FM 11-41

DEPARTMENT OF THE ARMY FIELD MANUAL

AUDIO-VISUAL SUPPORT CENTER OPERATIONS

HEADQUARTERS, DEPARTMENT OF THE ARMY
NOVEMBER 1966

TAGO 6154A

FIELD MANUAL
No. 11–41

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *28 November 1966*

AUDIO-VISUAL SUPPORT CENTER OPERATIONS

* This manual supersedes FM 11–41, 2 January 1962.

CHAPTER 1

INTRODUCTION

1. Purpose and Scope

a. Purpose. This manual is a guide for audio-visual support center personnel, including supervisory personnel, training specialists, and others concerned with audio-visual support functions. It provides information on the organization, administration, and operation of audio-visual support centers.

b. Scope. This manual describes the mission, organization, responsibilities, and operations of audio-visual support centers. Material presented herein may be applied to audio-visual support centers wherever authorized and established. The audio-visual distribution system is composed of the Audio-Visual Distribution and Utilization Section, Pictorial and Audio-Visual Division, Office of the Chief of Communications-Electronics; the Distribution Branch, Army Pictorial Center; and all Audio-Visual Support Centers.

c. Applicability. The material contained herein is applicable to both nuclear and non-nuclear warfare, except as otherwise noted.

d. Recommendations. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the United States Army Signal Center and School, Fort Monmouth, N.J. 07703, ATTN: SIGODTL–2.

e. References. A list of references applicable to the operation of audio-visual support centers is included in appendix A.

2. Mission

a. The mission of the audio-visual support center system is to provide direct visual training support to all elements of the Army. This is achieved through close liaison with all personnel engaged in the training of Army personnel.

b. Each audio-visual support center in the Army is a part of the audio-visual support center system. Its mission is broken down as follows:

(1) To advise and assist training personnel at all echelons in the use of motion pictures, transparencies, and related audio-visual aids.

(2) To maintain adequate stocks of motion picture prints and other pictorial materials to meet the training requirements of the parent installation and reserve component units within its area of responsibility.

(3) To maintain ready for issue, to units of the active Army, Reserve, and ROTC, the latest types of standard items of projection and other audio-visual equipment authorized by TA 11–12.

(4) To maintain facilities for training and licensing U.S. Army projectionists.

(5) To conduct, when appropriate, courses for projectionist instructors and for personnel engaged in the preparation of transparencies.

(6) To evaluate new educational ideas and developments, and to recommend the use of new audio-visual devices in Army training.

3. Responsibilities

a. The Chief of Communications-Electronics (fig. 1) is responsible for—

(1) Planning, directing and exercising technical supervision over all audio-visual support center services at class I and class II Army installations in the continental United States and in oversea departments and commands.
(2) Authorizing the establishment, reclassification, or discontinuance of Army audio-visual support centers.
(3) Exercising technical supervision over the distribution, storage, loan, exhibition, and maintenance of audio-visual projection equipment, film, and allied pictorial aids.

b. Commanders of CONUS armies, oversea commands, and the Commanding General, Military District of Washington are responsible for—

(1) Recommending establishment, reclassification, or discontinuance of audio-visual support centers in compliance with AR 108–30.
(2) Storing, loaning, and maintaining audio-visual projection equipment, film, and allied pictorial aids.
(3) Training projectionists, projectionist instructors, and personnel required to prepare transparencies.

c. A specific staff activity at Army headquarters is assigned responsibility for the technical operation of all audio-visual support centers. The deputy chief of staff of this activity is assisted in fulfilling this responsibility by a director of audio-visual support center services. Whenever this director is given additional pictorial responsibilities, his title becomes Army Director of Pictorial and Audio-Visual Support Center Services. The Army Director of Audio-Visual Support Center Services is responsible for—

(1) Technical control of all audio-visual support centers in the command.
(2) Dissemination of information pertaining to projection equipment to all audio-visual support centers in the command.
(3) Inspection of all audio-visual support centers in the command (as prescribed by AR 108–30).

d. A specific staff section is assigned responsibility for the operation of the audio-visual support center at the installation level. A director supervises the operation of the local audio-visual support center. The director of audio-visual support center services is responsible for—

(1) Efficient operation of the audio-visual support centers.
(2) Advising personnel of the availability of films, audio-visual equipment, and allied pictorial aids and their use.
(3) Training individuals of the audio-visual support center in the performance of their duties and cross-training them to perform other duties.
(4) Requesting, receiving, and storing audio-visual equipment, and allied pictorial aids.
(5) Procedures to loan films, audio-visual equipment, and allied pictorial aids to troop units, organizations, and individuals on an hourly, daily, or extended loan basis.
(6) Supervising of personnel engaged in performance of organizational maintenance on audio-visual support center equipment and films.
(7) Producing some forms of transparencies.
(8) Supervising personnel engaged in the training of projectionists of all using units.
(9) Issuing official U.S. Army Audio-Visual Equipment Operator Licenses.
(10) Maintaining necessary records and inventories required for the efficient operation of the audio-visual support center.

4. Organization

a. CONUS Army Area and Oversea Command. The headquarters of each CONUS army and oversea command has a central audio-visual support center to supervise the activities of audio-visual support centers within their areas of responsibility.

(1) They pass on information pertaining to film distribution and utilization to the other class B, C, D, or EX audio-visual support centers within their areas.
(2) They may reallocate film and equip-

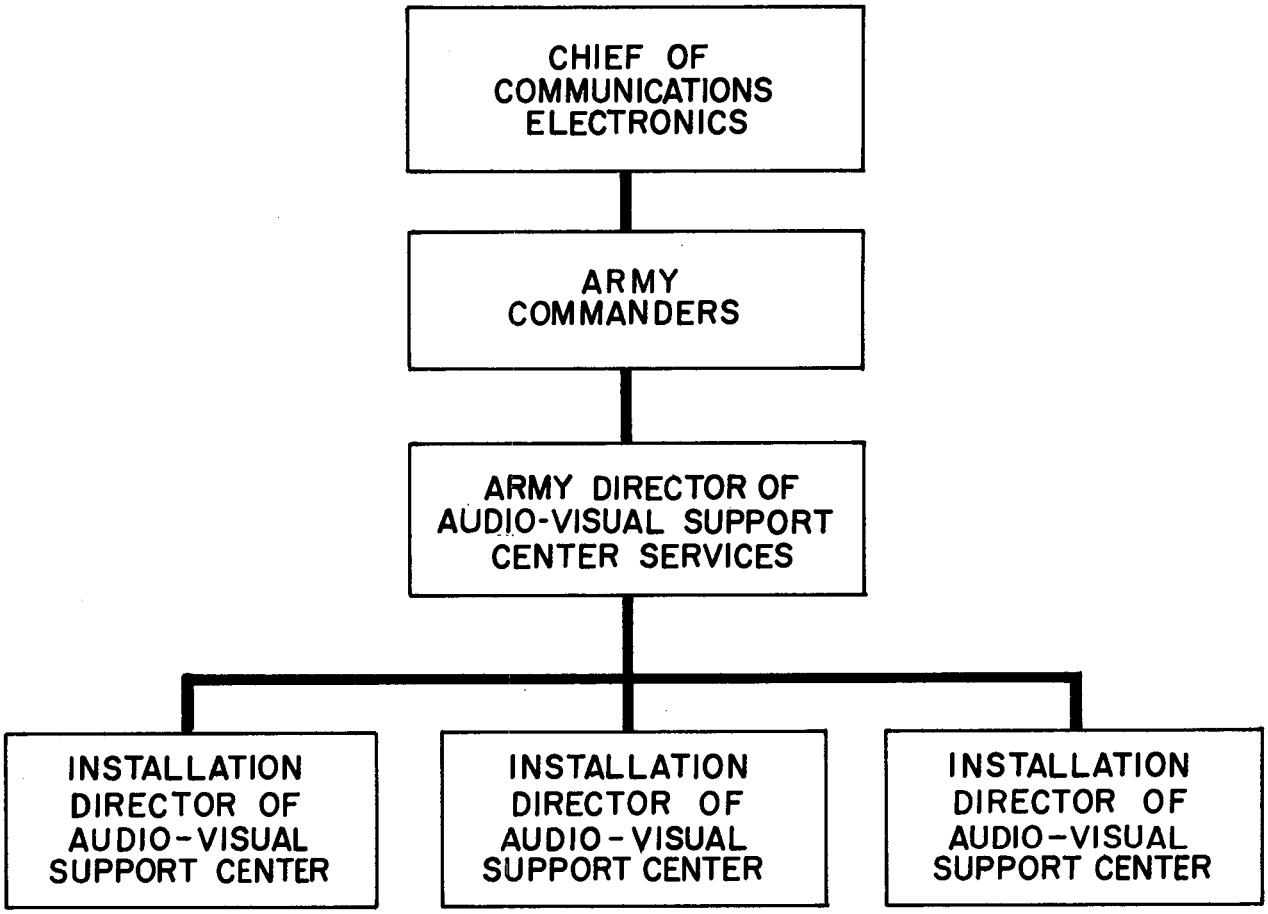


Figure 1. Chain of responsibility.

ment from one center to another to fill specific requirements.

b. Directors.

(1) Each army headquarters and major installation is assigned a director to supervise the operations of the audio-visual support centers in the area. Since these directors are well qualified as audio-visual specialists, they insure maximum and effective utilization of motion pictures, film strips, transparencies, and related audio-visual aids and equipments.

(2) A director of audio-visual support services for the Army Reserve (USAR) and ROTC (AR–ROTC) is assigned as an assistant to the army director to supervise the AR–ROTC requirements in each Army area. The Director of Audio-Visual Support Service for Army Reserve and ROTC is responsible for—

(*a*) Frequent staff visits to reserve training centers and ROTC units. He gives technical audio-visual assistance to key advisory and reserve instructor personnel, provides solutions to problems of local audio-visual support requiring immediate attention, and conducts group orientations.

(*b*) Technical supervision, including periodic inspection, of all phases of the Army area audio-visual support center reserve support program.

c. Personnel. Personnel who have had experience in commercial, industrial, or educational film exchanges are desirable for training assignments in Army audio-visual support centers. Such personnel often have the specialized

skills required for booking, issuing, inspection, and storage duties.

5. Types of Audio-Visual Support Centers

Audio-visual support centers are organized and given an alphabetical classification in accordance with population and geographical area served. Special assignments and unusual support functions are also considered in determining the type of audio-visual support centers to be established. The following center designations are used in the CONUS army areas:

a. A class A audio-visual support center provides centralized support in the army area. It is assigned only to an army headquarters audio-visual support center.

b. A class B audio-visual support center is assigned to an installation to support the requirements for on-post training of active Army, Reserve, ROTC, National Guard, and authorized civilian organizations and the public within the immediate vicinity of the post.

(1) As equipment and personnel requirements increase, audio-visual support center expansion is made feasible through multiple designations. For example: a class B audio-visual support center may be designated class 2B, 3B, 4B, 5B, or higher. Note, however, that only class B centers can be given multiple designations.

(2) Class B audio-visual support centers are located at service schools and major training installations.

c. A class C audio-visual support center, which has less equipment than is required by a class B center, supports active Army and civilian personnel post training requirements. These centers are normally established at installations having limited military training activities.

d. A class D audio-visual support center serves a small training installation or isolated activity, and requires limited equipment and categories of film.

e. A class EX audio-visual support center services depots, arsenals, and similar installations that conduct very little military personnel training. It meets film and projector requirements for safety training and civilian personnel instruction programs.

6. Auxiliary Audio-Visual Support Centers

When training requirements indicate a continuing need for a limited number of film subjects, army commanders, without prior approval, may establish auxiliary audio-visual support centers.

a. Auxiliary audio-visual support centers are extensions of the official audio-visual support center installation that supports them and are governed by the same directives and regulations applicable to the parent center.

b. The establishment of auxiliary audio-visual support centers is generally restricted to areas within the confines of the installation where the local post audio-visual support center is located. When circumstances warrant the establishment of an auxiliary center off post, it must be under the same command as the supporting center.

c. Establishment of auxiliary audio-visual support centers makes equipment more readily available and reduces the time normally involved in drawing and returning material from and to the post audio-visual support center. In many cases, major training installations and service schools may find it advantageous to operate auxiliary audio-visual support centers.

7. Equipment Authorization

Projection and allied audio-visual equipments for all audio-visual support centers are authorized by TA 11–12 or TOE 11–500.

a. Equipment is allocated to CONUS and oversea command audio-visual support centers on the basis of their classification and the authorizations in TA 11–12 or TOE 11–500.

b. The Chief of Communications-Electronics may authorize additional equipment to meet special operational requirements over and above the A to EX columnar allowances within the CONUS, when justified under column F, TA 11–12.

c. Upon the recommendation of the army or oversea commander, the Chief of Communi-

cations-Electronics may authorize multiple letter classifications of class B audio-visual support centers to augment equipment allowances.

8. Personnel Requirements

The functions of all audio-visual support centers in the Army film distribution and utilization system are basically the same. Therefore, personnel allocation must be based upon the size of the center and the scope of its activities.

a. Personnel requirements for individual centers are generally computed on the basis of DA Pam 20–551. However, local personnel guides, intended to facilitate efficient operations, may also prove to be useful in determining personnel requirements.

b. The following types of personnel are considered essential in the operation of Army central audio-visual support centers and class B centers supporting major service schools and training activities:

(1) Director
(2) Assistant director
(3) Secretary
(4) Administrative and clerical personnel, required for correspondence and records
(5) Chief booker
(6) Assistant bookers (as required)
(7) Audio-visual equipment instructor
(8) Transparency preparation instructor (at central exchanges and major service schools)
(9) Equipment maintenance supervisor
(10) Equipment maintenance technician
(11) Shipping and receiving supervisor
(12) Shipping and receiving clerks (as required)
(13) Film inspection supervisor
(14) Film inspectors (as required)
(15) Supply clerk
(16) Full-time preview projectionists should be assigned to an audio-visual support center when the volume of daily film previews demands the constant attention of one or more individuals.

9. Major Duties of Audio-Visual Support Center Personnel

a. Director.

(1) Directors are assigned to audio-visual support centers to provide coordination between audio-visual facilities and the actual training application of the facilities. The director—
  (*a*) Supervises the operation of audio-visual support centers.
  (*b*) Provides advice and assistance in the proper use of motion pictures, filmstrips, transparencies, and related audio-visual aids and equipments.
  (*c*) Supervises the training of personnel in the care and use of films and related audio-visual aids and equipments.
  (*d*) Assists Army training officials at all echelons in selecting, designing, and employing films, transparencies, and related audio-visual equipment and allied pictorial aids.
  (*e*) Obtains films, audio-visual equipment, and allied pictorial aids in support of training programs.
  (*f*) Assists in the improvement of existing classroom facilities and the implementation of new presentation procedures or techniques.
  (*g*) Arranges for the destruction of used or obsolete materials.
  (*h*) Establishes circuit bookings as required and as directed by the Chief of Communications-Electronics.

(2) The ideal director is a combination audio-visual educational specialist and sales executive, experienced in the employment of audio-visual devices and instructional aids, knowledgeable in motion picture distribution procedures, and, perhaps, experienced in film production fields. He should constantly emphasize the importance and value inherent in maximum and effective use of audio-visual instructional aids.

(3) The director must not become so involved in day-to-day administrative

details that he is unable to perform the more important duties of—

(*a*) Maintaining continuous contact with training officials of supported units or activities.

(*b*) Reviewing individual training programs and recommending the employment of appropriate films, audio-visual equipment, and allied pictorial aids.

(*c*) Assisting graphics arts personnel in determining requirements for preparing Department of the Army approved transparencies and charts.

(*d*) Screening all motion pictures and related audio-visual pictorial aids received, and preparing comprehensive recommendations as to individual item value and usage in support of training programs.

b. Administrative Assistant. The administrative assistant—

(1) Supervises the actual operations of the audio-visual support center.

(2) Implements established policies and procedures.

(3) Performs administrative functions.

c. Secretary. The secretary is responsible for the preparation of correspondence, the routing of incoming and outgoing correspondence, and other administrative duties.

d. Administrative and Clerical Personnel. Administrative and clerical personnel—

(1) Maintain records and inventories.

(2) Prepare reports.

(3) Process routine correspondence, loan requests, management forms, and reports.

(4) Perform other administrative and clerical functions as required to support the operations of the audio-visual support center.

e. Chief Booker. The chief booker is a particularly important individual, because the success or failure of an audio-visual support center depends upon the efficient operation of the booking section or department. The chief booker, and his assistants, must be familiar with available films and other materials. The chief booker—

(1) Recommends substitute films, transparencies, or other materials, when the requested material is not available.

(2) Orders additional prints of subjects receiving wide use to assure availability of required prints.

(3) Books all requested films, and sends out confirmatory notices.

(4) Compiles, and transfers to pertinent records, information relative to the number of showings (Army or other) of a film and the attendance at each showing (as indicated on film loan orders).

f. Assistant Booker(s). The number of assistant bookers varies with the size, workload, and responsibility of the audio-visual support center. Assistant bookers help the chief booker in maintaining efficient booking section or department operations.

g. Audio-Visual Equipment Instructor. The audio-visual equipment instructor is concerned primarily with the training of film projectionists. Experience indicates that proficient use of projectors and film enhances the value of, and considerably reduces the cost of, army training. The audio-visual equipment instructor conducts—

(1) Audio-visual equipment training courses (course outline in app B).

(2) Audio-visual equipment instructor courses (course outline in app B).

(3) Transparency preparation classes (course outline in app C), when transparency preparation instructors are not provided or authorized.

h. Equipment Maintenance Man. The equipment maintenance man and his assistants inspect and repair all audio-visual equipment and allied pictorial aids. This essential function assures successful use of all audio-visual support center equipment and materials as part of classroom instruction.

i. Shipping and Receiving Clerk. The num-

ber of shipping and receiving clerks required is determined by the size of the audio-visual support center and the scope of its operations. The shipping and receiving clerks—

(1) Prepare films for over-the-counter issue or shipment.

(2) Check loan orders and films to assure issue of requested films or appropriate substitutes.

(3) Check material received from users to assure return of all items issued.

(4) Prepare and maintain records pertaining to the use of pictorial material.

(5) Assist in the preparation of inventory reports, film review information, and related data.

(6) Remove obsolete film stock, upon notification.

j. Chief Film Inspector. The chief film inspector is responsible for supervising the film inspection section or department. The chief film inspector—

(1) Maintains a rigid film inspection and cleaning program.

(2) Assures that standards for the removal of damaged and unserviceable prints from active use are maintained.

k. Assistant Film Inspector. The assistant film inspector assists the chief film inspector in inspecting films and related materials upon return from using units and activities. He also maintains the film inspection section or department records.

CHAPTER 2

PHYSICAL ARRANGEMENT OF AUDIO-VISUAL SUPPORT CENTER

10. General

The basic mission of the audio-visual support center system is to provide direct support for the Army's training missions. Accordingly, the more conveniently centers are placed with respect to the location of training personnel, the more effective and responsible the service will be. The primary consideration in selection of the audio-visual support center location is close proximity to training units of the installation. Another important consideration is the physical arrangement of the audio-visual support center. Attention to these details will greatly enhance operations and efficiency.

11. Space Requirements

Adequate space must be made available to house the different sections or departments of the audio-visual support center.

a. A sufficient number of preview rooms should be provided to permit the director and training officials to screen motion pictures, filmstrips, transparencies, and related materials. Previews will enable interested personnel to determine the suitability of the material for specific training programs.

b. The area devoted to projectionist training classes should be so located that students will not interrupt, or be interrupted by, other audio-visual support center operations.

c. The administrative offices and the booking, shipping, inspection and storage, and equipment maintenance sections or departments must have adequate space to permit efficient operations.

d. Actual arrangement of the floor plan depends on the type of building and related factors. The following is considered minimum floorspace, in square feet, for each type of audio-visual center:

(1) Class A (Central)	5,500.
(2) Class B	3,500. For each multiple, add 2,400 sq. ft.
(3) Class C	2,000.
(4) Class D and EX	In proportion to mission and class C space requirements.

12. Administrative Office

The administrative office should be large enough to accommodate the director, his assistant, and the secretarial and clerical staff of the administrative office. In addition, the director must have a private office and should have a conference room for meetings with post training officials and other personnel.

13. Booking Department

The booking department should be located near the building main entrance, where it will be readily accessible to all representatives of the supported units. Tables and chairs should be provided to enable unit training personnel to prepare notes on films and related audio-visual aids they plan to use in future training programs. Space and facilities must be provided for—

a. Booking ledgers.

b. Quick reference files.

c. Sets of instructor's film references.

14. Shipping and Receiving Department

The shipping and receiving department should be conveniently located to facilitate pick up and return of films by unit training personnel. Space allocations for the shipping and receiving department must provide for—

a. "Ready racks" for audio-visual material to be picked up or shipped during the initial 24-hour period.

b. Storage racks for all types of audio-visual equipment issued or shipped during a 24-hour period. (If the director should determine that projectors and allied audio-visual equipment can be issued and received more efficiently by the equipment maintenance department, because of personnel allocations, this space will be required by that department.)

c. Scales, shipping materials, and related equipment. The larger the volume of mail requests filled, the greater will be the space requirements.

15. Film Inspection and Storage Department

The film inspection and storage department should be located adjacent to the shipping and receiving department. This will insure more efficient operation in the inspection and storage of returned films and related material. Space allocations for the film inspection and storage department should provide for—

a. Film inspection machines.

b. Film viewers.

c. Film repair equipment.

d. Film cleaning equipment.

e. Storage racks and facilities for films and related equipment.

f. Film shredding equipment.

16. Equipment Maintenance Department

The equipment maintenance department should be located close to the shipping and receiving department. This will facilitate inspection and repair of all audio-visual equipment returned from using units. In addition to a soundproof area for testing audio equipment, space must be provided for—

a. Workbenches.

b. Storage bins for equipment and repair parts.

c. Tools and test equipment.

17. Projectionist Training Facilities

Desirable arrangements for projectionist training facilities include—

a. An office for the audio-visual equipment instructor.

b. An assembly classroom, equipped with blackboards, projection facilities, screens, and other equipment essential to classroom instruction.

c. A room with stalls equipped with projectors and miniature screens. Where classes are conducted on a "buddy" basis, one stall is required for each two students. Six stalls are considered adequate for most installations.

d. Space for the equipment and materials required in preparing art work and transparency processing and reproduction. However, these requirements exist only at centers that conduct transparency preparation courses.

