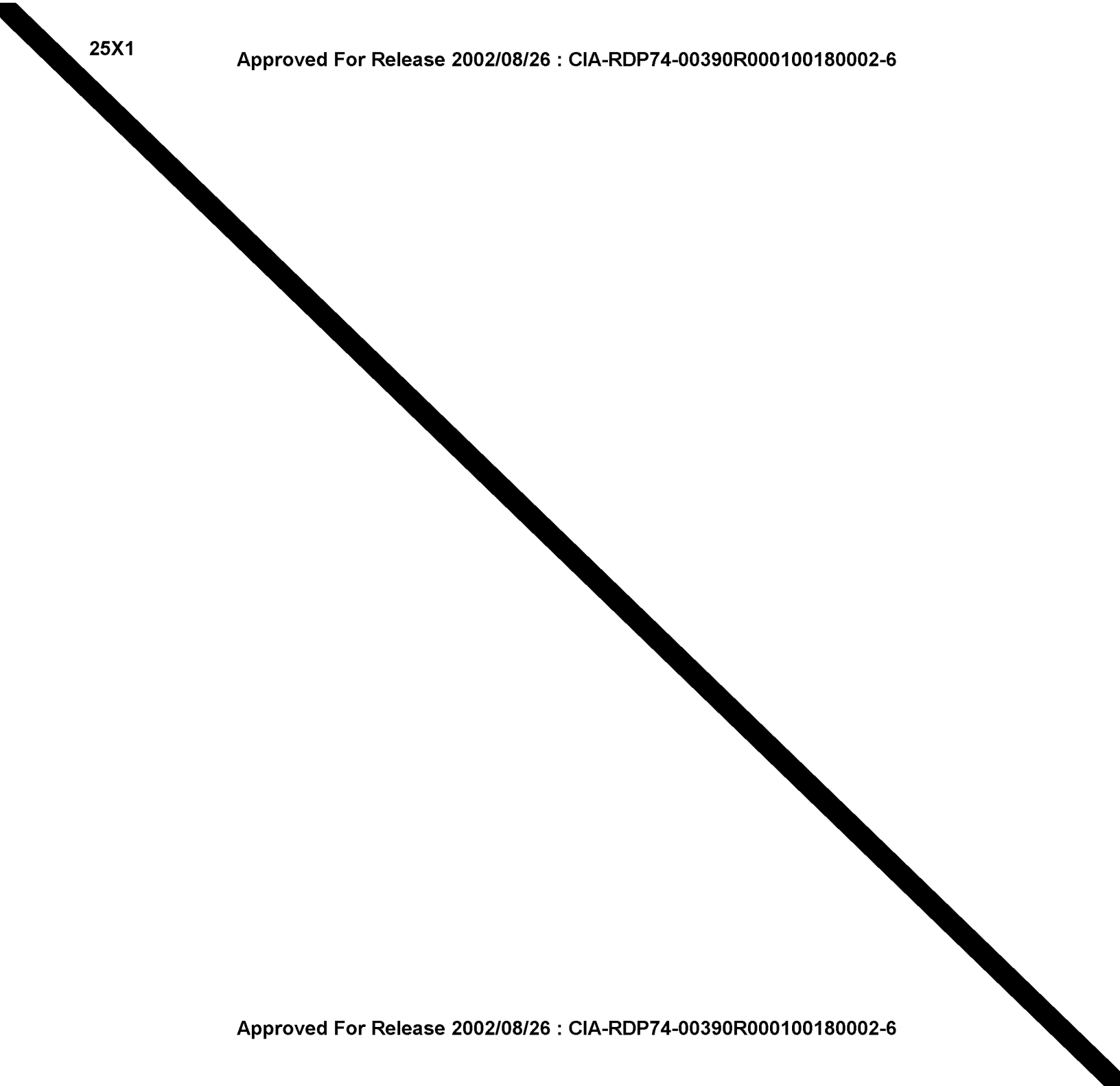
CENTRAL INTELLIGENCE AGENCY

Certification of Authenticity

The records shown on this film have been microfilmed in the regular course of business, and the originals will be destroyed. This film accurately reproduces the originals, and is a true unadulterated representation of the original file.