18. Preview Facilities

A minimum of one projection room must be available at all audio-visual support centers for the previewing of films. Additional facilities must be provided in larger centers.

a. The number of screening rooms will vary with the type activity being supported. For example, audio-visual support centers at major service schools and training installations should have one large and several small screening rooms to meet the requirements for preview facilities.

b. For most effective use of preview facilities, all training officials interested in a particular subject should be invited to attend scheduled film screenings. This will reduce the number of preview rooms required.

19. Reserve Stock Storage

Central audio-visual support centers and other audio-visual support centers maintaining reserve stocks of films must be provided with adequate facilities for storing these prints. These centers should have practical and efficient means both for temporarily safeguarding and eventual shipping of films.

CHAPTER 3

OPERATIONS

20. General

a. Standardization of procedures will assure efficient operation of the audio-visual support center system and its many individual centers. As far as is practicable, all audio-visual support centers should operate in the same manner.

b. When any audio-visual support center develops methods and techniques that improve operations, it should inform the Pictorial and Audio-Visual Director, Office of the Chief of Communications-Electronics (OCCE). He, in turn, will pass on pertinent information to subordinate centers for applicable integration.

21. Distribution Procedure

The distribution of films and related pictorial materials in the Army is made in the following categories:

a. Initial Distribution. When new films are produced at the Army Pictorial Center (APC), or procured from other sources, they are assigned a release number and distributed throughout the audio-visual support center system in accordance with initial distribution requirements.

(1) Initial distribution requirements for each film are based upon troop strength, training requirements, and the specific recommendations of Headquarters, USCONARC, and the heads of the proponent agency. Thus, the initial distribution of film does not follow a fixed formula.

(2) Film content, film utilization plans, and actual troop requirements determine film distribution. Directors of Army audio-visual support centers are responsible for reallocating prints received on initial distribution to meet the demands of training requirements within their areas or commands.

b. Circuit Distribution. Circuit distribution is required when the number of prints of a given film are limited, or when prints are not readily available for distribution. In this type distribution, a film print is sent to audio-visual support centers in accordance with a prearranged schedule established by the Army central audio-visual support center.

(1) To be successful, all exchanges scheduled to receive a print on a circuit distribution must be informed, several weeks in advance of delivery, of the dates when the print will be available for showing. When so notified, the director of the audio-visual support center must inform appropriate training officers and other officials that the film will be available for viewing only on specified dates.

(2) Films circulated on circuit distribution must be shipped to the next scheduled audio-visual support center on the scheduled shipping date. Failure to do so results in a complete breakdown of the established circuit.

(3) Because of the administrative problems involved in close scheduling, circuit distribution of films should be used only when it is the sole means of meeting the circulation requirements for the film.

22. Action Upon Receipt of Films

a. Upon receipt of initial distribution films and filmstrips, the film number, film title, and date of receipt are recorded in the audio-visual support center ledger. Shipping receipts are signed and returned to the source.

b. The following records are prepared for each print:

(1) DA Form 11–41 (Film Booking Card).

(2) DA Form 11–77 (Film Print Inventory and Utilization Record).

c. The titles of new films and filmstrips, with a brief synopsis of each, are brought to the attention of all units served by the audio-visual support center through a film newsletter (para 34*d*). Classified films are handled in accordance with AR 380–5.

23. Determining Film Reorder Distribution

To determine film reorder distribution, directors of audio-visual support centers must maintain close coordination with training officials. In this way, the directors will be well informed on current phases of training programs requiring audio-visual support. Factors to be considered when estimating print requirements for reorder distribution are—

a. Number and type of troops served by the center.

b. Status of troop training.

c. Film requirements to support each using unit's training programs.

d. Anticipated arrival of new units and their film print requirements.

e. Departure of units and their film print requirements.

f. Subject matter and planned usage of films to be requested on reorder distribution from the Army Pictorial Center.

24. Pictorial Material Selection Reference

A complete list of all Department of the Army (DA) films, filmstrips, phono-recordings, DA transparencies, and related pictorial aids is contained in DA Pam 108–1. Cumulative supplements are issued periodically as new films and related pictorial aids become available. These publications are issued to troop units through Adjutant General (AG) publication supply channels. Audio-visual support centers should maintain sufficient copies of these publications on hand for short-term loan to those units that have not received their copies through regular channels.

25. Film Showing Restrictions

a. The distribution letter that accompanies an initial film distribution contains the film title, release number, running time, type (black and white or color), synopsis of the film if it is unclassified, clearances, planned application, and usage restrictions. Directors are responsible for the film and must insure that it is used according to instructions contained in the ACP initial distribution letter, and that it is not made available to unauthorized persons, groups, or organizations.

b. APC monthly film information bulletins also provide information guidance to directors and other audio-visual support center personnel. These bulletins list new restrictions or releases pertaining to pictorial material previously distributed.

c. Both the initial distribution letter and the monthly information bulletin contain information and instructions regarding films that are cleared for public use, for nonprofit exhibition, for television or theatrical use, and for purchase. Note, however, that films can be purchased only from a holder of a Government Services Administration (GSA) contract for the sale of Government films. The Pictorial and Audio-Visual Directorate, OCCE, will keep directors informed of current GSA contract holders who are authorized to sell Government films.

d. Only films cleared by the initial distribution letter or the monthly information bulletin may be loaned to non-Army requestors.

e. Certain films, not cleared for showing to the general public, may be available to professionally interested groups, such as law enforcement and medical organizations. Applicable releases are listed in the initial distribution letter or monthly information bulletin.

f. Directors of audio-visual support centers are not authorized to loan prints for transfer processing to accommodate for closed circuit television.

26. Film Booking Procedure

Users may book films, filmstrips, transparencies, phono-recordings, and related equipment in the following ways:

a. In Person. A training officer or his representative may book the film by dealing directly with the booker at the audio-visual support center. If required, he may receive a written confirmation of the booking. However, such confirmation is not normally necessary when arrangements for the booking are made in person.

b. In Writing. A using unit on a post may send a written request through the distribution center to the audio-visual support center. This booking can be confirmed by a telephone call or a written message. Units located off-post may forward their booking requests by mail and receive a written confirmation by return mail.

c. By Telephone. Both on-post and off-post units may book films by telephone. In these cases, the booker will give oral confirmation, but not a written confirmation (except in special cases).

d. DA Form 11–44 (Audio-Visual Loan Order). All written requests from active Army and civilian component units will be made on Audio-Visual Loan Order, Form 11–44 (figs. 8 and 9).

e. Civilian Requests. Civilian organizations may request Army films, cleared for public nonprofit showing to fill valid requirements, either in person, by mail, or by telephone. Civilian requestors may use a letter or a post card, rather than Form 11–44.

f. Advanced Booking. Although no mandatory advanced booking time is required, advanced bookings guarantee that films will be available when and where required.

(1) Training officials and other representatives of using units should notify the audio-visual support center as far in advance as possible to assure the availability of special films.

(2) Timely requests for films not available at a particular center can usually be obtained from another audio-visual support center in the area or, through channels, from the Army Pictorial Center.

27. Booking and Issuing Procedures for Film and Other Pictorial Material

If a written confirmation of a booking is desired, three copies of DA Form 11–44 are submitted to the audio-visual support center. Otherwise, only two copies are required.

a. Upon receipt of the Form 11–44, the booker consults the DA Form 11–41 file to determine whether the film is stocked by the audio-visual support center and if it will be available on the requested date.

(1) If the film will be available on the date requested, the booker records the print number in the appropriate block on Form 11–44, records the using period on the DA Form 11–41, and places the date and his initials in the "Confirmation Mailed" block. Upon completion of these steps, the booker returns a copy of Form 11–44 to the requestor.

(2) If the film will not be available on the requested date, the booker records the nonavailability status on Form 11–44. He may also suggest alternate dates when the film will be available or substitute films that may be used in lieu of the requested film.

(3) If the film is not to be issued immediately, the booker places two copies of Form 11–44 in a suspense file. These copies are forwarded to the shipping department one day prior to the pickup or shipping date.

b. Upon receipt of the forms from the booker, the shipping clerk removes the prints from the storage racks and prepares them for pickup or shipping.

(1) *Over-the-counter pickup.* In this type operation, a representative of the using unit picks up the film on the appropriate date.

(*a*) The unit representative checks the print numbers carefully to insure that the requested prints are being issued.

(*b*) The unit representative signs both copies of the Form 11–44, which

serve as receipts for the films being issued.

(*c*) The unit representative takes the duplicate copy of Form 11–44.

(*d*) The shipping clerk files the original copy in suspense and indicates the date when the film is to be returned.

(2) *Mail.* When film is shipped to distant users by mail (parcel post), the shipping clerk—

(*a*) Packs the film in a shipping case and incloses the duplicate copy of Form 11–44. Before the form is returned with the film, the projectionist must fill in required information.

(*b*) Files the original copy of Form 11–44 in suspense and indicates the the return date.

(*c*) Ships the film.

(3) *Courier pickup.* The procedure for courier pickup is the same as that for over-the-counter pickup specified in (1) above.

28. Requesting Audio-Visual Equipment and Related Pictorial Aids

Requests for audio-visual equipment and related pictorial aids should be submitted well in advance to insure availability of the equipment when required. The audio-visual support center will lend equipment to such users as USAR and ROTC units on a daily, monthly, or indefinite basis. When equipment is loaned on an indefinite basis to USAR and ROTC units, it need not be returned unless the director for the Army Reserve and ROTC determines, during a personal visit, that the equipment is in need of repair or no longer required. Units may request equipment in the following manner:

a. By Telephone.

(1) The requestor or his representative calls the audio-visual support center to determine if the equipment will be available on the date required.

(2) The equipment maintenance man (shipping clerk in some centers) records the request, verifies the availability of equipment, and gives an oral confirmation.

(3) The requestor prepares the necessary copies of Projection and Audio-Visual Equipment Loan Order, DA Form 11–43 (figs. 6 and 7), and forwards them to the audio-visual support center for action.

b. In Person. The requestor may visit the audio-visual support center in person, prepare the forms, and give them directly to the equipment maintenance man.

29. Procedure for Issuing Audio-Visual Equipment and Related Pictorial Aids

a. Upon receipt of DA Form 11–43, the equipment maintenance man records the confirmation of the request, including the name of the unit, the amount and type of equipment, and the issue period on a chart, ledger, or file used for this purpose.

b. The equipment maintenance man then completes the Form 11–43 by recording the exchange number and serial number of each item of equipment in the appropriate block, and by posting the date of issue and the date the equipment is to be returned.

c. The unit representative signs the original copy of Form 11–43 when he accepts the equipment. A duplicate copy of Form 11–43 and equipment maintenance forms accompany the equipment.

d. The equipment maintenance man files the original copy of Form 11–43 in suspense and indicates the return date for the equipment.

30. Equipment Return Procedure

a. When equipment is returned to the audio-visual support center on the scheduled return date, the maintenance man—

(1) Withdraws the original copy of DA Form 11–43 from the suspense file and checks the equipment to insure that all items have been returned.

(2) Inspects each item of equipment to insure that all components are in satisfactory condition.

(3) Receives and checks all maintenance forms for completeness.

(4) Checks Form 11–43 to make sure that the projectionist's report has been completed and signed.

(5) Signs both copies of Form 11–43, indicating that he has received the listed equipment in satisfactory condition.

(6) Returns the original copy of Form 11–43 to the unit representative.

(7) Inspects, replaces necessary running spares, performs necessary maintenance, and returns equipment to storage for reissue.

(8) Files Form 11–43, and places the equipment maintenance form with the equipment.

b. When the equipment is not returned on or before its scheduled return date, the equipment maintenance man calls the using unit and requests return of the equipment. If the equipment is not returned as requested, the matter is reported to the director for necessary follow-up action.

31. Film and Filmstrip Return Procedure

The using unit should return films and filmstrips to the audio-visual support center on or before the due date indicated on the duplicate copy of DA Form 11–44. When films are not returned on schedule, the shipping clerk notifies the using unit and requests prompt return of the films. Repeated offenders will be brought to the attention of the director for appropriate action. Upon receipt of returned films—

a. The Shipping Clerk—

(1) Checks the original copy of Form 11–44 to verify that all films issued have been returned.

(2) Checks the duplicate copy of Form 11–44 to insure that the using unit has recorded all required information.

(3) Signs both copies of the form—acknowledging receipt—and returns the original to the using unit through its representative or by mail.

(4) Forwards the returned films to the inspection and storage department with the duplicate copy of Form 11–44.

b. The Film Inspector—

(1) Inspects, repairs, and rewinds returned films.

(2) Sorts out and holds unserviceable prints for salvage.

(3) Returns serviceable prints to the storage racks.

(4) Initials Form 11–44, indicating that he has inspected the films listed, and forwards the form to the booker.

(5) Reports excessive film damage to the director.

c. The Booker—

(1) Posts all required information on Form 11–77 (fig. 10), and indicates this action on Form 11–44.

(2) Files Form 11–44 according to date of issue for later reference in compiling periodic reports.

32. Classified Film and Filmstrip Control

The handling and control of classified films and filmstrips is in accordance with the provisions of AR 380–5 and pertinent local security regulation.

a. Identification of Requestors. Persons authorized or designated to pick up classified films and filmstrips should be cleared through the local G2 section of the headquarters under which the issuing audio-visual support center operates.

b. Preparation of DA Form 11–44. Classified and unclassified films are requested on separate Forms 11–44. Forms requesting classified films will include—

(1) The correct film number and title (when title is unclassified). Corrections to the items on the form will be initialed by the individual signing the request or the requesting officer.

(2) The following certificate will be inserted on the face of Form 11–44 by the audio-visual support center and signed by the unit commander:

> I hereby certify that in accepting the loan of the film(s) listed hereon, which are classified, I will comply with

the provisions of AR 380–5 to insure its (their) safeguarding. I further certify that the person(s) to view the film are cleared to have access to _____ and have a
insert classification
"need-to-know" regarding the information contained therein.

c. Classified Document Receipt. A classified document receipt, listing and identifying the classified items, is prepared and processed in accordance with AR 380–5.

d. Receiving Returned Classified Films and Filmstrips. Before accepting returned classified films and filmstrips, the receiving clerk will check the films to make certain that they are in the same condition as originally issued.

33. Projectionist Training

a. To insure the proper use and maintenance of audio-visual support center equipment, only trained and licensed personnel are authorized to operate the equipment. Included in the courses for training and licensing authorized personnel in audio-visual support center equipment are the—

(1) Audio-Visual Equipment Training Course (40 hours).

(2) Audio-Visual Equipment Instructors Course (40 hours).

(3) Transparency Preparation Course (40 hours).

(4) Audio-Visual Equipment Refresher Course (as needed).

b. The purpose of these courses is to train operators and technicians in the operation and care of projection and audio-visual equipments and the use of techniques that will improve audio-visual presentations. No compromise can be made in approved training programs if the efficient use of audio-visual aids is to be the policy.

c. The length of each course is based on the minimum time required to train operators and technicians in an acceptable degree of proficiency. Only where limited licenses are satisfactory will shorter courses be conducted.

d. The director of the audio-visual support center is responsible for monitoring all courses conducted by personnel of the audio-visual support center.

e. Projectionist License, DA Form 11–78 (fig. 11), is issued to all students who successfully complete the Audio-Visual Equipment Training Course.

(1) This license, which will be honored by all audio-visual support centers throughout the Army, will indicate the equipment the licensee is authorized to operate. An identification photograph of the individual, laminated to prevent it from being altered after issue, is made part of the license.

(2) Both the audio-visual equipment instructor and the director will certify that the graduate has demonstrated proficiency in the operation and maintenance of all equipment for which the license is issued.

(3) The Projectionist License is not transferable and is subject to recall and cancellation upon evidence of incompetence by the holder. The director of any audio-visual support center may revoke a license when films or equipment have been damaged as a result of negligence on the part of a projectionist. In addition, a license may be revoked upon evidence of inefficiency, incompetence, or lack of proficiency on the part of a projectionist.

f. To provide a means for the training of projectionists in remote locations, designated audio-visual support centers are authorized to train and license audio-visual equipment instructors. Only licensed projectionists are eligible to attend the instructor courses, and only those individuals considered qualified to act as instructors are recommended for instruction duties.

34. Services

Services offered by the director include but are not limited to,—

a. Orientation Classes. Audio-visual support center directors are responsible for conducting orientation classes on the proper use of motion pictures, transparencies, and related audio-visual aids. These classes may be conducted in

conjunction with the various officer classes held at each installation. As a minimum, the following subjects should be presented:

(1) Audio-visual support center operating procedures.

(2) Consultation services offered by the director.

(3) Availability and scheduling of preview facilities.

(4) Selection, booking, and use of audio-visual training aids.

(5) Audio-visual equipment training.

(6) Preparation and use of transparencies.

b. Provision of Preview Facilities. Preview facilities should be available at all times for the use of training officers and other authorized personnel. Where facilities are limited, it may be necessary to conduct scheduled showings. Officers should be encouraged to avail themselves of this service and to attend scheduled showings of subject prints applicable for specific training purposes.

c. Previews. Scheduled previews of new films are held weekly at the audio-visual support center. Maximum attendance is usually achieved through extensive advertising that indicates the subject, time, and place of the showing. To accommodate all interested personnel, films should be shown several times during the selected day.

d. A Film Newsletter. A film newsletter (fig. 2), distributed to all units, is the best means of keeping training officers and using units abreast of the latest developments in audio-visual training aids. The letter should include—

(1) A preview program, listing new films received by the audio-visual support center and the date on which they will be shown. Starting times of showing should be listed to permit officials to view the prints at a time most convenient for them.

(2) The title, running time, and a brief synopsis of each film to be shown.

(3) Information pertaining to obsolete films, changes in film classifications, changes in clearances of films for public showings, and other pertinent data concerning films and filmstrips.

(4) Information pertaining to new equipment, changes in procedure, or other notices of interest to using units and training officials.

35. Editing of Official Films

Cutting and editing of official Department of the Army films is a responsibility of the Chief of Communications-Electronics. Audio-visual support centers will not add to or remove footage from such films unless directed by Army Pictorial Center through channels. For further information, see AR 108–30.

36. Film Disposal

a. Serviceable Prints. Serviceable prints may be removed from stock and shipped from the audio-visual support center for the following reasons:

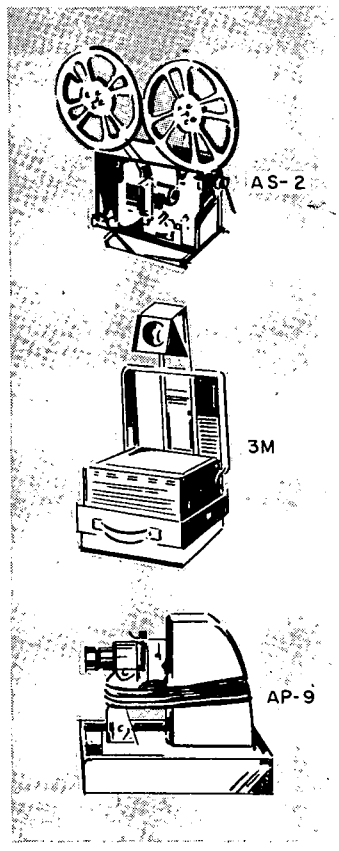
(1) Upon receipt of a reallocation order from the central audio-visual support center. In this case, the director will transfer serviceable prints to the designated audio-visual support center.

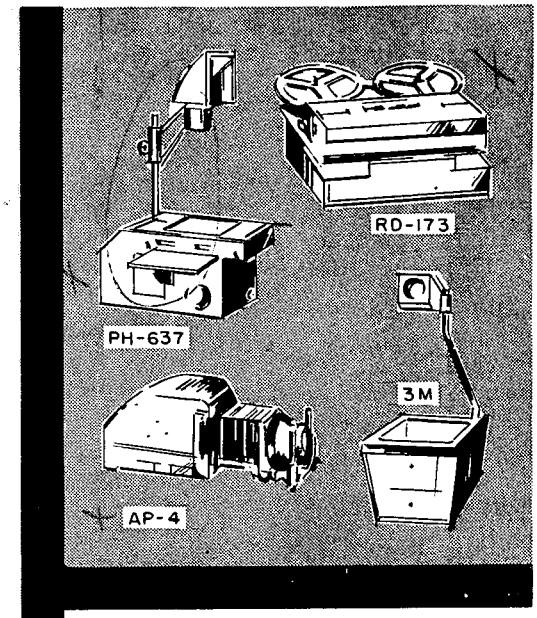
(2) When a director determines that he has prints in stock for which there is no longer a requirement. In this case, he will report the excess prints to the central audio-visual support center and request disposition instructions.

b. Disposal of Obsolete, Damaged, and Unserviceable Prints. Directors of audio-visual support centers, after being notified of obsolete subjects by higher authority will dispose of obsolete, damaged, and unserviceable prints in accordance with the following instructions:

(1) Disposal of classified prints will be handled in accordance with AR 380–5.

(2) Disposal of unclassified prints will be handled by the local disposal officer. These prints, which will be classified as scrap, will be accompanied by the required number of copies of DA Form 3161, Request for Issue or Turn-In, or other approved property turn-in





AUDIO-VISUAL SUPPORT CENTER

FORT MONMOUTH, N. J.

DIRECTOR	23878
FILM BOOKER	23931
MAINTENANCE & ISSUE	21660
PROJECTIONIST TRAINING	21660
FILM INSPECTION	23931

Number 9 January 1966

When requesting films from the Audio Visual Center, two copies of DA 11-44 must reach this center one day prior to pick up. When request are received for film not available at this center, they may be obtained by requisitioning at least two weeks prior to first showing. There is no same day booking.

After using or previewing a film, training officers will complete the information requested by the Film Review Code column according to instruction printed on the reverse side of DA 11-44 and repeated below for emphasis. This information is in addition to the usual information required on other portions of the form.

S-(Satisfactory) Film is acceptable for purposes intended.
R-(Revise) Major portion of film is acceptable. Significant inaccuracies in doctrine and/or equipment can be corrected by revision.
O-(Obsolete) Entire film should be remade or eliminated from use due to incorrect doctrine or outmoded equipment.

T (GTA) 10-4-6 FRAGMENTATION PROTECTIVE BODY ARMOR (COMPOSITE VEST) B & W (1 thru 6)
This series presents views, diagrams and charts of the composition, fitting, wearing and care of the armor vest.

T (GTA) 11-3-4 RADIO SET AN/PRC-6 B & W (1 thru 23)
This series illustrates the components and use of Radio Set AN/PRC-6.

T (GTA) 11-3-3 RADIO SET AN/GRC-50 B & W (1 thru 10)

T (GTA) 11-4-3 POWER PACK PP-990/G B & W (1 thru 3)
These three transparencies present diagrams of illustrating the construction and operational features of Power Pack PP-990/G.

Figure 2. Film newsletter.

form. The form will contain an appropriate certificate ((*a*) and (*b*) below), signed by the director.

(*a*) *Obsolete Prints.*
Above listed positive prints have been determined to be obsolete. Because of legal encumbrances and privacy rights, all listed items will be so disposed of as to insure that no portion of the picture or sound track can be reused.

(*b*) *Damaged or unserviceable prints.*
Above listed positive prints have been inspected and found to be unserviceable and nonrepairable. Because of legal encumbrances and privacy rights, all listed items will be so disposed of as to insure that no portion of the picture or sound track can be reused.

(3) The disposal officer will exercise particular care in the disposal of training films, because some of these carry copyright encumbrances or rights of privacy. Under no circumstance will he sell training films or filmstrips for projection purposes. In addition, he will not accept exposed films that have not been removed from reels and mutilated, thereby rendering copyright features unrecognizable. Films will be considered mutilated when they are reduced to six-inch strips that lack continuity.

c. Supporting Documents. All supporting documents pertaining to disposal actions are filed and used in the preparation of the SIG–12, Film and Equipment Exchange Summary.

37. Audio-Visual Support Center Closing

When, under the provisions of AR 108–30, the Chief of Communications-Electronics has approved closing of an audio-visual support center, the following actions will be taken:

a. Equipment on hand will be reported to the Army director of audio-visual support services of the appropriate headquarters for disposition instructions. The Army director will specify which equipment is to be turned in to the local depot, and which equipment is to be shipped to the Army central audio-visual support center or other centers within the Army area.

b. All films on hand will be reported to the Army director of Audio-Visual Support Center Services for disposition instructions. The director will indicate those films to be reallocated to meet Army area requirements and those to be returned to the Army Pictorial Center.

c. Final SIG–12 summary will be prepared to cover the activities of the discontinued audio-visual support center from the date of the last semiannual report to the closing date.

CHAPTER 4

REPORTS, RECORDS AND FORMS

38. General

The purpose of reports, records, and forms used by audio-visual support centers is to facilitate operations and keep them on an economical and efficient basis. Periodic reviews are used to determine if current reports, records, and forms are needed and fill existing requirements.

39. Reports

a. Film and Equipment Summary Report SIG–12. Requirements for the submission of the SIG–12 report are established by AR 108–39. This semiannual report, prepared by all audio-visual support centers, is submitted on DA Forms 11–174 (Part I) and 11–174–1 (Part II), Film and Equipment Exchange Summary (figs. 3 and 4). The report summarizes the operation of the audio-visual support centers and provides—

(1) A current record of Department of the Army accountable exempted motion picture films, television recordings, filmstrips, slides, phono-recordings, and flat and operable transparencies.

(2) Data pertaining to the use of films and filmstrips.

(3) Information used as the basis for initial distribution and redistribution of audio-visual support center stocks.

(4) Data on the status and adequacy of film subjects that have been reviewed.

(5) Factual data on field requirements for films to serve as a basis for production planning and as a means for determining annual budgetary requirements. These data accompany and support the film production and distribution budget.

(6) A summation of the comments made by film users regarding specific film subjects considered for revision or obsolescence.

b. Others. Audio-visual support centers prepare other reports as required by command directives and regulations.

40. Records and Forms

The following records and forms are maintained by all audio-visual support centers:

a. DA Form 11–41 (fig. 5). This card is used by film bookers to record specific booking commitments and to determine the availability of a requested film for a designated date.

b. DA Form 11–43 (figs. 6 and 7). This form is a request, issue, and turn-in slip, and also a performance record for projectors and allied equipment.

c. DA Form 11–44 (figs. 8 and 9). This form is used as a request, confirmation, issue, and turn-in document for films and filmstrips. It also provides the audio-visual support center with data on the number of film showings, to whom the film was shown, attendance figures, and information required for the film review program. The film review code, as required by AR 108–39, is applied to the comments received to determine the suitability of films for designated training areas. This code is also used to ascertain if any of the films should be revised or declared obsolete. Information of this type is essential in determining production and distribution requirements.

d. DA Form 11–77 (fig. 10). This card provides an inventory of the films stocked by the audio-visual support center; it indicates frequency of film use, need for film print revision, and film print obsolescence. By indicating those

FILM AND EQUIPMENT EXCHANGE SUMMARY
PART I - FILM AND EQUIPMENT INVENTORY, SHOWINGS AND ATTENDANCE
(AR 108-39)

PERIOD ENDING: 31 MARCH 1966 (six months)

REPORTS CONTROL SYMBOL SIG-12(R3)

PAGE NO. 1 | NO. OF PAGES 57

THRU: Central Audio Visual Support Center
2nd U. S. Army
Fort George G Meade Maryland 20755

TO: Commanding Officer, Central Audio-Visual Support Center, Bldg T-544, Fort George G Meade, Maryland 20655

FROM: *(Reporting Film and Equipment Exchange)*
Audio Visual Support Center
Building 1150 Vail Hall
Fort Monmouth, New Jersey

SECTION A - FILM AND FILM STRIP STOCK AND USE

LINE	ITEM *(Itemize 1 thru 3 in Part II)* a	MOTION PICTURE *(Report semi-annually)* 16MM MP FILMS b	MOTION PICTURE *(Report semi-annually)* 35MM MP FILMS c	SOUND AND SILENT *(Report annually)* SOUND FILM STRIPS d	SOUND AND SILENT *(Report annually)* SILENT FILM STRIPS e
1.	TITLES IN EXCHANGE, END OF PERIOD	2308		NOT REQUIRED	
2.	PRINTS IN EXCHANGE, END OF PERIOD	3617			
3.	NUMBER OF SHOWINGS DURING PERIOD TOTAL (4 + 5)	16,436		THIS PERIOD	
4.	___ ARMY AND CIVILIAN COMPONENT	15,860			
5.	___ ALL OTHERS	576			
6.	ATTENDANCE AT SHOWINGS DURING PERIOD	641,793			

SECTION B - INVENTORY OF EQUIPMENT, END OF PERIOD *(Report semi-annually)*

	EQUIPMENT ITEM f	NUMBER g	LINE	EQUIPMENT ITEM h	NUMBER i
7.	16MM SOUND PROJECTORS		15.	PRINT-DRY DEVELOPING MACHINE	
8.	___ AUTHORIZED		16.	SCREENS BM-6	178
9.	___ ON HAND		17.	BM-1 & BM-10	128
10.	TAPE RECORDER REPRODUCERS	8	18.	Projector AP-4	10
11.	FILM STRIP PROJECTORS	40	19.	Projector Auto 2 X 2	36
12.	OVERHEAD PROJECTORS	280	20.		
13.	OPAQUE PROJECTORS AP-5	20	21.		
14.	REPRODUCERS	15	22.		

SECTION C - TRANSPARENCIES AND PHONO-RECORDING STOCKS, END OF PERIOD *(Report annually)*

	ITEM j	NUMBER OF TRANSPARENCIES *(Itemize in Part III)* FLAT k	NUMBER OF TRANSPARENCIES *(Itemize in Part III)* OPERABLE l	NUMBER OF PHONO-RECORDINGS
23.	TITLES	NOT REQUIRED		
24.	PRINTS	THIS PERIOD		
25.	PHONO-RECORDINGS			NOT REQUIRED THIS PERIOD

SECTION D - REMARKS

TAPE RECORDERS.	8 ea	OVERHEAD PROJECTORS.	283 ea	Projector 16 MM	104	
RD-173A/UN	6 ea	PH-637A/PFP	142	AS-2(1)	99	
Cal. Sol. 72T	2 ea	PH-637B/PFP	45	AN/PFP-1	5	
		6510 C 3	75	Projector Auto.		
Film Strip Proj.	32 ea	Thermo Fax Model 60	11	2X2	36	ea
AP-6	2 ea	Thermo Fax Model 66	1	Robomatic	14	
PH-222-C	30 ea	Transpaque	6	Anscomatic	2	
		Transpaque Jr.	1	Carousel	20	
Opaque Proj.		Photo Lite 10	1			
AP-5	20 ea	View Graph Royal	1	AN/UIH-2	12	

TYPED NAME OF DIRECTOR, FILM AND EQUIPMENT EXCHANGE OR RESPONSIBLE OFFICER: JOHN C. VETTERL

SIGNATURE: John C Vetterl

TELEPHONE NO.: 23878

DA FORM 1 JAN 61 11-174 REPLACES EDITION OF 1 OCT 56 WHICH IS OBSOLETE.

Figure 3. DA Form 11–174.

FILM AND EQUIPMENT EXCHANGE SUMMARY
PART II - INVENTORY OF FILMS, PRINTS AND SHOWINGS
(AR 108-39)

EXCHANGE NUMBER

REPORTS CONTROL SYMBOL SIG-12(R3)

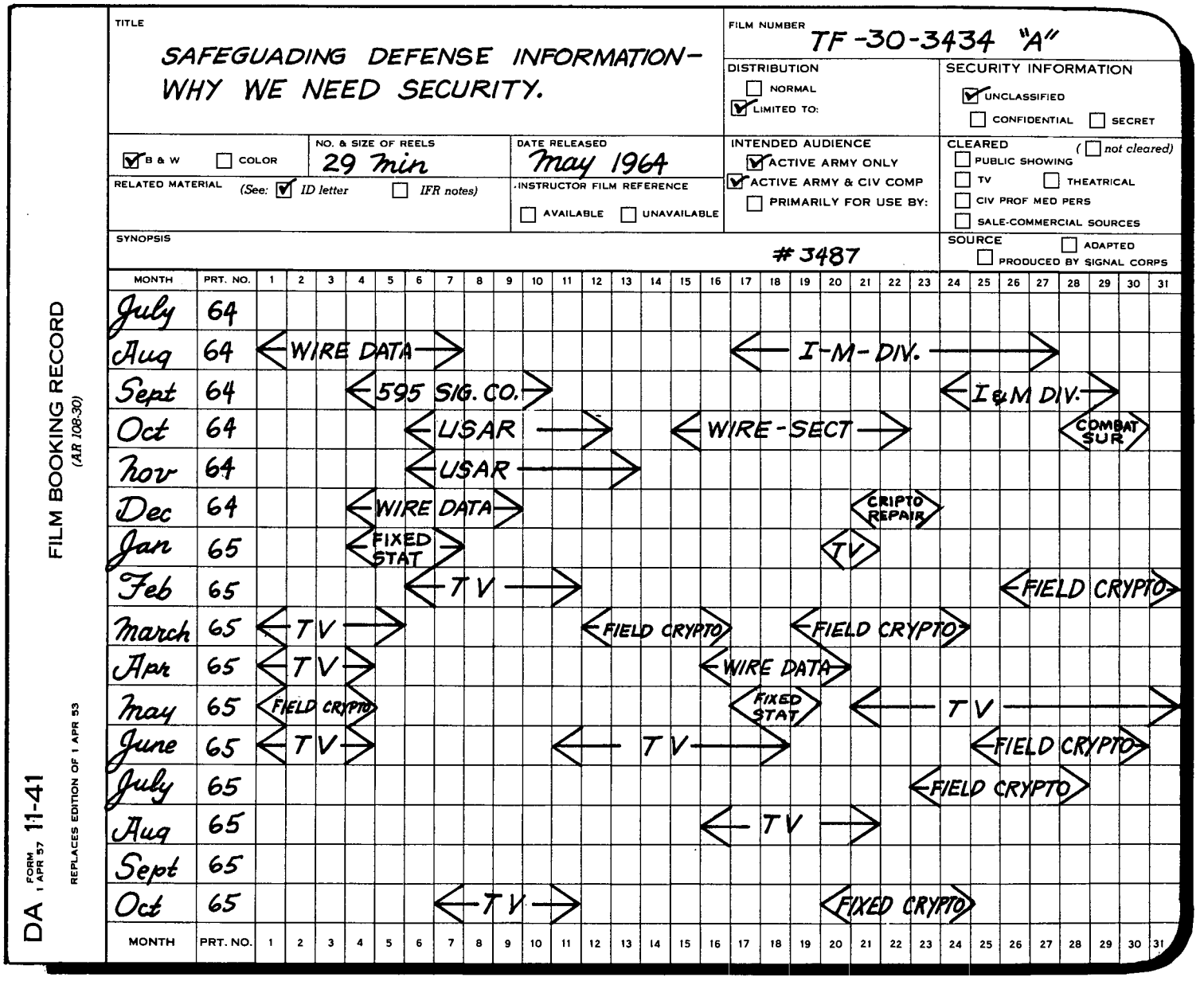
PAGE NO. 3 | NO. OF PAGES 57

For columns *f*, *m* and *t*: R=Revise; for *g*, *n* and *u*: O=Obsolete.

LINE NO.	FILM IDENTIFICATION NO. a	NO. OF PRINTS b	NO. OF SHOWINGS: TOTAL (d + e) c	NO. OF SHOWINGS: ARMY & CIV COMP d	NO. OF SHOWINGS: ALL OTHERS e	FILM REVIEW RECOM: R f	FILM REVIEW RECOM: O g	FILM IDENTIFICATION NO. h	NO. OF PRINTS i	NO. OF SHOWINGS: TOTAL (k + l) j	NO. OF SHOWINGS: ARMY & CIV COMP k	NO. OF SHOWINGS: ALL OTHERS l	FILM REVIEW RECOM: R m	FILM REVIEW RECOM: O n	FILM IDENTIFICATION NO. o	NO. OF PRINTS p	NO. OF SHOWINGS: TOTAL (r + s) q	NO. OF SHOWINGS: ARMY & CIV COMP r	NO. OF SHOWINGS: ALL OTHERS s	FILM REVIEW RECOM: R t	FILM REVIEW RECOM: O u
1	TF							TF							TF						
2	5-2408	1	3	3				5-3177	1						6-1498						
3	5-2409	1	6	6				5-3288	2						6-1533						
4	5-2410	1	6	6				5-3379	1						6-1686						
5	5-2411	1	7	7				5-3433	2						6-1757						
6	5-2412	1	8	8				5-3454							6-1775	1					
7	5-2413	1	7	7				5-3471	1						6-1991	1					
8	5-2414	1	7	7				5-3486	1						6-2258	1					
9	5-2415	1	8	8				5-3548	1						6-2374						
10	5-2416	1	7	7				5-3549	1	2	2				6-2375						
11	5-2417	1	3	3				5-3550	1						6-2376						
12	5-2449	2						5-3551	1						6-2377						
13	5-2450	1						5-3566							6-2378						
14	5-2451	1						5-3583	1						6-2379						
15	5-2452	1						5-3604							6-2424						
16	5-2453	1													6-2800	1					
17	5-2457														6-2804	1					
18	5-2458														6-2850	1					
19	5-2459														6-2875	2					
20	5-2460														6-3096	2	30	30			
21	5-2461														6-3122	1					
22	5-2462														6-3184	1					
23	5-2463														6-3185	1	2	2			
24	5-2464														6-3248	1					
25	5-2465														6-3249	1					
26	5-2466														6-3250	1					
27	5-2467														6-3251	2	41	41			
28	5-2468														6-3261	2					
29	5-2469														6-3298	1					
30	5-2506														6-3299	1					
31	5-2682	1													6-3300	1					
32	5-2683	1													6-3306	2					
33	5-2734	1													6-3307	2					
34	5-2758	1													6-3385	2					
35	5-2876	3	1	1											6-3386	2					
36	5-2877	3	6	6											6-3436	1					
37	5-2973	1													6-3448	2					
38	5-3002	1													6-3449	2					
39	5-3043	1													6-3450	2					
40	5-3066	1													6-3451	1					
41	5-3111	1													6-3456	1					
42	5-3157	1													6-3499	1	2	2			
43	5-3158	1													6-3515	2					
44	5-3159	1													6-3517	1	1	1			
45	5-3160														6-3558						
46	5-3161																				
47																					
48																					
49		34	69	69					13	2	2					44	76	76			

DA FORM 1 JAN 61 **11-174-1** REPLACES EDITION OF 1 OCT 55 WHICH IS OBSOLETE.

Figure 4. DA Form 11-174-1.



DA FORM 1 APR 57 11-41
REPLACES EDITION OF 1 APR 53

FILM BOOKING RECORD
(AR 108-30)

TITLE
SAFEGUADING DEFENSE INFORMATION- WHY WE NEED SECURITY.

FILM NUMBER TF-30-3434 "A"

DISTRIBUTION
☐ NORMAL
☑ LIMITED TO:

SECURITY INFORMATION
☑ UNCLASSIFIED
☐ CONFIDENTIAL ☐ SECRET

☑ B & W ☐ COLOR

NO. & SIZE OF REELS 29 Min

DATE RELEASED May 1964

INTENDED AUDIENCE
☑ ACTIVE ARMY ONLY
☑ ACTIVE ARMY & CIV COMP
☐ PRIMARILY FOR USE BY:

CLEARED (☐ not cleared)
☐ PUBLIC SHOWING
☐ TV ☐ THEATRICAL
☐ CIV PROF MED PERS
☐ SALE-COMMERCIAL SOURCES

RELATED MATERIAL (See: ☑ ID letter ☐ IFR notes)

INSTRUCTOR FILM REFERENCE
☐ AVAILABLE ☐ UNAVAILABLE

SYNOPSIS
#3487

SOURCE ☐ ADAPTED ☐ PRODUCED BY SIGNAL CORPS

MONTH	PRT. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
July	64																															
Aug	64	← WIRE DATA →																← I-M-DIV. →														
Sept	64				← 595 SIG. CO. →																				← I & M DIV. →							
Oct	64						← USAR →									← WIRE-SECT →													COMBAT SUR			
Nov	64						← USAR →																									
Dec	64				← WIRE DATA →																	← CRIPTO REPAIR →										
Jan	65				← FIXED STAT →																← TV →											
Feb	65						← TV →																				← FIELD CRYPTO →					
March	65	← TV →											← FIELD CRYPTO →							← FIELD CRYPTO →												
Apr	65	← TV →															← WIRE DATA →															
May	65	← FIELD CRYPTO →																← FIXED STAT →				← TV →										
June	65	← TV →										← TV →														← FIELD CRYPTO →						
July	65																							← FIELD CRYPTO →								
Aug	65																← TV →															
Sept	65																															
Oct	65							← TV →													← FIXED CRYPTO →											
MONTH	PRT. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Figure 5. DA Form 11-41.

PROJECTION AND AUDIO-VISUAL EQUIPMENT LOAN ORDER
(AR 108-30)

REQUEST NUMBER

NAME OF ISSUING AUDIO-VISUAL SUPPORT CENTER

Director, Audio Visual Support Center
Fort Monmouth, New Jersey 07703

INSTRUCTIONS

It is the responsibility of the requesting officer to authorize only licensed "Official U.S. Army Projectionists" to operate projection and allied equipment in accordance with AR 108-30.

First echelon maintenance will be performed by licensed operator in accordance with TM 38-750 *(DA Form 2404)*. Equipment requiring higher echelon maintenance will be returned to issuing AVSC for repair or replacement

List AN/PFP-1, or AS-2, etc. as appropriate under "TYPE". After use, return this form WITH equipment to AVSC to obtain release of responsibility signature. Equipment must be returned on date specified.

Projectionist's report on reverse side MUST be completed before return of equipment.

ISSUE TO: *(Include ZIP Code)*

Hq 52nd Arty Bde (Ad)
Fort Hancock N.J.
872-4566

TELEPHONE NUMBER

CHECK METHOD OF DELIVERY

☐ PICKUP ☐ MAIL ☐ EXPRESS
☐ OTHER *(Specify)*

ACTUAL DATES EQUIPMENT WILL BE USED

FROM 17 Feb 66 TO 23 Feb 66

◀ *RETURN EQUIPMENT THE DAY AFTER THIS DATE*

EQUIPMENT	TYPE	AVSC OR SERIAL NUMBER	AMOUNT	DATE ISSUED	DATE TO BE RETURNED
LENS					
PROJECTOR *(Film Strip)*					
PROJECTOR(S) *(16 MM M.P.)* ☐ PROJECTOR ☐ AMPLIFIER ☐ SPEAKER					
PROJECTOR *(Opaque)*	AP-5	lib #55	1 ea		
PROJECTOR *(Overhead)*	PH-637(A)	lib #77	1 ea		
PROJECTOR *(Slide)*					
PRINTING & DRY DEVELOPING MACHINE					
PUBLIC ADDRESS SET					
RECORD PLAYER					
SCREEN(S)					
TAPE RECORDER					

DATE	SIGNATURE OF REQUESTING OFFICER

LISTED ITEMS HAVE BEEN RECEIVED		LISTED ITEMS HAVE BEEN RETURNED	
DATE	SIGNATURE OF AUTHORIZED REPRESENTATIVE	DATE	SIGNATURE OF RECEIVING CLERK
17 Feb 66	John Doe Sgt.		

DA FORM 1 OCT 64 11-43 REPLACES DA FORM 11-43, 1 JUN 60, WHICH WILL BE ISSUED AND USED UNTIL 1 OCT 65, UNLESS SOONER EXHAUSTED.

Figure 6. Front of DA Form 11-43.