Date

Photographer
Office of Finance Registry



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INDUSTRY NEWS

continued from page 6

More than 52,000 pages of information from these five stacks of computer printouts are packed into a single nine inch roll of diazo microfilm produced by the new CBS Laboratories high speed, Model 2400 diazo microduplicating system, which processes more than 250,000 pages of information per hour, is the fastest microfilm duplicating system in existence. It heads a new product line by CBS Laboratories. The high resolution diazo film is grainless, and contains no silver halide alloys used in conventional film. In the background is the new CBS Laboratories Model 800 system.

A new calculator for quick lens figuring while designing microfilm/microfiche rear projection and office copier optical systems is available from *Bausch & Lomb*. Write on company letterhead to Special Products Division, Dept. 6606, Bausch & Lomb, 635 Paul St., Rochester, N.Y. 14602.

In a move designed to promote the exchange of ideas in a new and rapidly growing field, the Microfilm Products Division of *3M Company* and several other firms presently engaged in publishing on microfilm have formed the Micropublishers Council. Among the publishers involved in the formation of the new group are representatives from Arcata National, Arcata Microfilm, Micro-Publishing Systems Inc., Johnson Research and Micro-Data Corp. These firms are presently marketing 3M microfilm equipment as part of a total package approach to the sale of pre-published microfilm materials.

The availability of a Microfilm Reader and Reader/Printer Evaluation Report has been announced by Alonzo J. Sherman, Consultant. This user-oriented report contains practical information and guidance necessary in selecting reader and reader/printers for a particular application. Each unit — there are more than 2,000 model variations to choose from — is rated for each of the standard microform types it can handle, i.e., cartridge, roll, microfiche and aperture card. A one-page specifications and evaluations sheet is prepared for each basic reader and reader/printer. In addition, there are over 30 pages of textural data covering such subjects as method of evaluation, microfilm systems, analysis decisions and design considerations. For further information and prices, contact Alonzo Sherman, 1522 Gratiot Ave., Saginaw Mich. 48602.

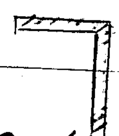
Francis L. LaQue, president of the *American National Standards Institute*, has been elected president of the *International Organization for Standardization*, one of the world's foremost organizations for voluntary international standardization.

Mr. LaQue is vice-chairman of the National Metric Advisory Panel of the U.S. Department of Commerce, and vice-president of the Pan American Standards Commission. He has been president of the American Society for Testing and Materials, the National Society of Corrosion Engineers, and the Electrochemical Society. He was also chairman of the Corrosion Research Council.

continued on page 39

Insertions/additions to microfilm procedure.
Conversion phase

Para 1 E. Familiarize self with exposure readings established for certain paper copy, print, backgrounds, etc. Necessary to alter light intensity to obtain clarity in film image

For planetary camera filming recommend use an angle guide  secured to the filming surface area. Aids in uniform positioning of documents.

Formula for determining approx number images may expect on film:
reduction ratio (i.e. 18x1) x 100' (avg. length of film) = No. of 8 1/2 x 11" inch documents (images)

OLD

MICROFILM FORMS

NO.	TITLE
62	Microfilm Camera Operator Report and Certificate (Improve certification) BACK -- Inspection and Supplemental Report.
449	Microfilm Transcript Sheet (No Interest)
843	Microfilm Index Card. (No Interest (for Dispatch files only)
1663	Microfilm Master Index (POSSIBLE Interest)
1774	Microfilm Code Sheet (No Interest) (DDP Project for Punch Card Control)
31	Microfilm Survey (Front Records Back Eqt) (Keep Xerox Copy on Hand)

Handbook, explains technical terms and provides guidance in the selection of the printing or reproduction process which will most nearly satisfy the requirement. While requisitioning offices are encouraged to indicate desired processes on the requisition, the Office of Logistics has the final responsibility for selection of processes, format, and the plant in which the work will be done. Any process or format change will be cleared with the requesting office.

(b) Requisition for Materiel and/or Services, Form 88, will be prepared for the procurement of printing and reproduction equipment and submitted, with appropriate justification therefor, to the Director of Logistics in accordance with [redacted] Lengthy requisitions may be continued on Form 88a, Continuation Sheet.

(2) APPROVALS. Officials authorized to requisition printing and reproduction services will, when applicable, obtain prior approval for items and services as indicated below:

(a) Agency regulatory issuances — Office of the Deputy Director for Support. (See [redacted]

(b) Forms — CIA Records Administration Officer.