CONDITION OF EQUIPMENT

TO BE COMPLETED AND RETURNED

CONDITION OF EQUIPMENT WHEN RETURNED *(If damaged or unserviceable, explain in Remarks item below)*

☑ SERVICEABLE

☐ DAMAGED OR UNSERVICEABLE

TO: *(Include ZIP Code)*

Director, Audio Visual Support Center
Fort Monmouth, New Jersey, 07703

REMARKS *(No entry is required if equipment performed satisfactorily)*

DATE	LICENSE NO.	SIGNATURE OF LICENSED PROJECTIONIST
23 FEB. 66	27-63	John Doe, Sgt.

INSTRUCTOR'S REPORT *(Instructors are invited to comment on performance of equipment and quality of projection service)*

* U.S. GOVERNMENT PRINTING OFFICE : 1960 O—554235

Figure 7. Back of DA Form 11–43.

AUDIO-VISUAL LOAN ORDER
(AR 108-30)

FOR AVSC USE ONLY
AVSC REQUEST NUMBER

NAME OF ISSUING AUDIO-VISUAL SUPPORT CENTER

Director, Audio Visual Support Center
Fort Monmouth, New Jersey 07703

SHIPPING DATES
OUT: 11 FEB 66 | DUE IN: 16 FEB 66

METHOD OF SHIPMENT
☐ PICKUP ☐ OTHER ☐ EXPRESS ☐ MAIL | INSURANCE OR REG. NO.

CONFIRMATION MAILED
INITIALS | DATE

RECORD OF RETURNED ITEMS
RECEIVED BY: a m | DATE: 16 JAN 66

PRINT RECORD CARD POSTED
INITIALS: a m | DATE: 18 JAN 66

ISSUE TO:

TV DIV. OAO, USASCS
FORT MONMOUTH, N.J.

CHECK METHOD OF DELIVERY
☑ PICKUP ☐ MAIL ☐ EXPRESS ☐ OTHER

ACTUAL DATES ITEMS WILL BE SHOWN
FROM: 11 FEB 66 | TO: 16 FEB 66

INSPECTED BY
INITIALS | DATE

Instructor is responsible for insuring that licensed projectionists only (DA Form 11-78) will operate U.S. Army Projection Equipment.

TO BE COMPLETED BY USER

ITEM NUMBERS	ITEM TITLES	PRINT NUMBERS	REVIEW CODE (See Reverse) S	R	O	NUMBER OF SHOWINGS: ARMY & CIV COMP	ALL OTHERS	ATTENDANCE
TF11-3353	RAWINSONDE PT-1	A				2		150
TF11-3388	RAWINSONDE PT-2	A				2		150

INSTRUCTIONS: List item numbers and titles in space provided above. Indicate method of delivery and actual showing dates. Shipping time will be allowed by Center. AFTER SHOWING, COMPLETE PROJECTIONIST'S REPORT and return copy of this form to AVSC with items indicating showing and attendance information as required by DA Forms 11-174, 11-174-1 and 11-174-2 *(Reports Control Symbol Sig-12 (R3))* and AR 108-30.

Damaged items should be returned immediately to the AVSC with full report of circumstances on reverse of this form. Items MUST BE RETURNED AT AGREED UPON TIME. DO NOT REWIND FILMS AFTER LAST SHOWING.

REQUESTING OFFICER *(Signature, Grade and Title)*: FRANK B. VARGORIC

REQUESTER'S TELEPHONE NO.: 22241 | DATE: 18 Jan 66

RECEIVED *(Signature or Authorized Representative)*: Lindell C Smith P.F.C.

DATE: 11 Feb 66

NOTE: Showings and attendance information and projectionist's report will be completed.

DA FORM 1 AUG 66 11-44 REPLACES DA FORM 11-44, 1 NOV 64, EXISTING SUPPLIES OF WHICH WILL BE ISSUED AND USED UNTIL 1 AUG 67 UNLESS SOONER EXHAUSTED.

Figure 8. Front of DA Form 11-44.

PROJECTIONIST'S REPORT

REPORT WILL BE COMPLETED AND RETURNED ON ITEMS DAMAGED OR UNSERVICEABLE

Director, Audio Visual Support Center
Fort Monmouth, New Jersey 07703

PROJECTIONIST'S REMARKS *(If items are DAMAGED or UNSERVICEABLE when returned, explain.)*

Torn sprocket holes. Probably due to several film breaks that have been poorly joined. Film should be checked and properly spliced.

DATE	LICENSE NUMBER	SIGNATURE
1 March 66	11-60	Charles Q. Pullman

INSTRUCTIONS FOR REVIEW CODES

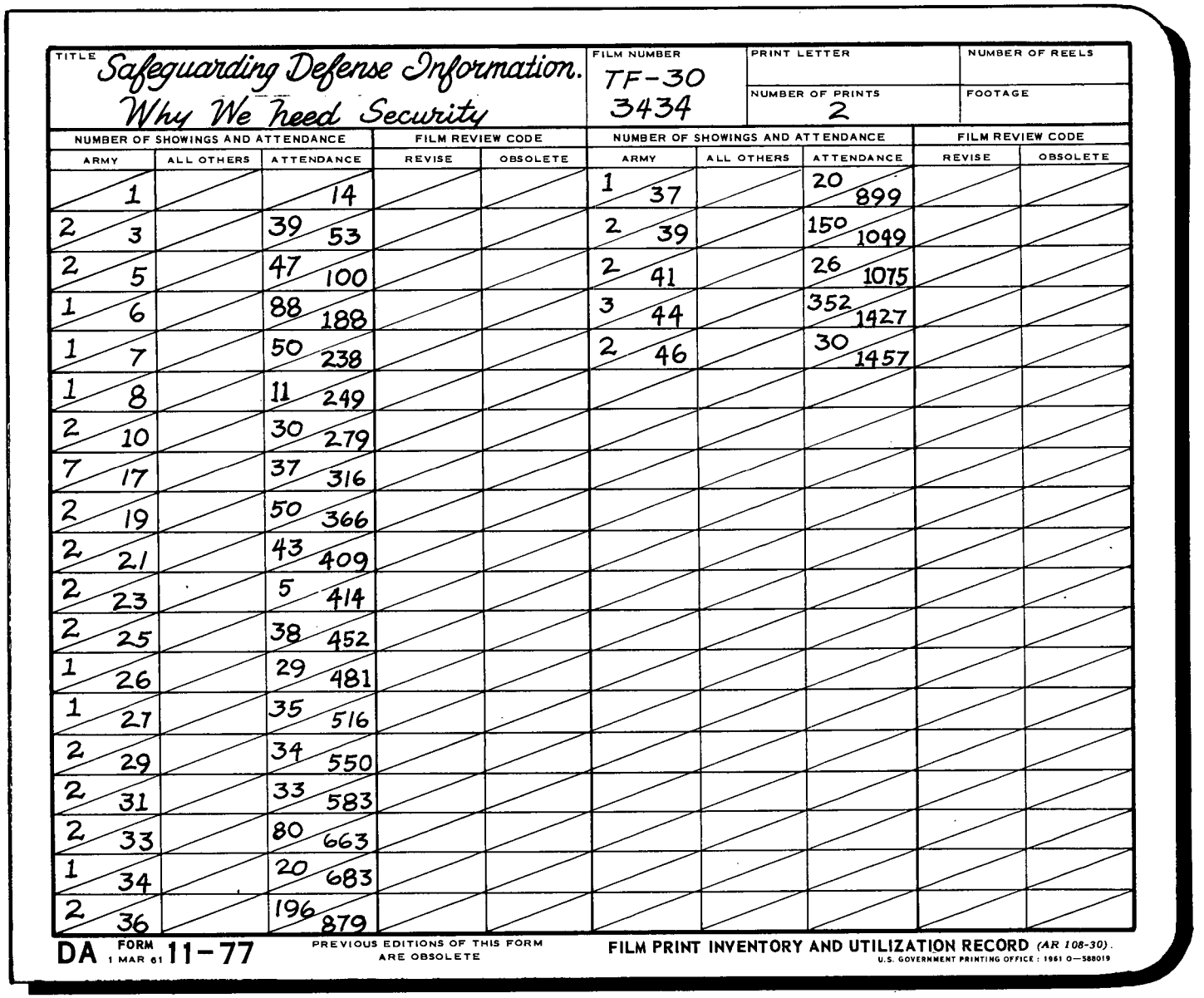
Army users will enter one of the following Review code designations in the appropriate column on the face of this form for each item shown as basis for information required by AR 108-39.

S - *(Satisfactory)* - Item is acceptable for the purposes intended.

R - *(Revise)* - major portion of item is acceptable. Significant inaccuracies in doctrine and/or equipment can be corrected by revision.

O - *(Obsolete)* - entire item should be remade or eliminated from use due to incorrect doctrine or outmoded equipment.

Figure 9. Back of DA Form 11-44.



TITLE: Safeguarding Defense Information. Why We Need Security

FILM NUMBER: TF-30 3434

PRINT LETTER:

NUMBER OF REELS:

NUMBER OF PRINTS: 2

FOOTAGE:

NUMBER OF SHOWINGS AND ATTENDANCE			FILM REVIEW CODE		NUMBER OF SHOWINGS AND ATTENDANCE			FILM REVIEW CODE	
ARMY	ALL OTHERS	ATTENDANCE	REVISE	OBSOLETE	ARMY	ALL OTHERS	ATTENDANCE	REVISE	OBSOLETE
1		14			1 37		20 899		
2 3		39 53			2 39		150 1049		
2 5		47 100			2 41		26 1075		
1 6		88 188			3 44		352 1427		
1 7		50 238			2 46		30 1457		
1 8		11 249							
2 10		30 279							
7 17		37 316							
2 19		50 366							
2 21		43 409							
2 23		5 414							
2 25		38 452							
1 26		29 481							
1 27		35 516							
2 29		34 550							
2 31		33 583							
2 33		80 663							
1 34		20 683							
2 36		196 879							

DA FORM 1 MAR 61 11-77 PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

FILM PRINT INVENTORY AND UTILIZATION RECORD (AR 108-30).

U.S. GOVERNMENT PRINTING OFFICE : 1961 O—588019

Figure 10. DA Form 11-77.

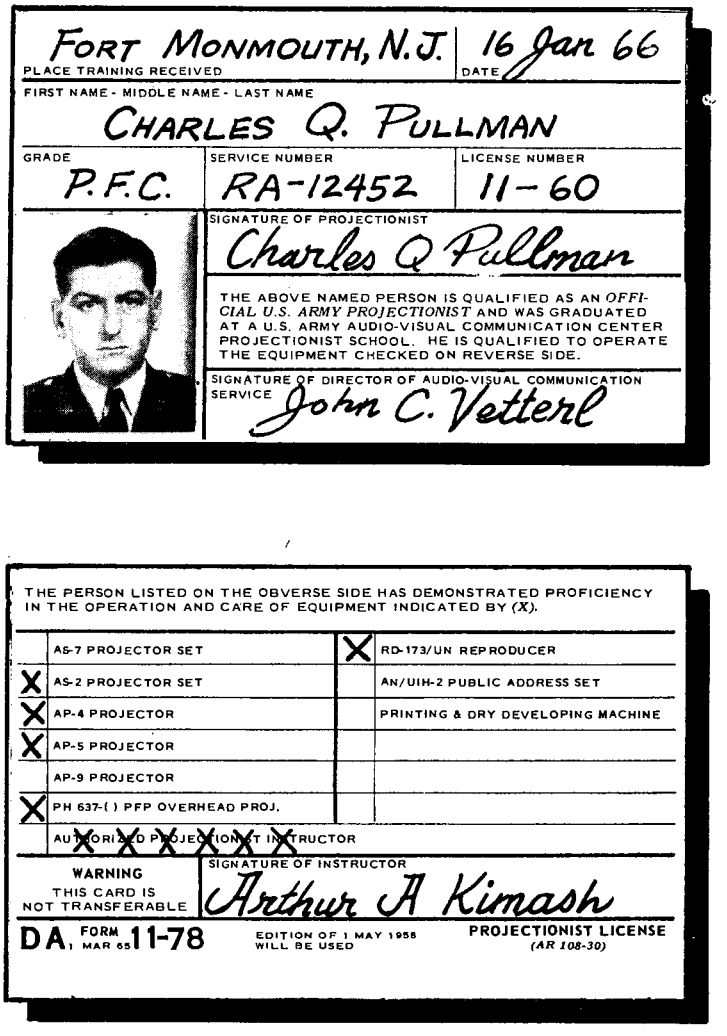


Figure 11. Front and back of DA Form 11–78.

films that are frequently or never used at an audio-visual support center, it justifies the retention, reallocation, or removal of films. This record provides a ready reference for preparing Form 11–174.

e. DA Form 11–78 (fig. 11). This license is issued to all students who have successfully completed the audio-visual equipment training course.

f. DA Form 11–172 (fig. 12). (*Permanent Retention Film Order*) *and DA Form 11–172a* (*Continuation Sheet for Permanent Retention Film Order*). These forms are used by audio-visual support centers to order films and allied materials from central audio-visual support centers on a permanent basis. They are also used by central audio-visual support centers to order film and allied materials from the Army Pictorial Center.

g. DA Form 2404 (*Equipment Inspection and Maintenance Worksheet*) (fig. 13). This form is used to record all deficiencies, shortcomings, and corrective actions taken to maintain the operational efficiency of the equipment.

SEE INSTRUCTIONS ON REVERSE SIDE	DATE	PAGE NR	NR OF PAGES	ORDER NUMBER
	15 Feb 66	1	1	18-66

TO:	FROM:
Audio Visual Support Center Governors Island New York, New York 10004	Audio Visual Support Center Vail Hall Bldg. 1150 Fort Monmouth, N.J. 07703

SHIP TO:

Audio Visual Support Center
Vail Hall Building 1150
Fort Monmouth, N.J. 07703

These columns for action entries by issuing agency. (See reverse side for code explanation).

LINE NR 1	FILM NUMBER 2	TITLE 3	ON HAND 4	REQUIRED 5	SHIP 6	REMARKS 7
1	TF 1-5361	Printed circuits and their repair	2	1		

Request an additional print be requisitioned on a permanent basis as there is a requirement to show this film four or more times per week. The print we are now using has enlarged sprocket holes and has been spliced 25 times.

TYPED NAME OF DIRECTOR, FILM & EQUIPMENT EXCHANGE SVCS	SIGNATURE
John C. Vetterl	Al Muzzi

SPACE BELOW FOR ISSUING AGENCY

ISSUE NUMBER	ITEMS LISTED IN COLUMN 6 WERE SHIPPED ON	VIA ☐ EXPRESS ☐ PARCEL POST ☐ OTHER (Specify)

TYPED NAME AND TITLE OF ISSUING OFFICIAL	SIGNATURE

DA FORM 1 SEP 55 11-172 PERMANENT RETENTION FILM ORDER (AR 108-30)

Figure 12. DA Form 11–172.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

(TM 38-750)

1. ORGANIZATION					2. NOMENCLATURE AND MODEL		
Audio Visual Support Center					AS-2(1) 16 MM Projector		
3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION	
10	N/A	225	N/A	N/A	15 Feb. 66	Monthly	

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE
11-6730-201-10	7 June 60		

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

9a. SIGNATURE (Person(s) performing inspection)	9b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
John Doe Equipment Repairman	0830	William Hunter	0900	

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
4		No Picture	Replace Proj. Lamp DFD	WH
6		Film Take up won't work	Replace Spring Belt	WH
3		No Sound	Replace Main Fuse 15 AMP	WH
3		No Sound	-2407	WH

DA FORM 1 JAN 64 2404

Figure 13. DA Form 2404.

CHAPTER 5

FILM AND EQUIPMENT MAINTENANCE

41. Supply

Audio-visual support center directors are responsible for determining the quantity of audio-visual equipment needed to accomplish the support and training mission. Required equipments, together with sufficient supplies to keep them operational, are requisitioned through supply channels. The authority for requisitioning equipment is TA 11–12 and TOE 11–500 ( ); the guide for requisitioning spare parts is the technical manual for each item of equipment; and the guide for requisitioning expendable supplies is TA 11–100( ).

42. Film Handling

Films require the utmost care in handling. Neglect of a single maintenance factor can result in irreparable damage and complete loss of the film—proper handling assures long film life. Factors that shorten the service life of film prints are—

a. Improper film projection (para 43).

b. Scratches caused by emulsion deposits and dirt.

c. Cinching of film during rewinding.

d. Use of improperly aligned rewinds and damaged reels.

e. Continuous projection in a warm or exceptionally dry atmosphere.

f. Failure to place film in proper storage containers.

g. Film projection in dusty rooms.

h. Careless fingering of films.

43. Film Care During Projection

Film can be damaged by any projector if it is improperly threaded, or if the projector is not kept free of dirt and dust. Factors that can cause film damage during projection include—

a. Improper Threading. If the film is improperly threaded, the sprocket teeth will not engage perforations and will cause dents, new perforations, or tears along the film edges. If the film is twisted in the threading, or if the film is run in a silent projector, perforations will be punched in the sound track. By making a careful check after threading, and by turning the threading knob a few times to make sure that the film is properly engaged, this type of film damage can be prevented.

b. Bad Splices. Bad splices cause the film to jump and ride the sprockets. The projectionist must always be near his machine to detect any unusual noise and stop the projector when ever the film does not wind onto the take-up reel.

c. Improper Loops. Loops of film are used to provide slack between moving claws and sprockets.

(1) Loops of proper size will prevent pulling, nicking, tearing, and destruction of the sprocket hole.

(2) Excessively large loops will cause the moving film to touch stationary projector parts, not intended to guide the film, and will result in scratched or torn film.

(3) Short loops will often cause extensive damage to perforations.

d. Lack of Thorough Cleaning. When film running through a projector becomes statically charged, it attracts particles of dust that lodge in the film chute or in the rollers and sprockets. Eventually, this dust forms into hard lumps that are capable of scratching the film. The longer these lumps remain, the harder they

become and the more extensive the damage to the film. Therefore, the film chute, aperture, and all parts of the projector film path must be cleaned with a brush after every film showing.

44. Audio-Visual Support Center Film Care

a. Inspection. All films returned to an audio-visual support center should be inspected prior to reissue or return to storage racks. Special attention must be given to broken sprocket holes, rough edges, thick or damaged splices, and scratches. Stored film should be properly reeled, be ready for projection, and have a minimum leader of eight feet on each end. To prevent film scratches, inspectors should wear cotton film inspection gloves.

b. Repair. Bulky splices, loose splices, burned spots, torn sprocket holes, nicks, gouges, and creases should be repaired or removed by cutting and splicing. To assure a proper splice, strict attention must be paid to the instructions that accompany each splicer; splicing procedures vary with different models.

c. Rewinding. Identical procedures are observed for hand and electric rewinding units.

(1) The rewinding unit should be firmly secured to the inspection table.

(2) Reels must be in perfect alignment, so that the film edge will not ride against the reel flange. Bent or damaged reels are often the source of film damage.

d. Cleaning. Audio-visual support centers must set up cleaning schedules to insure that all films are kept uniformly clean. In the cleaning process, the film is both cleaned and waxed in one operation.

***Caution:* Do not use carbon tetrachloride as a film cleaner. Tetrachloride fumes are toxic and physically harmful.**

e. Storage. After inspection, repair, and cleaning, films should be placed (heads out) in metal film cans and stored on racks away from excessive heat. Ideally, the temperature should be between 70° and 80° Fahrenheit, and the relative humidity between 25 and 60 percent. Films removed from storage and made ready for shipment should always be issued in the metal cans, which are designated to protect the film from dirt and other damage.

45. Equipment Maintenance

Equipment must be properly maintained to give continuous service.

a. Directors of audio-visual support centers are responsible for preventive maintenance of all issued equipment and organizational maintenance of equipment on indefinite loan basis to units, in accordance with the instructions in the applicable technical manual.

b. Equipment requiring higher echelon maintenance will be sent to combined maintenance shops designated by higher headquarters.

c. A planned audio-visual support center maintenance program is based on instructions given in the technical manual for each item of equipment. Other maintenance program instructions are issued by the army area or oversea commander.

46. Care and Handling of Screens

Dirt is an enemy of screen efficiency, because it reduces image brilliance. To improve screen performance and to assure long service—

a. Keep screens rolled when not in use. This will prevent dust or dirt from settling on the surface.

b. Keep screens away from dust, and do not permit them to become dirty or wet while in transit.

c. Avoid touching the screen surface with a pointer or your fingers.

d. Remove dust and insects by brushing the screen with a soft cloth at the end of the film showing. If insects are rolled into the screen, or if fingerprints are impressed on screen surfaces, chemical discoloration will occur.

e. Keep screens in canvas covers while in transit or storage.

f. Transport and store in a horizontal position to avoid damage to screen edges.

APPENDIX A

REFERENCES

AR 10–7	United States Continental Army Command.
AR 108-6	Motion Picture Production.
AR 108–30	Operation of Army Audio-Visual Communication Centers.
AR 108–39	Film and Equipment Exchange Summary (Reports Control Symbol SIG–12 (R3)).
AR 135–380	Release of Classified Information to Army National Guard, U.S. Army Reserve and Reserve Officers' Training Corps.
AR 320–5	Dictionary of United States Army Terms.
AR 320–50	Authorized Abbreviations and Brevity Codes.
AR 350–15	Military Training Aids.
AR 380–5	Safeguarding Defense Information.
AR 380–6	Security, Automatic Time-Phased Downgrading and Declassification System.
AR 711–16	Installation Stock Control and Supply Procedures.
DA Pam 20–551	Staffing Guide for U.S. Army Garrisons.
DA Pam 20–561	Staffing Guide for U.S. Army Central Film and Equipment Exchanges.
DA Pam 108–1	Index of Army Film Transparencies, GTA Charts, and Recordings.
DA Pam 108–3	Audio-Visual Communication and Presentation Facilities.
DA Pam 310-series	Military Publications.
FM 11–40	Signal Corps Pictorial Operations.
SB 11–199	Supply Procedure for Diazo Materials Used With Printing and Dry Developing Machines ES–19(1), FSN 3610–392–8781, and ES–30(1), for Audio-Visual Communication Centers.
SB 11–217	Supply Procedure for Diazo Materials Used With Printing and Dry Developing Machines ES–19( ) and ES–30 for Army, ROTC, and USAR Units.
SB 11–278	Rear View Projection Kit and Rear Projection Screen.
SB 11–483	Supply Procedure for Visa-Matic and Technamation Treatment Materials.
SB 11–502	Supply Procedure for Planotype Materials.
SB 11–584	Photographic Projection Screens BM–10A and BM–23.
TA 11–12	U.S. Army Photographic Facilities and Audio-Visual Communication Centers.
TA 11–100 (11–12)	Allowances of Signal Corps Expendable Supplies for Signal Corps Film and Equipment Exchanges.
TM 11–401–1	Army Pictorial Techniques, Equipments, and Systems: Pictorial Fundamentals.
TM 11–487F	Directory of U.S. Army Signal Equipments: Pictorial Equipment.

APPENDIX B

AUDIO-VISUAL EQUIPMENT TRAINING COURSE

B–1. Purpose

Audio-visual equipment training courses are conducted to provide both qualified operators and instructors. The following licenses indicate trainee proficiency in particular subject areas:

a. Audio-Visual Equipment Operator License. This license is issued to individuals upon completion of the audio-visual equipment training course (lesson outline part I, 40 hours).

b. Audio-Visual Equipment Instructor License. This license is issued to individuals upon completion of the audio-visual equipment instructors course (lesson outline part I and part II, 80 hours).

B–2. Objective

The objective of the outlined audio-visual equipment training course is to provide preliminary training and on-the-job working experience in all phases of audio-visual equipment utilization.

B–3. Procedure

Training is based on approved technical manuals. The course includes equipment assembly, packing, troubleshooting, replacement of parts, and the most efficient methods of employment.

B–4. Prerequisites

Selection of trainees for the audio-visual equipment training course should be based on certain prerequisites. Trainees should have—

a. Good near vision for identification and cataloging of film.

b. Hand-eye coordination and manual dexterity for operating and maintaining equipment.

c. Ability to comprehend and apply information found in technical publications pertaining to film and audio-visual equipment.

d. Mechanical ability to perform repairs on film projection and associated audio-visual equipment.

e. At least 6 months service remaining in his tour of duty to make the training effort worthwhile.

B–5. Training Schedule

The following training schedule is a suggested convenient program for a progressive, step-by-step training approach. Subsequent lesson outlines guide the instructor along a practical course.

Training Schedule

Time (in hrs)	Subject or nature of training	Subcourse	Text reference	Training aids and equipment
		PART I		
2	Motion Picture Film and Reels.	Projection screen	TM 11–2329 and TM 11–6730–208–10.	16-mm film and splicer reels, screens PH–556/GF, BM 6, and BM 10.
20	Projector Set AN/PFP–1	Introduction, purpose and use.	TM 11–6730–208–10, para 3	Projector AN/PFP–1, screen, and 16-mm film.
		Nomenclature	TM 11–6730–208–10, para 4–7.	Projector AN/PFP–1, screen, and 16-mm film.
		Theory of motion picture reproduction.	TM 11–6730–208–10	Projector AN/PFP–1, screen, and 16-mm film.
		Theory of optics	TM 11–6730–208–10	Projector AN/PFP–1, screen, and 16-mm film.
		Theory of sound	TM 11–6730–208–10	Projector AN/PFP–1, screen, and 16-mm film.
		Showmanship	TM 11–6730–208–10	Projector AN/PFP–1, screen, and 16-mm film.
		Operation	TM 11–6730–208–10, para 12–18.	Projector AN/PFP–1, screen, and 16-mm film.
		Maintenance	TM 11–6730–208–10, para 28–33.	DA Form 2404 and TF 11–1752.
		Practical exercise	TM 11–6730–208–10	16-mm film, Projector AN/PFP–1, screen, and TF 11–1574.
		Examination and film	All previous references.	
1	Sound Motion Picture Projection Set AS–2, AS–7.	Description	TM 11–6730–208–10	Projectors AS–2, AS–7, screen, and 16-mm film.
		Operation	TM 11–6730–208–10	Projectors AS–2, AS–7, screen, and 16-mm film.
		Examination	All previous references.	
3	Projector PH–222–C, Remote Switching Control BP–1A, and Still Picture Projectors AP–6 and AP–9.	Introduction, purpose, and use.	TM 11–2332, para 3 and 4; TM 11–2332A, para 3 and 4, TM 11–2332A–20.	Projectors PH–222–C, AP–6 and AP–9; screens BM–6 and BM–10; remote control BP–1A.
		Nomenclature	TM 11–2332, para 5 and TM 11–2332A, para 5 and 6.	Projectors PH–222–C, AP–6 and AP–9; screens BM–6 and BM–10; remote control BP–1A.

Training Schedule—Continued

Time (in hrs)	Subject or nature of training	Subcourse	Text reference	Training aids and equipment
		PART I		
		Operation	TM 11–2332, para 9–18 and TM 11–2332A, para 11–19.	Filmstrip, and 2x2 slide. DA Form 2404.
		Maintenance	TM 11–2332, para 23–29 and TM 11–2332A, para 24–29.	Filmstrip, and 2x2 slide. DA Form 2404.
		Practical exercise	TM 11–2332 and TM 11–2332A.	Projectors PH–222–C, AP–6 and AP–9; screens BM–6 and BM–10; remote control BP–1A.
		Examination	All previous references.	
1	Still Picture Projector AP–4.	Introduction and nomenclature.	TM 11–2337, para 1–7	Projector AP–4, screen, and 3¼ x 4 in. slide.
		Operation and maintenance	TM 11–2337, para 11–14, and 17–21.	Projector AP–4, screen, and 3¼ x 4 in. slide. DA Form 2404.
1	Still Picture Projector AP–5.	Introduction and nomenclature.	TM 11–2330A, para 3–8	Projector AP–5, screen, and opaque objects.
		Operation and maintenance	TM 11–2330A, para 10–24	Projector AP–5, screen, and opaque objects.
2	Projector PH–637/PFP.	Introduction and reference	TM 11–2323, para 1–9	Projector PH–637/PFP, screen, and 8 x 10 in. transparency.
		Operation	TM 11–2323, para 12–14	Projector PH–637/PFP, screen, and 8 x 10 in. transparency.
		Maintenance	TM 11–2323, para 35–39	DA Form 2404.
		Practical exercise	TM 11–2323	Projector PH–637/PFP, screen, and 8 x 10 in. transparency.
		Examination	All previous references.	
3	Public Address Set AN/UIH–2.	Introduction, purpose, and use.	TM 11–5830–200–10, para 1–3.	Address Set AN/UIH–2 and recording.
		Nomenclature	TM 11–5830–200–10, para 4–6.	Address Set AN/UIH–2 and recording.
		Operation	TM 11–5830–200–10, para 6–13.	Address Set AN/UIH–2 and recording. Projector PH–222–C, slide and filmstrip.
		Maintenance	TM 11–5830–200–10, para 18–21.	Projector PH–222–C; slide and filmstrip. DA Form 2404.
		Practical exercise	TM 11–5830–200–10, TM 11–5830–200–20.	Address Set AN/UIH–2, Projector PH–222–C, slide and filmstrip, and recording.
		Examination	All previous references.	

3	Sound Recorder-Reproducer RD–173A/UN and Printing and Dry Developing Machine ES–19.	Introduction, purpose and use.	TM 11–5835–212–15	Recorder RD–173A/UN; magnetic tape.
		Nomenclature	TM 11–5835–212–15	Recorder RD–173A/UN; magnetic tape.
		Operation	TM 11–5835–212–15	Recorder RD–173A/UN; magnetic tape.
		Maintenance	TM 11–5835–212–15	Recorder RD–173A/UN; magnetic tape; DA Form 2404.
		Practical exercise	TM 11–5835–212–15	Recorder RD–173A/UN; magnetic tape; printing and developing machine ES–19.
		Examination	All previous references.	
2	Projecto-Printer and related equipments.	Introduction and nomenclature.	Projecto-Printer Instruction Book. TM 11–3610–201–10, TM 11–3610–201–20.	Projecto-Printer and ES–30 with kit.
		Operation	TM 11–2323, para 25–31	Expendable supplies; Diazo material.
		Practical exercise	TM 11–2323, para 25–31	Transfer material.
		Maintenance	Projecto-Printer Instruction Book.	Bruning Multicolor Kit #100; ammonia (28%).
2	Review mandatory audio-visual equipment and procedures.	Review all previous lesson outlines and audio-visual support center operation.	All previous references; AR 108–30.	All projection equipment; DA Pam 108–1; DA Forms 11–43 and 11–44.
		PART II		
12	Projecto-Printer	Practical exercise	All previous references; Bruning Instruction Book Kit #100.	Illustration kit, plus material.
8	Review	Review all previous lesson outlines.	All previous references	All audio-visual projection equipment.
5	Military Instruction	Principles of learning—part I.	FR TF 21–2301	Projector AN/PFP–1; TF 21–2301.
		The stages of instruction—part II.	FR TF 21–2302	Projector AN/PFP–1; TF 21–2302.
		The stages of instruction—part II.	FR TF 21–2303	Projector AN/PFP–1; TF 21–2303.
		The stages of instruction—part II.	FR TF 21–2304	Projector AN/PFP–1; TF 21–2304.
		Training aids—part III	FR TF 21–2305	Projector AN/PFP–1; TF 21–2305.
		Speech technique	FR TF 21–2306	Projector AN/PFP–1; TF 21–2306.
8	Instruction practice	Practical teaching	All previous references	Training aids and equipment. All projection equipment.

Training Schedule—Continued

Time (in hrs)	Subject or nature of training	Subcourse	Text reference	Training aids and equipment
		PART II		
2	Classroom layout	Classroom site, classroom layout.	Applicable text reference	Training aids and equipment. All audio-visual projection equipment and screen.
2	Teaching principles	Visual aids for instructor training.	Applicable text reference	Training aids and equipment. Overhead projector PH–637/PFP, screen.
3	Audio-visual support center procedures.	Operation of audio-visual support center.	AR 108–30	Training aids and equipment. DA Form 11–44.
		Procedures for requesting training film.	AR 108–30	DA Form 11–44, DA Pam 108–1.
		Procedures for requesting projection equipment.	AR 108–30	DA Form 11–43, local center SOP.
		Procedures for requesting transparencies.	AR 108–30	DA Pam 108–1, DA Form 11–44.
		Conduct a tour of training aids subcenter.		Training aids subcenter.
		Conduct a tour of audio-visual support center.		Audio-visual support center.
		Graduation		Certificate of Training, DA Form 78.

LESSON OUTLINE

PART I

1. Motion Picture Film (1 hr)

a. Objective. To familiarize the students with 16–mm motion picture film and film reels.

b. Lesson Outline.

(1) Introduce the lesson by distributing pieces of 16-mm motion picture film, and describe its characteristics.
  (*a*) Emulsion.
  (*b*) Frames.
  (*c*) Sound track.
  (*d*) Silent and sound film.

(2) Explain and demonstrate the proper method of making a splice.

(3) Explain in detail the type and use of film reels.

2. Projection Screens

a. Objective. To familiarize the students with projection screens.

b. Lesson Outline.

(1) Introduce the subject by displaying and describing standard Army screens.

(2) Discuss the correct use of projection screens.

(3) Explain the proper maintenance and storage of projection screens.

Instructor's note. Show MF 11–7754 and MF 11–8634, if possible; allocate time, as necessary.

3. Projector Set AN/PFP–1 (20 hr)

a. Nomenclature.

(1) *Objective.* To familiarize the students with 16-mm projector set AN/PFP–1.

(2) *Lesson outline.*
  (*a*) Introduce the subject, and outline material to be covered.
  (*b*) Discuss major components and their functions.
    1. Projector PH–652A/PFP–1.
    2. Amplifier AM–424A/PFP–1.
    3. Speaker LS–170A.
  (*c*) Conduct an oral quiz. Direct the students to identify and describe the components covered in the instruction period.

b. Theory of Motion Picture Reproduction.

(1) *Objective.* To acquaint the students with the theory of motion picture reproduction.

(2) *Lesson outline.* Define the following, and indicate the effect of each item on the projection of motion picture film.
  (*a*) Picture continuity.
  (*b*) Frame transport.
  (*c*) Image regulation.

c. Theory of Optics.

(1) *Objective.* To acquaint the students with the theory of optics.

(2) *Lesson outline.*
  (*a*) Discuss the optical sound track, variable area, and variable density.
  (*b*) Discuss the scanning lens.
  (*c*) Discuss sound reproduction, volume, pitch, and tone.

d. Showmanship.

(1) *Objective.* To acquaint the students with professional showmanship in projecting a 16-mm motion picture film.

(2) *Lesson outline.*
  (*a*) Discuss threading of the film.
  (*b*) Discuss the actions taken prior to projection.
  (*c*) Discuss the actions taken during projection.

(*d*) Discuss the procedures followed at the end of the projection.

(*e*) Summarize the lesson.

e. Operation of Projector Set AN/PFP–1.

(1) *Objective.* To train the students to operate 16-mm Projector Set AN/PFP–1.

(2) *Lesson outline.*

(*a*) Introduce the lesson by emphasizing the importance of becoming thoroughly familiar with all the controls and switches of Projector Set AN/PFP-1.

(*b*) Explain and demonstrate the actions taken before actual operation.

(*c*) Explain and demonstrate proper threading procedure.

(*d*) Explain and demonstrate the initial and final operating adjustment.

(*e*) Explain and demonstrate system operations.

1. Single equipment operation.

2. Dual equipment operation.

(*f*) Explain and demonstrate the proper stopping procedure.

(*g*) Summarize the lesson, placing emphasis on the equipment performance check.

1. Preparation check.

2. Operation check.

3. Stop check.

Instructor's note. Prepare transparencies locally for this period.

f. Maintenance.

(1) *Objective.* To acquaint the students with the necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Introduce the lesson by distributing DA Form 2404 and DD Form 314 (Preventive Maintenance Schedule and Record). Discuss the scope of operator maintenance.

(*b*) Explain the use of DA Form 2404 and DD Form 314.

(*c*) Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken when following directions in the appropriate equipment technical manuals on operator and organizational maintenance.

(*d*) Show TF 11–1752, How to Operate the Army 16-mm Sound Projector Set AN/PFP–1.

(*e*) Summarize the lesson.

Instructor's note. Direct the students to fill in DA Form 2404 and DD Form 314 as each step of preventive maintenance is discussed.

g. Practical Exercise.

(1) *Objective.* To provide a practical exercise in the operation of Projector Set AN/PFP–1.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of Projector Set AN/PFP–1. Direct the students to—

1. Set up the projector.

2. Operate the projector.

3. Return the projector to its carrying case.

(*b*) Critique the practical exercise.

Instructor's note. Divide the students into equal groups, and assign each group to a Projector Set AN/PFP–1. Require each group to set up and operate Projector Set AN/PFP–1 in accordance with procedures previously taught. During the practice session, rotate personnel and question each student to insure that the principles of operation are clearly understood.

h. Examination and Film.

(1) *Objective.* To test student knowledge of Projector Set AN/PFP–1.

(2) *Lesson outline.*

(*a*) Administer test No. 1.

(*b*) Correct test papers.

(*c*) Critique the test.

(*d*) Show TF 11–1574, The Technique of Good Projection.

(*e*) Summarize the lesson.

4. Sound Motion Picture Projection Set AS–2 (1 hr)

a. Nomenclature.

(1) *Objective.* To describe and point out

items or parts that differ from similar parts of Projector PH–652A/PFP–1.

(2) *Lesson outline.*

(*a*) Provide a general description of Sound Motion Picture Projection Set AS–2.

(*b*) Discuss Sound Motion Picture Projector AQ–2A (one-piece amplifier-projector loudspeaker equipment).

(*c*) Explain the use of the power cord.

b. Operation.

(1) *Objective.* To train the students in the operation of Sound Motion Picture Projection Set AS–2.

(2) *Lesson outline.*

(*a*) Explain and demonstrate the operation of Sound Motion Picture Projection Set AS–2, emphasizing procedures that differ from those used in operating Projector PH–652A/PFP–1.

(*b*) Summarize the lesson.

c. Examination.

(1) *Objective.* To test student knowledge of Sound Motion Picture Projection Set AS–2.

(2) *Lesson outline.*

(*a*) Administer test No. 2.

(*b*) Correct test papers.

(*c*) Critique the test.

Instructor's note. Teach this lesson in conjunction with the lesson on Projector Set AN/PFP–1. If only Sound Motion Picture Projection Set AS–2 is taught, increase the total time to 8 hours (including 3 hours practice time).

5. Projector PH–222–C, Remote Switching Control BP–1A, and Still Picture Projectors AP–6 and AP–9 (3 hr)

a. Nomenclature.

(1) *Objective.* To familiarize students with the proper application of Projector PH–222–C, Remote Switching Control BP–1A, and Still Picture Projectors AP–6 and AP–9.

(2) *Lesson outline.*

(*a*) Introduce the lesson by displaying and describing Projector PH–222–C and Remote Switching Control BP–1.

(*b*) Explain the application of both the projector and the remote switching control.

(*c*) Explain the function and controls of Projector PH–222–C, and indicate how it is used with Remote Switching Control BP–1A.

(*d*) Explain function and controls of Still Picture Projectors AP–6 and AP–9.

(*e*) Indicate the major components of the projectors and state their functions.

1. Base assembly.

2. Turret assembly.

3. Cover assembly.

4. Lamphouse assembly.

5. Filmstrip attachment assembly.

6. Slide carrier assembly.

(*f*) Conduct an oral quiz. Direct the students to identify and describe the major components covered in the instruction period.

b. Operation.

(1) *Objective.* To train the students in the operation of Projector PH–222–C with Remote Switching Control BP–1A; and in the operation of Still Picture Projectors AP–6 and AP–9.

(2) *Lesson outline.*

(*a*) Introduce the lesson by emphasizing the importance of operating projectors correctly.

(*b*) Discuss and demonstrate the actions taken prior to actual operation.

1. Blackout windows.

2. Seating arrangements.

3. Electrical outlets.

(3) Explain and demonstrate the following operating procedures:

(*a*) Use of 2- x 2-inch slides.

(*b*) Use of 35-mm film strips.

(*c*) Use of Remote Switching Control BP–1A.

(4) Summarize the lesson.

Instructor's note. Prepare locally and use transparencies applicable to the subject matter.

c. Maintenance.

(1) *Objective.* To acquaint the students with the operator's maintenance of Projector PH–222–C, Remote Switching Control BP–1A, and Still Picture Projectors AP–6 and AP–9.

(2) *Lesson outline.*

(*a*) Introduce the lesson by distributing DA Form 2404, and discuss the scope of operator maintenance.

(*b*) Explain the use of DA Form 2404.

(*c*) Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken when following directions in the appropriate equipment technical manuals on operator and organizational maintenance.

d. Practical Exercise.

(1) *Objective.* To provide a practical exercise in the operation of Projector PH–222–C, Remote Switching Control BP–1A, and Still Picture Projectors AP–6 and AP–9.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of the projectors. Direct the students to—

1. Set up the equipment.

2. Operate the equipment.

3. Return the equipment to its carrying case.

(*b*) Critique the practical exercise.

Instructor's note. If Still Picture Projectors AP–6 or AP–9 are not available, devote full time to Projector PH–222–C and Remote Switching Control BP–1A. Divide the students into equal groups, and assign each group to a projector. Require each group to set up and operate the projector in accordance with the procedures previously taught. During the practice session, rotate personnel and question each student to insure that the principles of operation are clearly understood.

e. Examination.

(1) *Objective.* To test student knowledge of Projector PH–222–C with Remote Switching Control BA–1A, and Still Picture Projectors AP–6 and AP–9.

(2) *Lesson outline.*

(*a*) Administer test No. 3.

(*b*) Correct test papers.

(*c*) Critique the test papers.

6. Still Picture Projector AP–4 (1 hr)

a. Nomenclature.

(1) *Objective.* To describe Still Picture Projector AP–4, and to familiarize the students with its function as a lantern slide projector.

(2) *Lesson outline.*

(*a*) Explain the subject, and outline the material to be covered.

(*b*) Explain and demonstrate the function of each major component of Still Picture Projector AP–4.

b. Operation.

(1) *Objective.* To train the students to operate Still Picture Projector AP–4, and to acquaint them with the necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of Still Picture Projector AP–4. Direct the students to—

1. Set up the projector.

2. Operate the projector.

3. Return the projector to its carrying case.

(*b*) Distribute DA Form 2404, and discuss the scope of operator maintenance.

7. Still Picture Projector AP–5 (1 hr)

a. Nomenclature.

(1) *Objective.* To describe Still Picture Projector AP–5, and to familiarize the students with its function as an opaque projector.

(2) *Lesson outline.*

(*a*) Explain the subject, and outline the material to be covered.

(*b*) Explain and demonstrate the function of each major component of Still Picture Projector AP–5.

b. Operation.

(1) *Objective.* To train the students to operate Still Picture Projector AP–5, and to acquaint them with necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of Still Picture Projector AP–5. Direct the students to—

1. Set up the projector.
2. Operate the projector.
3. Return the projector to its carrying case.

(*b*) Distribute DA Form 2404. Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken.

Instructors' note. Prepare transparencies locally for this instruction.

8. Projector PH–637A/PFP (2 hr)

a. Nomenclature.

(1) *Objective.* To describe Projector PH–637A/PFP, and to familiarize the students with its function as an overhead projector.

(2) *Lesson outline.*

(*a*) Introduce the subject, and outline the material to be covered.

(*b*) Explain and demonstrate the function of each major component of Projector PH–637A/PFP.

b. Operation.

(1) *Objective.* To train the students in the operation of Projector PH–637A/PFP.

(2) *Lesson outline.*

(*a*) Introduce the lesson by discussing the importance of properly operating Projector PH–637A/PFP.

(*b*) Discuss the actions taken prior to actual operation.

(*c*) Explain and demonstrate the following types of operation:

1. Front-view projection.
2. Rear-view projection.

(*d*) Summarize the lesson.

Instructor's note. In demonstrating Projector PH–637A/PFP, use the following types of material: single cell transparency, multicell transparency, operable transparency, projecto acetate carbon, chemical fluids in Petri dish, iron filings and magnet, and plastic transparencies. Fluids are used to visually demonstrate chemical reaction. Iron filings and a magnet are used to visually demonstrate magnetic forces.

c. Maintenance.

(1) *Objective.* To acquaint students with the necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Introduce the lesson by distributing DA Form 2404, and discuss the scope of operator maintenance.