(c) Microfilming equipment and services — CIA Records Administration Officer.

(d) TOP SECRET material — Area Top Secret Control Officer.

10–14. Reserved.

CAMERA

Flash Cards (To be created as Forms and Stocked)

Form No

62 – Camera Operator Certificate and Inspection

62a – Start of Retake

62b – End of Retake and Certificate

62c

+ Retake of Previous Document

– Microfilm Classification Secret
– " " Confidential
– " Unclassified

+ Microfilm Project Number and Title
– Index to Reel No _____
+ Camera Resolution Chart
– Graphic Scale chart
+ Start Reel No.
+ End Reel No
+ Flash Card Stripes
+ Flash Card No. Folder Identity

(over)

Other Microfilming Related Forms

Microfilm Box Label.

Project Analysis Form
Film Inventory Form

Cross Reference to Microfilm

ACTIONS

Office Study + Action Forms

Coordination Forms.

Implementation Forms.

MICROFILM SYSTEMS DEVELOPMENT

OFFICE ACTION:

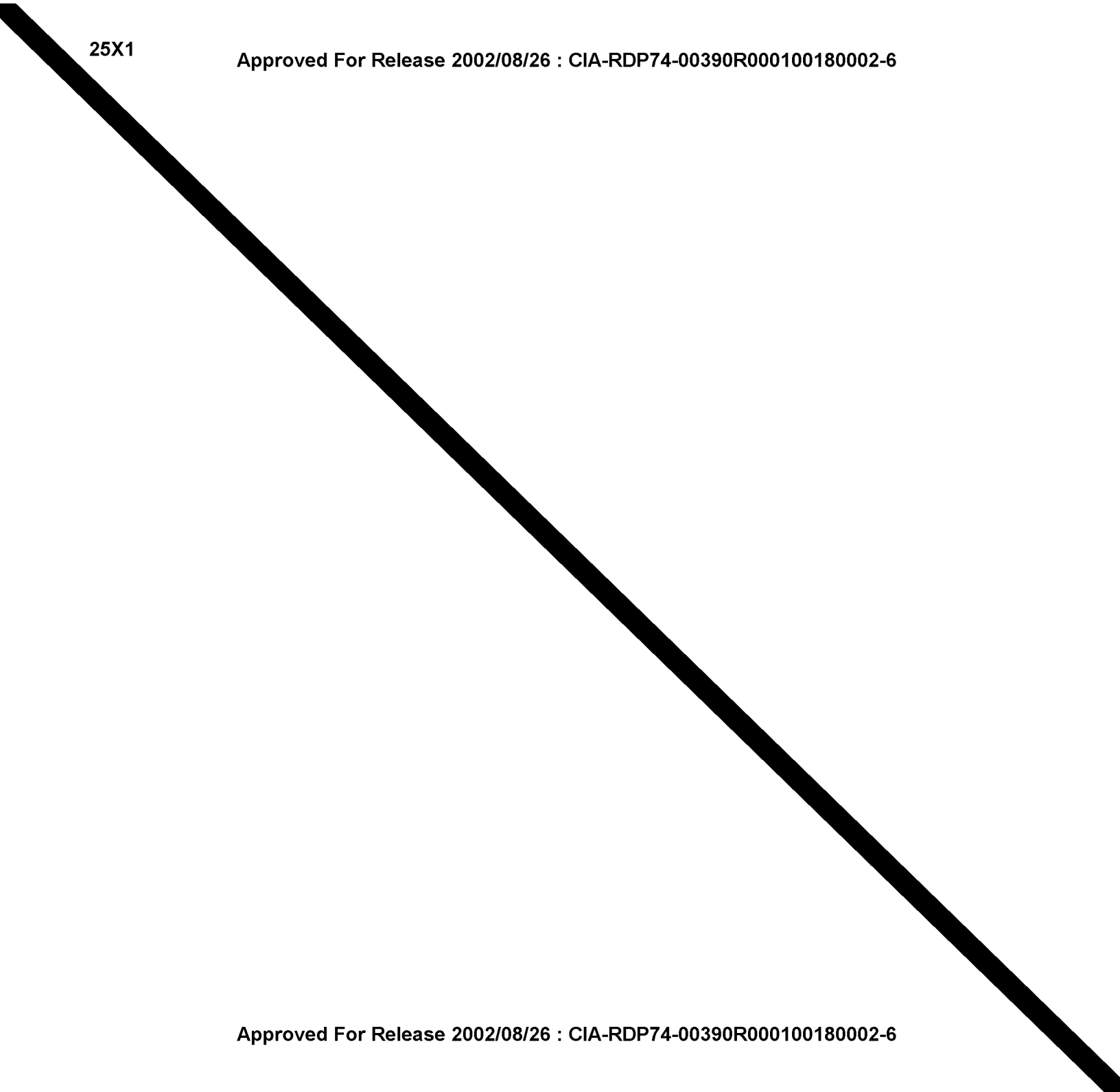
Problem Definition - Office Objectives and Needs
Concept Development - Alternatives Possible to Reach Goals
Feasibility Study - Files Information (Form =) Data Flow
System Analysis - User Acceptance - Equipment & Procedures
Preparation of System and Equipment Proposal
Office review and endorsement