(*b*) Explain the use of Form 2404. As each preventive maintenance step is discussed, direct the students to complete Form 2404.

(*c*) Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken when following directions in the appropriate equipment technical manuals on operator and organizational maintenance.

d Practical Exercise.

(1) *Objective.* To provide a practical exercise in the operation of Projector PH–637A/PFP.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of the PH–637A/PFP. Direct the students to—

1. Set up the projector.
2. Operate the projector.
3. Return the projector to its carrying case.

(*b*) Critique the practical exercise.

Instructor's note. Divide the students into equal groups, and assign each group to set up and operate the projector according to procedures previously taught. Dur-

ing the practice session, rotate personnel and question each student to insure that the principles of operation are clearly understood.

e. Examination.

(1) *Objective.* To test student knowledge of Projector PH–637A/PFP.

(2) *Lesson outline.*

(*a*) Administer test No. 4.

(*b*) Correct the test papers.

(*c*) Critique the test.

Instructor's note. Prepare transparencies locally for this lesson plan.

9. Public Address Set AN/UIH–2 (3 hr)

a. Nomenclature.

(1) *Objective.* To familiarize the students with the functions and controls of Public Address Set AN/UIH–2.

(2) *Lesson outline.*

(*a*) Introduce the lesson by emphasizing the importance of using Public Address Set AN/UIH–2 controls properly and in correct sequence.

(*b*) Discuss the major components and their functions.

1. Sound reproducer.

2. RP–104/UIH–2.

3. Microphone M–23/U.

4. Loudspeaker Assemly LS–148/U.

(*c*) Conduct an oral quiz. Direct the students to identify and describe components taught during this instruction period.

b. Operation.

(1) *Objective.* To train the students in the operation of Public Address Set AN/UIH–2.

(2) *Lesson outline.*

(*a*) Introduce the lesson by discussing the importance of operating the public address set correctly—

1. When played back for public address purposes.

2. When played as a mixer.

(*b*) Discuss the actions taken before actual operation.

(*c*) Explain and demonstrate the following operating procedures:

1. Playback used in conjunction with Projectors PH–222–C, AP–6, AP–9, and sound filmstrip.

2. Use as a public address set.

3. Use as a mixer (using microphone and recording).

Instructor's note. Prepare and use transparencies that relate to the subject matter.

c. Maintenance.

(1) *Objective.* To acquaint the students with the necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Introduce the lesson by distributing DA Form 2404, and discuss the scope of operator maintenance.

(*b*) Explain the use of DA Form 2404.

(*c*) Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken when following directions in the appropriate equipment technical manuals on operator and organizational maintenance.

d. Practical Exercise.

(1) *Objective.* To provide a practical exercise in the operation of Public Address Set AN/UIH–2.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of the AN/UIH–2. Direct the students to—

1. Set up the equipment.

2. Operate the equipment.

3. Return the equipment to its case.

(*b*) Critique the exercise.

Instructor's note. Divide the students into equal groups, and assign each group to a Public Address Set AN/UIH–2. Require each group to set up and operate the AN/UIH–2 in accordance with procedures previously taught. During the practice session, rotate personnel and question each student to insure that the principles of operation are clearly understood.

e. Examination.

(1) *Objective.* To test student knowledge of Public Address Set AN/UIH–2.

(2) *Lesson outline.*

(*a*) Administer test No. 5.

(*b*) Correct test papers.

(*c*) Critique the test.

10. Sound Recorder-Reproducer Set RD–173A/UN (3 hr)

a. Nomenclature.

(1) *Objective.* To familiarize students with the functions and controls of Sound Recorder-Reproducer Set RD–173A/UN.

(2) *Lesson outline.*

(*a*) Introduce the lesson by emphasizing the importance of using RD–173A/UN controls properly and in correct sequence.

(*b*) Explain and demonstrate the functions of the various controls in the proper operation of the RD–173A/UN.

(*c*) Summarize the material covered.

b. Operation.

(1) *Objective.* To train the students in the operation of Sound Recorder-Reproducer Set RD–173A/UN.

(2) *Lesson outline.*

(*a*) Introduce the lesson by discussing the importance of operating the RD–173A/UN correctly.

(*b*) Discuss the actions taken before actual operation.

(*c*) Explain and demonstrate the following procedures:

1. Microphone recording.

2. Recording from line.

3. Reproducing.

4. Dual track.

5. Winding and rewinding.

6. Erasing.

7. Editing.

8. Stopping procedures.

(*d*) Summarize the lesson.

c. Maintenance.

(1) *Objective.* To acquaint the students with the necessary maintenance regulations, procedures, and forms.

(2) *Lesson outline.*

(*a*) Introduce the lesson by distributing DA Form 2404, and discuss the scope of operator maintenance.

(*b*) Explain the use of Form 2404.

(*c*) Explain and demonstrate preventive maintenance techniques. Point out specifically what to check, how to check, and precautions to be taken when following directions in the appropriate equipment technical manuals on operator and organizational maintenance.

d. Practical Exercise.

(1) *Objective.* To provide a practical exercise in the operation of the Sound Recorder-Reproducer Set RD–173A/UN.

(2) *Lesson outline.*

(*a*) Conduct a practical exercise in the operation of the RD-173A/UN. Direct the students to—

1. Set up the equipment.

2. Operate the equipment.

3. Return the equipment to its case.

(*b*) Conduct a critique of the practical exercise.

Instructor's note. Divide the students into equal groups, and assign each group to a Sound Recorder-Reproducer Set RD–173A/UN. Require each group to set up and operate the RD–173A/UN in accordance with procedures previously taught. During the practice session, rotate personnel and question each student to insure that the principles of operation are clearly understood.

e. Examination.

(1) *Objective* To test student knowledge of the Sound Recorder-Reproducer Set RD–173A/UN.

(2) *Lesson outline.*

(*a*) Administer test No. 6.

(*b*) Correct test papers.

(*c*) Critique the test.

Instructor's note. Use this lesson outline and appropriate TMs to instruct in any other type of tape recorder.

11. Projecto-Printer (2 hr)

a. Nomenclature.

(1) *Objective.* To familiarize the students with the function and capabilities of the Projecto-Printer in printing and developing of transparencies.

(2) *Lesson outline.*

(*a*) Introduce the lesson by displaying and describing the printer.

(*b*) Explain the purpose and use of the printer.

(*c*) Describe the component parts, and explain their functions.

(*d*) Describe expendable supplies.

1. Diazo foils.

2. Transferon material.

3. Transferon chemical and ammonia (dry and aqueous).

(*e*) Make transparencies by—

1. Using a translucent master.

2. Using an opaque master.

(*f*) Explain how Printing and Dry Developing Machines ES–19 and ES–30 (with kit) can be used in the same manner as the Projecto-Printer.

b. Operation.

(1) *Objective.* To provide, for the students, a practical exercise in the operation of the Projecto-Printer and in the production of transparencies.

(2) *Lesson outline.* Conduct a practical exercise in the operation of printer. Direct the students to—

(*a*) Make a translucent master.

(*b*) Make a transparency by the Diazo method.

(*c*) Make a transparency by the Transferon method.

c. Maintenance.

(1) *Objective.* To instruct the students in operator maintenance of the Projecto-Printer.

(2) *Lesson outline.*

(*a*) Emphasize the importance of keeping the equipment clean. Indicate the effect that a dirty printer has on transparencies.

(*b*) Summarize the lesson.

Instructor's note. If this lesson is used in the course for projectionist instructors, extend the lesson outline to 4 hours and omit the review lesson (para 12 and 13).

12. Review of Equipment (1 hr)

(This completes the first 40 hours of instruction.)

a. Objective. To provide a review of the operational capabilities of all audio-visual projection equipment previously discussed.

b. Lesson outline. Conduct a review on all audio-visual projection equipment previously covered to include—

(1) Capabilities and uses.

(2) Operator maintenance.

(3) Operator responsibilities as a projectionist.

13. Review of Audio-Visual Support Center Services, Operations, and Procedures (1 hr)

a. Objective. To familiarize the students with audio-visual support center services, operations, and procedures.

b. Lesson Outline.

(1) Introduce the lesson by distributing the following:

(*a*) AR 108–30.

(*b*) DA Pam 108–1, with changes.

(*c*) DA Form 11–43.

(*d*) DA Form 11–44.

(*e*) Local audio-visual support center SOP.

(*f*) Local reproductions of audio-visual support center bulletins.

(2) Discuss the correct use and procedure when referring to applicable ARs, DA Pamphlets, and DA Forms.

(3) Distribute the audio-visual Projectionist License (DA Form 11–78).

LESSON OUTLINE

PART II

14. Projecto-Printer Practical Exercise (12 hr)

a. Objective. To provide a practical exercise in the fabrication of visual training aids for use with still picture overhead projectors.

b. Lesson Outline. Conduct a practical exercise, using varied techniques and methods in the production of effective visual training aids.

(1) Sketch transparencies, using china-marking pencils, magic-marker, etc.
(2) Cut-out visuals.
(3) "Lift" method (rubber cement-clay coating paper).
(4) Diazo method.
(5) Transferon method.
(6) Bruning multicolor method.
(7) Transparency mounting techniques.
(8) Transparency design.
(9) Special techniques.
  (*a*) Projection of liquids.
  (*b*) Opaque projection silhouette (overhead).
  (*c*) Polarized light (overhead).

c. Summarization. Summarize the important points covered in the instruction.

15. Review (8 hr)

a. Objective. To give the students practice in setting up and operating all audio-visual projection equipment previously taught.

b. Lesson Outline. Each student will practice setting up and operating all types of projection equipment in order to increase his individual efficiency.

Instructor's note. Rate the student on his operational ability as "Exceptional," "Good," "Average," or "Below Average." Use this rating and the numerical grade achieved by the student in his academic test in determining each student's final grade for the instruction.

16. Military Instruction (5 hr)

a. Introduction.

(1) *Objective.* To familiarize the students with the six principles of learning.

(2) *Lesson outline.*
  (*a*) Explain briefly the six principles of learning.
  (*b*) Show training film TF 21–2301, Military Instruction, Part I, Principle of Learning.
  (*c*) Discuss the film.

b. "Preparation."

(1) *Objective.* To familiarize the students with the first stage of instruction, "Preparation."

(2) *Lesson outline.*
  (*a*) Define briefly "Preparation," and explain its importance in military training instruction.
  (*b*) Show training film TF 21–2302, Military Instruction, Part IIa, The Stages of Instruction—Preparation.
  (*c*) Discuss the film.

c. "Presentation."

(1) *Objective.* To familiarize students with the importance of "Presentation."

(2) *Lesson outline.*
  (*a*) Discuss briefly the elements involved in "Presentation."
  (*b*) Show training film TF 21–2303, Military Instruction, Part IIb, The Stages of Instruction—Presentation.
  (*c*) Discuss the film.

d. "Application, Examination and Review of Critique."

(1) *Objective.* To familiarize the students with the importance of "Application,

Examination, and Review of Critique."

(2) *Lesson outline.*

(*a*) Discuss briefly the importance of stimulating student interest by using "Application, Examination, and Review of Critique."

(*b*) Show training film TF 21–2304, Military Instruction—Part IIc—The Stages of Instruction—Application, Examination, and Review of Critique.

(*c*) Discuss the film.

e. Training Aids.

(1) *Objective.* To familiarize the students with the use of audio-visual training aids in military instruction.

(2) *Lesson outline.*

(*a*) Discuss the types, characteristics, and use of simple and complex training aids.

(*b*) Show training film TF 21–2305, Military Instruction—Part III—Training Aids.

(*c*) Discuss the film.

f. Speech Technique.

(1) *Objective.* To familiarize the students with proper speech techniques and poise.

(2) *Lesson outline.*

(*a*) Demonstrate the proper speech techniques and poise required to gain student attention.

(*b*) Show training film TF 21–2306, Military Instruction — Part IV — Speech Techniques.

(*c*) Discuss the film.

(*d*) Summarize the instruction on military instruction.

17. Instruction Practice (8 hr)

a. Objective. To evaluate the students as instructors.

b. Lesson Outline.

(1) Assign a specific section of this lesson plan to each student and direct him to prepare a lesson outline and present it to the class.

(2) Discuss the good points and faults of each student instructor.

Instructor's note. Grade each student on his practical teaching ability, poise, diction, delivery, etc., as "Exceptional," "Good," "Average," or "Below Average." Use this grade and the numerical rating achieved by the student in his academic test in determining each student's final grade in instruction practice.

18. Classroom Layout (2 hr)

a. Introduction.

(1) *Objective.* To indicate the advantages gained by properly locating a classroom.

(2) *Lesson outline.* Discuss the advantages of having a properly located classroom i.e., central location, availability of equipment, training aids, and the elimination of excessive noise and distracting sights, etc.

b. Types of Classroom Layouts.

(1) *Objective.* To acquaint the students with various types of classroom layouts.

(2) *Lesson outline.*

(*a*) Explain and demonstrate the physical seating arrangement, projection equipment placement, and the instructor position in various types of classrooms to allow maximum screen visibility for each student in the class.

1. Square classroom.

2. Oblong classroom.

3. Very large classrooms.

4. Front and rear projection.

5. Acoustical requirements.

6. Electrical outlets and arrangement of cords.

(*b*) Summarize the lesson.

19. Teaching Principles (2 hr)

a. Objective. To familiarize the students with teaching principles and the relationship of the instructor to the students.

b. Lesson Outline.

(1) Discuss the use of audio-visual aids in instruction.

(2) Discuss the use of motion pictures as training aids.

Instructor's note. Use films TF 11–1572 and MF 21–8424, if available; adjust time as necessary. Use locally prepared transparencies to explain teaching principles.

20. Audio-Visual Support Center Procedures (3 hr)

a. Introduction.

(1) *Objective.* To acquaint the students with the operation of an audio-visual support center.

(2) *Lesson outline.*

(*a*) Introduce and briefly explain AR 108–30.

(*b*) Explain the operation of a central audio-visual support center.

(*c*) Explain the operation of an installation audio-visual support center.

b. Requesting.

(1) *Objective.* To explain the procedures used in requesting and providing films.

(2) *Lesson outline.*

(*a*) Distribute DA Pam 108–1 and DA Form 11–44.

(*b*) Explain content and use of DA Pam 108–1.

(*c*) Explain use of DA Form 11–44. Direct the students to fill out DA Form 11–44.

(*d*) Explain the responsibilities of the requesting agency and the projectionist.

c. Requesting Projection Equipment and Responsibility of Requesting Agency.

(1) *Objective.* To explain procedures for requesting projection equipment, and to indicate the responsibility of the requesting agency.

(2) *Lesson outline.*

(*a*) Distribute DA Form 11–43.

(*b*) Explain the use of DA Form 11–43. Direct the students to fill out DA Form 11–43.

(*c*) Explain the responsibilities of the requesting agency and the projectionist.

d. Requesting Transparencies.

(1) *Objective.* To explain procedures for requesting transparencies.

(2) *Lesson outline.*

(*a*) Distribute DA Pam 108–1.

(*b*) Explain the contents of DA Pam 108–1 and the procedures for ordering transparencies.

e. Training Aids Subcenter.

(1) *Objective.* To familiarize the students with the operation of a training aids subcenter.

(2) *Lesson outline.* Conduct a tour of the training aids subcenter, and explain its operation.

f. Operation of an Audio-Visual Support Center.

(1) *Objective.* To show and describe the operation of an audio-visual support center.

(2) *Lesson outline.* Conduct a tour of an audio-visual support center, and explain its operations and responsibilities.

g. Graduation.

(1) *Objective.* Graduation.

(2) *Lesson outline.* Summarize the course, and review the responsibilities and authority of the audio-visual equipment instructor. Issue DA Form 11–78.

21. Necessary Equipment for the Course

a. Projector Set AN/PFP–1, and Sound Motion Picture Projection Sets AS–2 and AS–7.

b. Projector PH–222–C and Remote Switching Control BP–1.

c. Still Picture Projector AP–4.

d. Still Picture Projector AP–6 or AP–9.

e. Projector PH–637/PFP (overhead projector).

f. Still Picture Projector AP–5 (opaque projector).

g. Public Address Set AN/UIH–2.

h. Sound Recorder-Reproducer Set RD–173A/UN (tape recorder).

i. Projecto-Printer.

j. Printing and Dry Developing Machine ES–19 or ES–30.

k. Obsolete 16-mm film and 35-mm filmstrips.

l. Diazo material and ammonia.

m. Bruning Multicolor Kit #100.

n. Transferon material.

o. Illustration kit.

22. Text References for the Course

a. Army Regulations (ARs). AR 108–30 Operation of Army Audio-Visual Communication Centers.

b. Department of the Army Pamphlets (DA Pams).

(1) DA Pam 108–1, Index of Army Motion Pictures, Filmstrips, Slides, and Phono-Recordings.

(2) DA Pam 108–3, Audio-Visual Communication and Presentation Facilities.

c. Miscellaneous Publications.

(1) Projecto-Printer Instruction Book.

(2) Bruning Instruction Book Kit #100.

d. Field Manuals (FMs).

(1) FM 11–41, Film and Equipment Exchange Operations.

(2) FM 21–5, Military Training Management.

(3) FM 21–6, Techniques of Military Instruction.

e. Technical Manuals (TMs).

(1) TM 11–2323, Projectors PH–637/PFP and PH–637A/PFP; and Projectors, Still Picture PH–637B/PFP and PH–637C/PFP; and Spinner, Polarizer BM–34(A), including repair parts and special tool lists.

(2) TM 11–2332A, Still Picture Projector AP–6(1).

(3) TM 11–2332–10, Operator's Manual: Projector PH–222–C and Projector, Still Picture AP–9(1).

(4) TM 11–2337, Projectors, Still Picture AP–4(1), AP–4(2) and AP–4(3).

(5) TM 11–5830–200–10, Operator's Manual, Public Address Set AN/UIH–2, Reproducing Equipment MC 364–D; Loudspeaker LS–148/U; Reproducers, Sound RP–104/UIH and RP 104A/UIH; and Turntable MX–932/U.

(6) TM 11–5835–212–15, Operator, Organizational Field and Depot Maintenance Manual: Sound Recorder-Reproducer Sets RD–173/UN and RD–173A/UN.

(7) TM 11–6730–201–10, Operator's Manual: Projection Set, Motion Picture, Sound AS–2(1) including Projectors, Motion Picture, Sound AQ–2(1), AQ–2A(2), and AQ–2A(3).

(8) TM 11–6730–208–10, Operator's Manual: Projector Set AN/PFP–1.

f. Supply Bulletins (SBs).

(1) SB 11–190, Requisitioning Electronics Command Materiel.

(2) SB 11–217, Supply Procedure for Diazo Materials used with Printing and Dry Developing Machines ES–19 and ES–30 for the Army ROTC and USAR Units.

(3) SB 11–278, Rear View Projection Kit and Rear Projection Screen.

(4) SB 11–483, Supply Procedures for Visa-Matic and Technamation Treatment Materials.

23. Training Aids

a. Training Films (TFs).

(1) TF 11–1572, Film Tactics.

(2) TF 11–1574, Technique of Good Projection.

(3) TF 11–1752, How to Operate the Army 16-mm Sound Projector Set.

(4) TF 21–2301, Military Instruction—Part I—Principles of Learning.

(5) TF 21–2302, Military Instruction—Part IIa—The Stages of Instruction—Preparation.

(6) TF 21–2303, Military Instruction—Part IIb—The Stages of Instruction—Presentation.

(7) TF 21–2304, Military Instruction—Part IIc—The Stages of Instruction—Application, Examination and Review or Critique.

(8) TF 21–2305, Military Instruction—Part III—Training Aids.

(9) TF 21–2306, Military Instruction—Part IV—Speech Techniques.

b. Miscellaneous Films (MFs).

(1) MF 11–7754, Facts About Film.

(2) MF 11–8634, Origins of the Motion Picture.

(3) MF 21–8424, Accent on Learning.

c. Transparencies. Locally prepared transparencies.

d. Department of the Army Forms (DA Forms).

(1) DA Form 11–43, Projection and Audio-Visual Equipment Loan Order.

(2) DA Form 11–44, Audio-Visual Loan Order.

(3) DA Form 2404, Equipment Inspection and Maintenance Worksheet.

SAMPLE TEST FORMATS

Test No. 1. Projector AN/PFP–1

1. When projecting film, all spare parts and accessories must be near which piece of equipment? _____

2. What is the length of each of the following cords?
   a. Permanent speaker cord _____
   b. Speaker cord extension _____

3. How close to the center of the screen must the speaker be placed?
_____

4. May the speaker be placed on the ground or floor during a performance?
   a. Yes _____
   b. No _____

5. Why is the speaker cord hooked to the legs of the stand when setting up for a film showing? _____
_____

6. What are the two principal reasons for using more than one speaker?
   a. _____
   b. _____

7. The projector should be placed at the side of the room so that no one will trip over the speaker cord.
   a. True _____
   b. False _____

8. The projector should be placed as high as is practical to avoid shadows of the audience on the screen.
   a. True _____
   b. False _____

9. When fastening the ends of spring belts, the projectionist must first apply counter turns.
   a. True _____
   b. False _____

10. Is it necessary to stop a projector if the feed spring belt or the takeup spring belt breaks during a show?
   a. Yes _____
   b. No _____

11. How often must Projector PH–652A/PFP–1 be oiled? _____
_____

12. If a projector burns out fuses at short intervals, what should the projectionist do? _____
_____

13. Is it possible to receive an electrical shock if the equipment is not properly grounded?

a. Yes _____

b. No _____

14. How does the projectionist test for positive ground contact?

_____

15. Why does the projectionist allow the motor to run a few seconds after turning off the projection lamp? _____

_____

16. Can the film be damaged if the rewind switch is used to run the film in reverse?

a. Yes _____

b. No _____

17. Will fingerprints reduce the life of a projection lamp?

a. Yes _____

b. No _____

18. When must a projection lamp be replaced? _____

_____

19. If the projection lamp is not twisted completely into position, what will be the effect on the projected screen image? _____

_____

20. What will be the effect on the screen image if the projection lamp adjustment levers are not properly alined? _____

_____

21. What is the wattage of the maximum size projection lamp used in Projector Set AN/PFP–1? _____

_____

22. What is the wattage of the standard size projection lamp used in Projector Set AN/PFP–1? _____

_____

23. Give two occasions when the maximum watt projection lamp must be used.

1. _____

2. _____

24. What is the average life of the following?

a. Standard watt projection lamp _____

b. Maximum watt projection lamp _____

25. Projector condenser lenses are used to focus an image sharply on the screen.

a. True _____

b. False _____

26. Is it permissible for the projectionist to remove lenses from their mounts?

a. Yes _____

b. No _____

27. Is it permissible for the projectionist to remove the reflector from the projector?

a. Yes _____

b. No _____

28. How often are projector condenser lenses and the reflector cleaned by the projectionist? _____

_____

29. What must be used to clean reflectors and lenses? _____

_____

30. Is the cleaning brush used to clean lenses?

a. Yes _____

b. No _____

31. Will oil accumulation upon lenses cause damage to the lenses?

a. Yes _____

b. No _____

32. How should hardened emulsion or dirt be removed from the aperture plate and pressure shoe? _____

33. What are the three ways to make the projected film image and screen equal in size?

1. _____
2. _____
3. _____

34. May any part of the projector be cleaned while the motor is running?

a. Yes _____

b. No _____

35. When cleaning the projector aperture, which must be removed first?

a. Film channel _____

b. Pressure plate _____

36. When replacing the film channel and pressure plate, which is replaced first?

a. Film channel _____

b. Pressure plate _____

37. In what position must the film image be placed in the film channel?

a. Right side up _____

b. Up side down _____

38. To replace or connect anything with an electrical contact, what lines must be disconnected first? _____

_____

39. How many frames per second are the following speeds?

a. Silent speed _____

b. Sound speed _____

40. Film passes through the film channel for motion picture reproduction intermittently.

a. True _____

b. False _____

41. Assuming identical projector positions, a 1-inch focal-length lens will project a larger screen image than a 2–inch focal-length lens.

a. True _____

b. False _____

42. What is the standard focal-length-size projection lens used in all 16-mm motion picture projectors, and why is it the standard size?

_____

43. To increase the screen image size with any given projection lens, should the projector be placed closer to or farther from the screen?

a. Closer _____

b. Farther _____

44. Using a 6-foot wide screen and a 2-inch focal-length lens, what should be the distance between projector and screen to fill the screen properly? _____

45. What is the last connection to be made on the projector equipment when setting up for film projection? _____

_____

47. What is the first disconnection to be made after a film showing?

_____

48. Projector equipment should be stored, transported, and operated in an upright position.

a. True _____

b. False _____

49. List 16 spare-parts and accessories that must accompany Projector Set AN/PFP–1 and that must be checked by the projectionist.

1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

50. Should projector equipment be obtained from the audio-visual support center by projectionists to avoid possible damage through improper handling?

a. Yes _____
b. No _____

51. When transporting projector equipment, should it be secured to avoid bouncing?

a. Yes _____
b. No _____

52. What electrical current is required by the following equipment?

a. Projector PH–652A/PFP–1 ac_____ dc_____
b. Amplifier AM–424/PFP–1 ac_____ dc_____

53. When using standard size projection lamps, what wattage is required to operate Projector Set AN/PFP–1? _____

_____

54. Which of the following may be used to operate Projector Set AN/PFP–1?

a. 115 volts _____ c. 230 volts _____
b. 60 cycle _____ d. 90 cycles _____

55. What is the correct size fuse for the following?

a. Projector PH–652A/PFP–6 _____ampere
b. Amplifier AM–424/PFP–1 _____ampere

56. Draw the connecting powerlines only and mark each line ac or dc in the following diagram (fig. 14).

57. Name the two purposes for which the PE Cord is used.

1. _____
2. _____

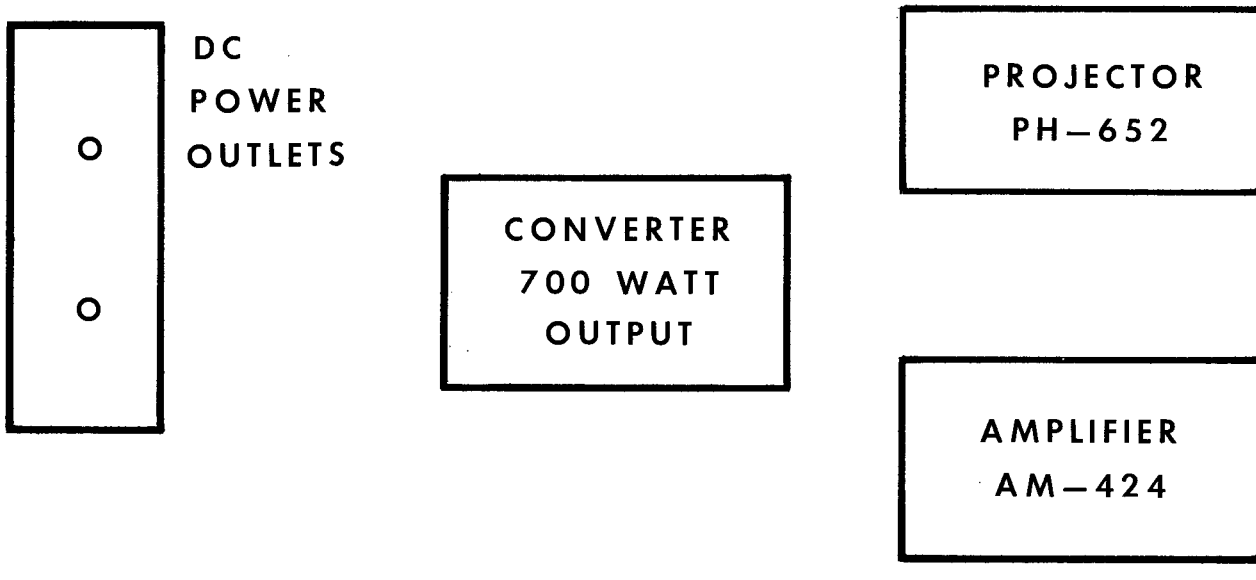


Figure 14. Required powerline connections.

58. Name the parts of Projector PH–652A/PFP–1 that must be cleaned before each performance.

a. _____

b. _____

c. _____

59. Can silent film be used with Projector PH–652A/PFP–1?

a. Yes _____

b. No _____

60. List the five ways in which a projectionist can be assured that film has been correctly wound upon the reel.

1. _____

2. _____

3. _____

4. _____

5. _____

61. If during film inspection prior to projection, a projectionist discovers that the film is broken near the middle, should he tape the broken section or wind the film on separate reels? (Assuming no splicing machine is available.) _____

62. At what parts of a reel does the greatest amount of damage usually occur?

a. _____

b. _____

63. If the upper loop formed by the projectionist is too large or too small, will damage occur during projection?

a. Yes _____

b. No _____

64. Why must film be threaded tightly at the sound head? _____

_____

65. Is the threading knob used to test the film threading?

a. Yes _____

b. No _____

66. What is the correct order in which switches are used when beginning a film showing without the use of the douser?

a. _____Amplifier switch, projector motor switch, projector lamp switch, gain control, house lights.

b. _____Gain control, amplifier switch, house lights, projector motor switch, projector lamp switch.

c. _____Projector motor switch, projector lamp switch, amplifier switch, house lights, gain control.

67. Should the projectionist stop the projector if the film breaks during a showing?

a. Yes _____

b. No _____

68. Must the projector be stopped if the lower film loop at the film channel is lost?

a. Yes _____

b. No _____

69. Is the loop setter used to regain the lower film loop?

a. Yes _____

b. No _____

70. Is the loop setter adjustment lever used to help eliminate picture jumping on the screen?

a. Yes _____

b. No _____

71. Is the loop setter adjustment lever used to eliminate travel ghosts on the screen?

a. Yes _____

b. No _____

72. Must the projector be stopped if the upper film loop at the film channel is lost?

a. Yes _____

b. No _____

73. What adjustment must be made after a show to rewind film on Projector PH–652A/PFP–1? _____

_____

74. To what part of the amplifier must the speaker cord be connected?

a. Output _____

b. Monitor _____

75. Name the three controls of Projector Set AN/PFP–1 that must be at the ON position before the exciter lamp will light.

1. _____

2. _____

3. _____

76. Will the amplifier be damaged if power is turned on while the speaker cord is not connected?

a. Yes _____

b. No _____

77. Prior to threading a projector, how does the projectionist determine there will be sound?_____

_____

78. By what means is the variable light carried to the P.E. Cell?

a. Scanning lens _____

b. Prism _____

c. Exciter lamp _____

79. Name the immediate, on-the-spot checks to be made by a projectionist when he discovers that there is no sound.

a. _____ f. _____
b. _____ g. _____
c. _____ h. _____
d. _____ i. _____
e. _____ j. _____

80. Film passes around the sound drum:

a. Intermittently _____
b. Constantly _____

81. Can a dirty sound drum cause a thumping sound in the speaker at regular intervals?

a. Yes _____
b. No _____

82. Who is responsible for producing the correct volume and tone quality in sound reproduction? _____

_____

83. When is it permissible for the projectionist to change amplifier tubes? _____

84. What two objects produce the scanning beam?

a. _____
b. _____

85. Is the projectionist permitted to adjust the scanning lens assembly?

a. Yes _____
b. No _____

86. What intercepts the scanning beam to produce variable quantities of light? _____

87. Do scratches on the sound track, caused by improper handling of film, produce unwanted sounds?

a. Yes _____
b. No _____

88. What two parts of the projector does the douser control?

1. _____
2. _____

89. Why must the lower film loop, at the film channel, be exactly as indicated by the loop setter? _____

_____

90. When a silent film projector must be used for sound film projection, what two parts of the projector must be examined carefully before it can be declared safe for this application?

1. _____
2. _____

91. What is the best way to determine projector film damage during a showing? _____

_____

92. Is the framing knob used to frame the picture on the screen?

a. Yes _____

b. No _____

93. Should the projectionist listen to the sound at some distance from the projector to determine volume and to adjust it properly?

a. Yes _____

b. No _____

94. Once volume is properly adjusted, is it necessary to be on the alert for possible increase or decrease in volume?

a. Yes _____

b. No _____

95. Should the douser be closed before the end of sound?

a. Yes _____

b. No _____

96. Without using the douser, what is the correct switching order at the close of projection?

a. _____Projector lamp switch, house lights, projector motor switch, amplifier switch.

b. _____Amplifier switch, house lights, projector lamp switch, projector motor switch.

c. _____House lights, projector lamp switch, projector motor switch, amplifier switch.

d. _____House lights, projector lamp switch, amplifier switch, projector motor switch.

97. What adjustment must be made prior to beginning a show, after the film has been rewound on Projector PH–652A/PFP–1? _____

_____

98. Is it permissible to splice film without using a splicing machine?

a. Yes _____

b. No _____

99. What is the main reason for tightly closing film cement bottles immediately after use?

a. _____To prevent evaporation.

b. _____To prevent loss of strength.

c. _____To prevent hardening.

100. In what way does the image of a silent film perform when projected with Projector PH–652A/PFP–1? _____

_____

Test No. 2 Sound Motion Picture Projection Set AS–2

1. What type power may be used to operate the AS–2?
   a. ac _____ d. 60 cycle _____
   b. dc _____ e. 115 volt _____
   c. 20 cycle _____ f. 230 volt _____

2. What size fuse must be used in the following?
   a. Projector AQ–2A _____
   b. Amplifier of the AQ–2A _____

3. Will damage occur in the amplifier of the AQ–2A if the remote-local speaker switch is switched to the remote position without a remote speaker connection and power is put into the amplifier? _____
_____

4. May the local speaker be used with regular film projection?
   a. Yes _____
   b. No _____

5. The pressure plate marked "For use with fixed lens carriage" is to be used with the AS–2.
   a. True _____
   b. False _____

6. Should the AS–2 be used for an audience of 150?
   a. Yes _____
   b. No _____

7. Which of the following items are part of the complete AS–2 set?
   a. 15 amp. fuse _____ d. Changeover control _____
   b. 1000-watt lamp _____ e. Douser _____
   c. P.E. cord _____ f. Microphone hookup _____

8. Can Dynamic Loudspeaker LS–170A/PFP–1 of Projector Set AN/PFP–1 be used with the AS–2?
   a. Yes _____
   b. No _____

9. Can the local speaker be used simultaneously with the remote speaker?
   a. Yes _____
   b. No _____

10. Should the AS–2 be used in theaters?
   a. Yes _____
   b. No _____

Test No. 3 Still Picture Projectors AP–6, AP–9, Projector PH–222–C, and Remote Switching Control BP–1A

1. What type power may be used to operate the AP–6, AP–9, and PH–222–C?
   a. ac _____ d. 60 cycle _____
   b. dc _____ e. 115 volt _____
   c. 50 cycle _____ f. 230 volt _____

2. What is the largest size lamp that may be used in the AP–6, AP–9, and PH–222–C? _____

3. May the projectionist remove condenser lenses from their mounts for cleaning purposes?

a. Yes _____

b. No _____

4. When framing a filmstrip, is it necessary to unlock the operating knob?

a. Yes _____

b. No _____

5. What two filmstrip frame sizes may be used with the AP–6, AP–9, and PH–222–C?

a. _____

b. _____

6. When you are standing on the operator's side of the projector, in what position must the cue mark of the slide be? _____

7. When typing on cellophane to prepare a slide, in what position must the emulsion side of the carbon be?

a. To the back of the cellophane _____

b. On top of the cellophane _____

8. May a smaller frame than the 35–mm type be mounted and masked as a slide for use with the PH–222–C?

a. Yes _____

b. No _____

9. What two steps must be taken to place a cue mark in the correct position on a slide?

a. _____

b. _____

Test No. 4 Projector PH–637/PFP

1. What type of power is required to operate the PH–637/PFP?

a. ac _____ d. 60 cycle _____

b. dc _____ e. 115 volt _____

c. 50 cycle _____ f. 230 volt _____

2. What size projection lamp is required?

a. 500 watts_____

b. 750 watts_____

c. 1000 watts_____

3. What parts of the PH–637/PFP must be cleaned by the projectionist?

a. Projector lamp _____ f. Fresnel lens _____
b. Reflector _____ g. Glass projection stage _____
c. Condenser lens _____ h. Projection lens _____
d. Heat filter _____ i. Front surface mirror _____
e. Rear surface mirror _____ j. Front window _____

4. In what position must the lamp cap cut out be placed?

a. Towards the reflector_____
b. Towards the condenser lens_____

5. Should the copy holder be removed to use operable transparencies?

a. Yes _____
b. No _____

6. Can grease pencil markings be removed from cellophane rolls and acetates?

a. Yes _____
b. No _____

7. How may a lucite pointer be obtained? _____

_____

8. Which end of the cellophane holder must be engaged with the crank?

a. Circular end_____
b. Rectangular insert end_____

9. Which side of the Fresnel lens must face the projection lens?

a. Concave side_____
b. Convex side_____

10. Describe the procedure used to eliminate a keystone image effect.

_____

Test No. 5 Public Address Set AN/UIH–2

1. The AN/UIH–2 operates on ac_____ dc_____?
2. What size fuse is used in the AN/UIH–2? _____
3. The AN/UIH–2 may be operated with—

a. 115 volts_____ c. 90 cycles_____
b. 230 volts_____ d. 60 cycles_____

4. Can the instructor or speaker superimpose his voice on the sound produced by a record?

a. Yes _____
b. No _____

5. What are the three RPM speeds?

a. _____ b. _____ c. _____

6. In what position must the stylus be set for microgroove recordings?

_____

7. Does a change in power cycle affect the record sound reproduction?

a. Yes _____
b. No _____

8. For what purpose are the neon lamp and stroboscope disc used?

---

9. Explain how synchronization of the image and the image change signal can be assured ---

---

10. Explain the proper method of testing and using a microphone. ---

---

Test No. 6 Sound Recorder-Reproducer RD–173A/UN

1. The RD–173A/UN operates on—
   a. 110–115 volts single phase 60–70 cycles per second---
   b. 108–122 volts single phase 55–65 cycles per second---
   c. 105–115 volts single phase 50–60 cycles per second---

2. What two recording speeds are used?
   a. ---
   b. ---

3. On the RD–173A/UN, the speed of recording is adjusted by—
   a. Changing the speed control knob ---
   b. Using larger reels ---
   c. Changing the size of the capstan ---

4. When recording voice, in what position must the microphone be?

---

5. For a microphone recording, you must turn the master control to the position marked record line.
   a. True ---
   b. False ---

6. You are directed to record a speech. Is it possible to use a previous recorded tape with orchestra music?
   a. Yes--- b. No--- Explain

---

7. The RD–173A/UN requires monthly lubrication.
   a. True ---
   b. False ---

8. What is the correct procedure for splicing tape?---

---

9. What is the meaning of the letters LMH on the microphone impedance adjustment screw?
   L--- M--- H---

10. When should the record level indicator eye barely close? ---

---

APPENDIX C

TRANSPARENCY PREPARATION COURSE OUTLINE

Audio-visual support centers using this outline will prepare transparencies to facilitate comprehension of course details, or use existing transparencies where appropriate.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	1.
Lesson Title:	Orientation on Audio-Visual Training Aids.
Objectives:	To acquaint students with the aims of the course and facilities of the post.
References:	TM 11–2323; TM 11–2330A; Department of the Army approved transparencies catalog.
Training Aids:	None.
Method of Instruction:	Lecture.
Total Time:	1 hour, 30 minutes.
Introduction:	Opening remarks by— a. Pictorial Officer. b. Army Director of Audio-Visual Support Services. c. Instructor.
Orientation:	Discuss the— a. Course duration and hours. b. Equipment and material covered. c. Uniform requirements. d. Smoking regulations. e. Conduct of students while in class. f. References. g. Post automobile permits. h. Quarters and mess facilities. i. Locations of personnel and finance officers. j. Recreation facilities: (1) Type. (2) Location.
Questions and Answers:	Answer questions brought up by students.
Film:	Show Film MN6753C, Preparation of Training Aids. This film will show some of the techniques and processes in the preparation of training aids. In general, most of these processes are designed for use in the production shop of a training aids center. You will note that the equipment in the film is of the large type; we will work with portable and field expedient type equipment.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	2.
Lesson Title:	Projector PH–637/PFP, Nomenclature and Operation.
Objectives:	To acquaint students with the nomenclature, operation, and maintenance of the PH–637/PFP.

References: TM 11–2323, paragraphs 1 through 15.

Training Aids: Projector PH–637/PFP; fresnel condenser; transparencies; (1) Functional diagram of PH–637/PFP; (2) Figure 7 of TM 11–2323.

Method of Instruction: Demonstration and practical exercise.

Total Time: 1 hour, 15 minutes.

Introduction: Introduce the lesson.

Transparencies may be a slide, a sheet of acetate, or a sheet of plastic on which the operator may write or draw. The PH–637/PFP is used to project these transparencies on a screen that is located behind the operator. Thus, he can face the audience while operating the equipment and conducting the lecture.

Demonstration and Explanation: Indicate the principal parts of Projector PH–637/PFP. The projector consists essentially of a housing, a head supporting tube, and a projection head assembly. The head assembly, which is mounted on a supporting tube attached to the housing, contains a lens and a mirror.

a. Show the students a PH–637/PFP, and point out the switch and power receptacle (power cable, 15 feet).

b. Open the rear door of the housing and the lamp housing door.

(1) Indicate the lamp (500- or 1,000-watt), reflector, lamp cap, and condenser lens.

(2) Direct the students to remove and replace the lamp and the lamp cap. Make sure that the students remove their fingerprints from the lamp.

(3) Close the lamp housing door and the rear door of the housing.

(4) Open the side door on the left side of the housing to show the condenser lens, the filter (used with 100-watt lamp), the rear surface mirror, the blower, and the fresnel condenser. Allow the students to examine the extra fresnel condenser. Close the door.

(5) Point out the production stage, which consists of a 10- x 10-inch fresnel condenser and a plate glass cover.

(6) Indicate the mounting hole for the supporting tube, and show how the clamping knob is used to lock the tube in position.

(7) Install a cellophane roll on the cellophane roll attachment.

(8) Show the maskings.

c. While examining the head supporting tube, point to the rack. Place the tube in the mounting hole, and lock it in position.

d. When discussing the projection head assembly, indicate the—

(1) 14-inch focal length lens.
(2) Front surface mirror, housing, and window.
(3) Supporting arm, focusing knob, and pinion.
(4) *Head assembly.* Place the assembly on the supporting tube and point out the—
(a) *Focusing knob.* Direct the students to focus projector.
(b) *Elevation knob.* Direct the students to adjust elevation, but warn them against turning the elevation knob too far. This can break the mirror.

e. Show how the projector is properly stored in its case.

Summary: Summarize the lesson.

a. Projector PH–637/PFP is designed to project transparency images onto a screen. Because the image is projected onto a screen behind the user, he can face the audience while operating the equipment and conducting the lecture.

b. Note that the operator can write or draw on the transparency during projection.

c. The projector has three parts—

(1) The housing.
(2) The head supporting tube.
(3) The projection head.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 3.

Lesson Title: Application of Techniques and Training Potentials of Projector PH–637/PFP.

Objectives: To familiarize students with the special advantages and training potentials of Projector PH–637/PFP.

References: TM 11–2323 (para 15–25); information sheets.

Training Aids: Projector PH–637/PFP; filters; red carbon; acetate sheet; plexiglass blocks; small C-clamp; Petridish; carbon coated plastic; chemical dyes; magnet; iron filings; cellophane roll; grease pencil; cutouts; operable transparencies to include text advantages of overhead projector and text summary of special advantages of the PH–637/PFP; transparency of DA Form 11–44

(blank 11–44); overlays for map reading; strip tease chart; blank form with overlays of material in colors; organization chart; flow chart; table chart; graphs (a) Bar; (b) Pie; (c) Line; (d) Pictorial; (e) Area; plastic ink and acetate transparency; type cellophane transparency; special type pencils; grease pencil; acetate; carbon-coated plastic; Diazo, single color and multiple color; Diazo, photographic black and white.

Method of Instruction: Demonstration and lecture.

Total Time: 1 hour, 45 minutes.