Agency Coordination

Development - Records Officers - Component + Directorate
System Review - Directorate Info Processing Coordinator
Equipment Requisition - Records Mgt Staff / SSS
Film Processing - Printing Services Div O/Log
Computer COM System - SIPS/DDS IPC in each Directorate

Office Implementation

Equipment Procurement and Installation
Manpower assignment, space, work schedules and Supervision
Work Flow - File Screening - File Preparation - Filming - Hold File
Processing - Film Deliver - Process - Return - Verification - Corrections
Distribution - File Film master + Copy - Return Files
Use of Film - Use Procedures and Film Maintenance
Disposition - Authority + Procedures for file + film disposal



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CLASSIFICATION

MEMORANDUM FOR THE RECORD

DATE 12 Apr 71

SUBJECT RCB Microfilm Project

FILE NUMBER

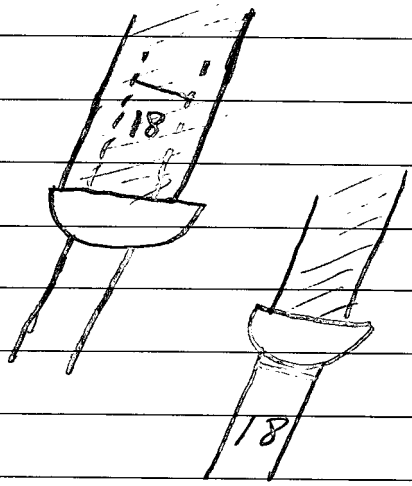
On Monday, 12 April at 9:30 am

STATINTL I phoned [redacted] to check on operation at PSD

He said Reel #39 was out of focus. He would come right over. I stopped Jim on

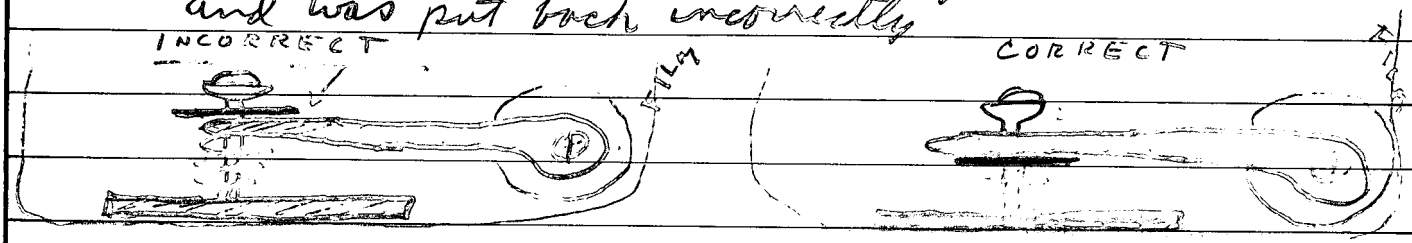
STATINTL our camera. [redacted] and his supervisor arrived at 10:30 and found two things wrong:

(a) The legs slipped down probably when camera was being mounted.



This is the correct position with line and 18 showing

(b) The film compressor inside the camera had been bumped loose when film was inserted and was put back incorrectly



Reels #39, 40, 41, 42, 43, 44, 45, 54, and 55 will have to be reshot photographed. Work Request 11:15.

OFFICE AND TITLE

Reels 39 to 55 are Boxes (10) - (11) - (12) - (13) and Box (1) of 2 Series + (1)

STATINT

FORM 7-62 1954

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CLASSIFICATION

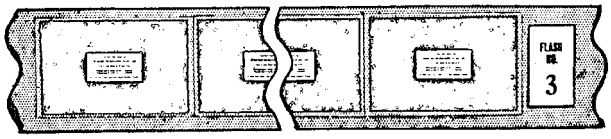
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

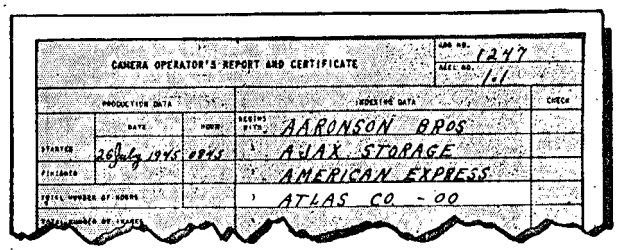
(40)

f. Flash No. 3—Special Target.

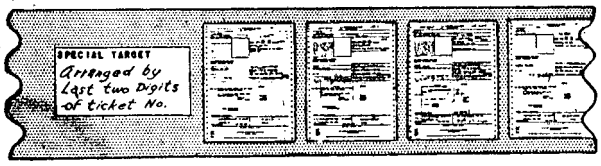
(1) Continues above steps until first folder ot Atlas Bros. is reached.

(2) Photographs flash cards eight times, followed by Flash No. 3 and enters "Atlas Co. 00" on camera operator's report, and certificate.





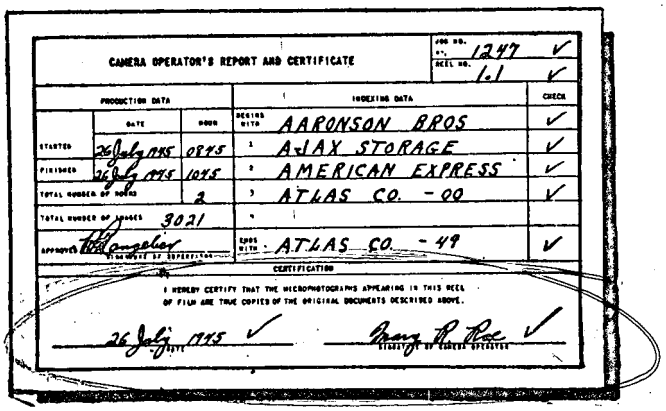
(3) Photographs special target "Arranged by last two digits of ticket number" required by special file arrangement. Follows special target by contents of folder.



(4) Continues photographing material with spacer targets between folders until buzzer warns that approximately 98 feet of film have been used.

g. End of First Reel.

(1) Finishes contents of folder and executes remainder of operator's certificate.



(2) Photographs camera operator's report and certificate after approval of entries by supervisor.

(3) Writes across top of drawer survey sheet the next reel number. If more than one reel begins within a drawer, write the second reel number in a similar fashion on a plain piece of paper. The survey sheet and paper remain in the drawer.

(4) Unloads the first reel and places it in carton marked Reel No. 1.1.

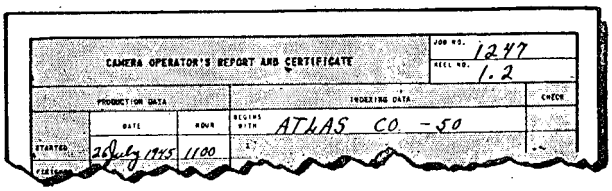
(5) Reloads camera using receiving spool for carton marked Reel No. 1.2.

h. Second Reel.

(1) Cleans glass guide, checks lamps, and resets image counter to 0000.

(2) Assembles interlocking reel number digits for Reel No. 1.2 to correspond with numbers on empty carton and operator's report.

(3) Removes first folder BACK OF MARKER from drawer and makes necessary entries on the operator's report.



(4) Depresses spacer for 2 seconds.

(5) Photographs title, density, and reel number targets, and special target reading "Arranged by first two digits of ticket number," followed by contents of folders.

(6) Continues photographing all folders until end of drawer is reached.

(7) Identifies drawer as microfilmed by inserting yellow card *in back* of drawer label, and returns drawer to proper location in cabinet.