Introduction: Introduce the lesson.

a. Discuss the capability and versatility of the overhead projector.

b. Refer to the various ways in which instruction can be supported by transparencies or related visual processes.

Demonstration and Explanation: Discuss principal points in lesson.

a. Point out that the overhead projector is designed to be *instructor operated* in front of the training group.

b. Show how the instructor can face the group and maintain *eye contact.*

c. Indicate that page size transparencies are used.

d. Show that lecture notes may be attached to the margin of transparencies for ready reference.

e. Give examples of how cutouts may be used to demonstrate tactical situations.

f. Indicate that operable transparencies show subject function and can be substituted for large makeups and cutaways in many cases.

g. Fill in full size transparency of DA Form 11–44 while students follow step-by-step instructions with actual form.

h. Demonstrate how the grease pencil is used as a pointer, and how pertinent points and key words can be underscored or circled.

i. Demonstrate how materials may be disclosed line by line. (Use cover sheets; point out that the instructor can read through the cover sheets—keeping ahead of the students.)

j. Show how overlay materials are produced. Discuss: map overlays, color overlays, and strip tease charts.

k. Show the following charts: organization, flow or tree, table chart, cutaway, diagram, exploded view, graphs (bar, pie, line, pictorial, and area).

l. Demonstrate use of cellophane roll to—

(1) Protect photographic color transparencies.

(2) Provide extemporaneous drawings.

(3) Provide lesson notes (prepared in advance with grease pencil).

m. Demonstrate use of carbon coated plastic.

Summary: Summarize the lesson.

a. Transparencies are prepared in many different ways: pen and ink; typed cellophane; grease pencil on acetate; carbon coated plastic; special type pencils; Diazo, single color and multiple color; photographic, black-and-white and color.

b. Transparencies have special advantages. (Use transparency that lists special advantages, and discuss each point.)

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 4.

Lesson Title: Layout Design.

Objectives: To familiarize students with basic fundamentals of design and layout needed for effective graphic materials production.

References: Instructor notes.

Training Aids: Still Picture Projector AP–4; tape recorder; slide set; and taped commentary.

Method of Instruction: Illustrated lecture.

Total Time: 30 minutes.

Introduction: Introduce the lesson.

a. Graphics made possible the first recording and accumulation of experience other than through the memory of man. As early as 20 to 25 thousand years B.C., primitive men drew pictures on the walls of caves to depict hunting, traveling, and religious ceremonies. These cave paintings illustrate the high degree of skill reached by early man in expressing himself pictorially.

b. Graphics speak a universal tongue that can surmount language barriers. On the wall of the main temple of Ramses III—Medinet Habu—in Egypt, there is a striking relief that depicts the pharaoh and his party hunting wild bulls in a swamp alive with water birds. Stone carvings of this type demonstrate the amount of information that can be communicated pictorially.

c. If graphics are to have eye appeal and effectively communicate ideas to others, some fundamentals of design and layout must be considered.

Demonstration and Explanation:

Discuss principal points in lesson.

a. Design is the purposeful arrangement of the elements of a composition. These elements are the lines, shapes, colors, copy (lettering), and space.

b. Before we begin the designing process, we must consider the following:

(1) *Subject matter or use.*

(a) What are we to communicate?

(b) What points, processes, operations, and ideas need visualizing?

(c) How can material best be visualized: overlays, cutouts, animated devices, 2- x 2-inch or 2¼- x 4-inch slides, transparencies, models, cutaways, specimens?

(2) *Audience.*

(a) Background.

(1) Related experiences.

(2) Beliefs.

(3) Drives and anxieties.

(4) Prejudices.

(5) Vocabulary.

(b) Size (number).

(3) *Method of production.*

(a) Number needed.

(b) Time.

(c) Cost.

c. Balance in composition is one of the more important elements of design, and we will consider it first. Since all matter has a tendency to remain in balance, we are disturbed and displeased when we observe something out of balance. Therefore, unbalanced visuals are not as satisfying as those pleasingly arranged. Balance is of two types: formal and informal.

(1) Formal balance is best illustrated with equal figures or objects on each side of a composition. For example, equal tree masses on each side of a composition balance each other. Illustrate formal balance in space or area division.

(2) Informal balance is best illustrated by unequal figures or objects, balanced through placement. Illustrate informal balance in various landscapes and in the space or area division. When large areas are balanced opposite small areas, the division is sometimes more interesting than in equal division.

d. Scientific studies indicate that the eye is attracted to the spot or line that is—

(1) Most contrasting.

(2) Largest.

(3) Most irregular.

(4) Nearest the margin or moving from left to right (due to our reading habits).

(5) Composed of warm colors (attract more attention than cool colors).

e. The path taken by the eye through or about a composition is called movement. We can direct the eye to points of emphasis through lines, arrows, numbers, and colors. A conscious consideration of these factors in planning and layout will produce materials that have impact and eye appeal, and that clearly communicate ideas. When we look at a visual aid, our eyes rest at a point in the upper left hand corner, and then move to the right and downward.

(1) Numbers and colors can be used to give emphasis and organize material.

(2) Shaded areas can be used to represent key words or phrases of copy in color. Attention from a word or phrase at the upper left can be brought down to a word or phrase at the lower right by a red line. Illustrative matter is presented in a blue rectangle.

(3) Color and an arrow can be used to bring attention to the key point of the chart. Key statements, set off by red copy, can be represented by shaded areas. Key points can be emphasized by red spots.

f. In general, our visuals will be more effective and communicate our ideas more clearly if we—

(1) Make material as pictorial as possible.

(2) Keep visuals plain (avoid details) by using simple, stylized, easily recognized symbols.

(3) Say what we have to say with as few words as possible.

(4) Make materials self-explanatory.

Summary: Summarize the lesson by requesting answers to the following questions:

a. What is considered first in designing a visual? Is it use? Is it subject matter?

b. Does the potential audience have any effect on our design?

c. What factors determine the method of preparation?

d. In what ways can we emphasize a particular element of a composition?

e. What constitutes contrast?

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	5.
Lesson Title:	Lettering and Legibility Standards.
Objectives:	To familiarize students with the fundamentals of lettering, the use of guidelines, and the spacing and legibility standards.
References:	Instructor notes.
Training Aids:	Projector PH–637/PFP; cellophane roll; grease pencil; lettering set; transparencies; use of guidelines spacing; legibility chart; chart of art work standards; drafting equipment; photographic letters.
Method of Instruction:	Demonstration and practical application.
Total Time:	1 hour.
Introduction:	Introduce the lesson. Most visuals contain some copy. It is important that we consider fundamentals and standards for producing simple, legible, and attractive copy.
Demonstration and Explanation:	Discuss principal points in lesson. a. Stick to plain letters without serifs, avoid fancy variations. Use upper case (capital) letters for short statements, titles, and labels. b. Use guidelines to keep letters uniformly high. Make sure that both the tops and the bottoms of the letters stay on guidelines. When lettering on transparent or translucent material, place the sheet with the guidelines underneath the material; this eliminates the process of erasing guidelines from the finished drawing. c. Letter spacing, which is the area between letters that must be kept uniform, is done mechanically or optically. (1) Open or circular letters must be closed up to give a pleasing appearance, while straight letters must be spaced farther apart. (2) Demonstrate how legibility and unity are destroyed by mechanical arrangement. (3) Line spacing is important to legibility. If lines are too close, they will be hard to read.

(4) A good starting point is line spacing that is 1½ times the height of letters. When a ruler is used to measure the width or distance, however, the results are seldom pleasing.

d. Letter Size.

(1) For black-and-white line subjects, such as text material, tables, graphs, and outline sketches, use the following chart:

Viewing distance of	*Minimum symbol size of*
128 feet	4 inches
64 feet	2 inches
32 feet	1 inch
16 feet	½ inch
8 feet	¼ inch

(2) When upper and lower case letters are used, the body height of the lower case characters is used to determine the minimum size of the letters.

e. Legibility Requirements for Lettering.

(1) Select the smallest size letters without sacrificing legibility that can be viewed from a distance six times the horizontal width of the projected image (six inches wide, ⅛ inch high). For letter preparation, use—

(*a*) Lettering pen point No. B–6.
(*b*) Lettering pen No. 2.

(2) Select the smallest size letters without sacrificing legibility, that can be viewed from a distance 12 times the horizontal width of the projected image (12 inches wide, ¼ inch high). For letter preparation, use—

(*a*) Lettering pen point No. B–4.
(*b*) Lettering pen No. 5.

(3) In selecting lettering for projectable materials, transparencies, and slides use the rule that an image on the transparency is magnified five times at projector-to-screen distance of six feet. Thus, with a minimum caption size of 1/10 inch, the screen image will be ½ inch at six feet. The image ratio grows larger as the projector is moved farther from the screen.

(4) With 20:20 vision, viewers should be able to read ⅜-inch letters at 20-foot distance.

f. Art Work Size for Projected Visuals.

(1) Size should be convenient for the artist.

(*a*) Excessively large work encourages delicate treatment for good legibility.
(*b*) Very small work demands extreme care in reproduction.
(*c*) Size should be convenient for filing.
(*d*) Standard size should permit use of the same art work for all types of visual aids.

(2) Art work, generally, should be on 8- x 10½-inch stock.

(3) Image size—

(*a*) For 2- x 2-inch and 2¼- x 4-inch slides, art work should be designed so that it presents a neat area of about 6⅝- x 8 3/16-inches. This is called the safe area.

(*b*) 8- x 10-inch transparencies for the overhead projector should have a 5¾- x 7 3/16-inch safe area.

g. Direct each student to—

(1) Letter his name, using ½-inch high letters and space all letters ¼-inch apart.

(2) Letter his name, rank, and organization on two lines, using ½-inch high letters.

(3) Make a nameplate with ultra-foil.

(4) Make a nameplate with photographic letters.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 6.

Lesson Title: Preparation of Transparency, Using Matte Surface Acetate and Special Pencils.

Objectives: To familiarize students with the preparation of ready-to-use transparencies on matte surface acetate.

References: Instructor notes.

Training Aids: Acetate and special pencils (assorted colors); drawing board; 8- x 10-inch original for tracing; film print coater; T-square; masking tape; triangle; transparency mount; and material cost data.

Method of Instruction: Practical application.

Total Time: 45 minutes.

Introduction: Introduce the lesson.

a. Explain the process of using special pencils on matte surface acetate to produce art work and lettering in various colors. Then apply a film print coater to convert the matte to a smooth clear surface. This will produce a projectable transparency.

b. Hand out materials.

Demonstration and Explanation: Instruct the class to proceed in the following manner:

a. Using tape, attach the original on the drafting board face up.

b. Place acetate, matte surface up, on top of the original, tape.

c. Trace the outline of the subject with a black pencil (No. 1 or 2).

d. Color in the details with special pencils.

e. Apply a film print coater to the acetate.

f. Mount the transparency.

g. Use a PH–637/PFP to project the transparency.

Summary: Summarize the main points of the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 7.

Lesson Title: Preparation of Transparency, Using Clear Acetate, Plastics, Inks, Felt Tipped Markers, Carbon Paper, and Carbon Coated Plastic.

Objectives: To teach students to prepare a nonphotographic ready-to-use transparency.

References: Instructor notes.

Training Aids: Clear acetate sheets (10 x 10 inches); plastic inks (assorted colors); felt tipped markers (assorted colors); red carbon paper; carbon coated plastic; T-square; drawing board; ballpoint pens (assorted); triangle; typewriter; transparency mounts; and original for tracing.

Method of Instruction: Practical application.

Total Time: 1 hour.

Introduction: Introduce the lesson.

a. Explain the process of using plastic inks, carbon paper, and felt tip markers on clear acetate. Explain the use of carbon plastic for a negative approach to transparencies.

b. Hand out materials.

Demonstration and Explanation: Instruct class to proceed as follows:

a. For carbon paper and plastic method—
   (1) Place acetate sheet between two sheets of red carbon paper, with carbon surface next to acetate.
   (2) Place sheet of black paper next to one carbon paper sheet.
   (3) Place in typewriter, so that blank paper faces keys.
   (4) Type name and address or other information as desired.
   (5) Remove from typewriter.
   (6) Place on drawing board, with blank paper up, and draw or write with No. 3 pencil.
   (7) Remove acetate, and project on overhead projector.
   (8) Demonstrate how this type of transparency must be mounted between two sheets of acetate to produce a permanent slide.

b. For carbon coated plastic method—
   (1) Place the carbon coated plastic, carbon side up, on the stage of the overhead projector.
   (2) Switch on the projector lamp.
   (3) Write or draw on the plastic with a ballpoint pen, hard pencil, or stylus.
   (4) For color, place colored acetate underneath the carbon coated plastic on the projector stage.
   (5) Use as master for negative Diazo print.

c. Plastic ink on acetate method—
   (1) Tape the original on the drawing board.
   (2) Tape clear acetate on top of the original.
   (3) Trace with black plastic ink, using a speed ballpoint pen.
   (4) After drying, remove the acetate; turn over and color, using felt-tip marking pen.
   (5) Mount the transparency.
   (6) Project on the overhead projector.

Summary: Summarize the main points of the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 8.

Lesson Title: Cutouts that Use Colored Acetate and Masking Tape.

Objectives:	To teach students the process of preparing cutouts for use with transparencies.
References:	Hand out sheet on cutouts.
Training Aids:	10- x 10-inch colored acetate; 1 inch or wider masking tape; scissors; drawing board; No. 2 pencil; cutouts for tracing; plastic cement; colored transparent tapes; knife.
Method of Instruction:	Practical application.
Total Time:	30 minutes.
Introduction:	Introduce the lesson. a. Explain methods of preparing cutouts. b. Hand out materials.
Demonstration and Explanation:	Instruct class to proceed as follows: a. Cover the colored acetate sheet with masking tape, and place it on the drawing board. b. Trace patterns on the masking tape. c. Cut out the patterns with scissors. d. Remove the masking tape from the cutouts. e. Make handles from scraps of clear acetate; attach the handles to the cutouts with plastic cement and allow them to dry. f. Place a transparency on the stage of the overhead projector. g. Maneuver the cutouts on the transparency during projection. h. Affix colored transparent tapes to the transparency.
Summary:	Summarize the principal steps in cutout preparation.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	9.
Lesson Title:	Nomenclature and Operation of Portable Transparency Printer.
Objectives:	To familiarize students with the nomenclature, operation, and maintenance of the portable transparency printer.
References:	Operation and maintenance guide for portable transparency printer.
Training Aids:	Transparency printer; 3 sheets Diazo film; ammonia; 1 sheet Diazo paper; pen-and-ink tracings; transparen-

tizing solution; original print suitable for transparency production.

Method of Instruction: Demonstration and lecture.

Total Time: 45 minutes.

Introduction: Introduce the lesson.

a. The portable transparency printer is a device used to make transparencies or slides by the Diazo method. It can also be used either for exposing and dry developing of Diazo materials or for exposing photographic autopositive materials requiring processing in conventional photographic solutions.

b. Diazo is a class of light-sensitive chemicals that form dyes in the presence of ammonia. When exposed to ultraviolet light, however, these chemicals lose their capacity to form dyes.

c. Manufacturers of Diazo coat the base materials, such as paper, clear plastic, and fabrics, with a sensitized emulsion. Diazo paper, for example, may be used for making paper prints of letters, drawings, etc. Diazo coating on clear plastic is used to produce transparencies in various colors.

Explanation: The portable transparency printer consists of a printing unit and a developing unit.

a. Show a printer assembled for carrying.

b. Separate printing and developing units.

(1) Indicate that the printing unit consists of—

(*a*) The housing, containing seven 15-watt fluorescent lamps, rich in ultraviolet, together with starters and ballasts.

(*b*) A momentary switch.

(*c*) A master switch.

(2) Loosen the fasteners, and show how the lamps and starters are removed and replaced. Point out the switches.

(3) Close the cover, tighten the fasteners. Point out the—

(*a*) Printing glass.

(*b*) Pressure plates and pressure springs.

(*c*) Arm and latch.

(4) Show how the momentary switch is closed when the arm is latched down.

(5) Show the timer. Indicate that the timer can be set up to 10 minutes, and that each minute of scale is divided into 15-second intervals. To insure sharp and clear prints the materials should be single sheet and should make good contact. If the springs have become worn, it may be necessary to bend them to insure sufficient pressure.

(6) Demonstrate and point out the main components of the developing unit. The developing unit consists of—

(*a*) The housing, consisting of an upper and lower portion separated by an ammonia pan. The upper portion, or ammonia chamber, contains a window through which development can be observed. The lower portion contains a heating chamber and heater, a thermostat, and a pilot light. Demonstrate how these components are adjusted and how the pilot lamp is replaced.

(*b*) The ammonia storage and dispensing system, consisting of a bottle is mounted on a special bracket. The bottle is opened and closed by means of a bulb; in turn, it is controlled by a pair of cam-activated shutoff clamps arranged to prevent simultaneous release of both clamps. The end of the bulb terminates in a stainless steel tube that projects through a hole into the wall of the ammonia chamber. The bulb should be squeezed, when necessary.

(*c*) The copy tray holds film for reproduction dye side up, under the holddown springs.

Demonstration: Demonstrate the operation of the printer.

a. Place the printer on a table, and connect the power cable of the printer and the developing unit. The developing unit should be at least 5 feet from the printing unit to prevent ammonia fumes from spoiling open packages of Diazo materials.

b. Place the master to be copied on the printing glass, ink side up.

c. Place the Diazo film, dye side down, on top of the master. (Show how to determine dye side).

d. Set the timer for approximately 1 minute.

e. After exposure, place the film in the tray of the developing unit.

f. Place the tray in the ammonia chamber, squirt ammonia into the chamber, and watch the development through the window. If image details are lost, reduce exposure time. If there is image background color, increase exposure time.

Summary: Summarize the lesson.

a. The portable transparency printer is designed to

produce Diazo transparencies or slides. However, it may also be used for photographic auto-positive material production.

b. Diazo sensitized emulsions are available in a wide range of base materials.

c. The portable transparency printer has two parts—

(1) The printing unit.

(2) The developing unit.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	10.
Lesson Title:	Nomenclature and Manipulation of Projecto-Printer.
Objectives:	To familiarize students with the nomenclature and operating procedure of the Projecto-Printer.
References:	Operating instructions for Projecto-Printer; TM 11–2323; instructor notes.
Training Aids:	Projecto-Printer; ammonia; 1 sheet Diazo film or paper; material to be reproduced.
Method of Instruction:	Demonstration.
Total Time:	1 hour.
Introduction:	Introducing the lesson. The Projecto-Printer is designed to produce transparencies used with overhead projectors. These transparencies can be made from all types of transparent, translucent, opaque, two-side printed, and bound or unbound visual materials. The printer, which will handle 8½-x 11-inch copy, will accept both Diazo and photo reflex materials. The photocopy process calls for a single solution development process.
Explanation:	Point out the principal parts of the Projecto-Printer. The Projecto-Printer consists of a printing device, a Diazo developing unit, a photocopy processor, and a case. Explain to students the function of the following components: a. Case. b. Air pump. c. Yellow or orange filter. d. Air cushion. e. Printer. (1) Blue-light fluorescent tubes. (2) Printing glass.

(3) Timer.
(4) Two-case latches.

f. Diazo developing unit.
(1) Plastic shell.
(2) Metal insert circuit.
(*a*) Lamp, switch.
(*b*) Copy holding springs.
(3) Sponge.

g. Photocopy processor.
(1) Rubber pressure rollers.
(2) Crank.
(3) Chutes.
(4) Siphon and bottle assembly.
(*a*) Plastic bottle and cap.
(*b*) Rubber tubing.
(*c*) Plastic tube.

Demonstration: Demonstrate the operation of the Projecto-Printer.

Both the Projecto-Printer and the Printing and Dry Developing Machine ES–19 function identically with either Diazo or photo-reflex materials. Diazo material is used as follows:

a. Place the material to be copied on plexiglass printing glass, ink side up.

b. Place the Diazo film, emulsion side down, on the original. Show how the emulsion side is determined by the notch in the film.

c. Set the timer for approximately 2 minutes.

d. After the film has been exposed—
(1) Place the Diazo film, dye side out, around the metal insert of the developing unit; secure it with copy holding springs.
(2) Saturate the sponge with 26 percent aqua ammonia solution.
(3) Return the insert to the plastic shell. Watch image development. If details do not come out, or are lacking in contrast, decrease the exposure. If there is background color, increase the exposure.

Summary: Summarize the lesson.

a. The Projecto-Printer and the Printing and Dry Developing Machine ES–19 operate identically when used to produce Diazo prints or transparencies.

b. The developing unit of the Projecto-Printer is simpler and more foolproof than that of the Printing and Dry Developing Machine ES–19.

c. The following lesson will cover the photo-reflex process and the photocopy processor.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	11.
Lesson Title:	Reflex Printing.
Objectives:	To familiarize students with the principles and advantages of reflex printing.
References:	Manual for the portable transparency printer; Projecto-Printer manual; TM 11–2323, paragraph 29; instructor notes.
Training Aids:	Projector PH–637/PFP; transparencies.
Method of Instruction:	Lecture.
Total Time:	30 minutes.
Introduction:	Introduce the lesson.

a. Reflex printing permits the copying of materials having printing, or an illustration, on both sides of opaque material. The light allowed to pass through the film to the original being copied is reflected back to the light sensitive film emulsion only by the white areas of the original. Since direct light has no appreciable effect on the film emulsion, only additional exposure, caused by the reflected light, affects the film.

b. There are two types of reflex materials with which we are concerned—

(1) Materials requiring wet development by conventional photographic chemicals.

(2) Photocopy materials requiring semimoist one chemical processing.

c. The Projecto-Printer can be used for both types of reflex printing, because it is equipped with a special processing unit to permit one chemical processing.

Demonstration and Explanation: Point out that the exposure process is the same with both types of printing methods.

a. Procedures involved in printing are as follows:

(1) Place a yellow or orange filter on the printer.

(2) Place reflex material, emulsion side up, on the filter.

(3) Place the original, image side down, on the film.

(4) Expose the film (exposure depends on the sensitivity of the reflex material and the

brightness range of the surface reflection of material to be copied).

(5) Develop the exposed material.

(6) Wash and dry the material.

b. The operation of the Projecto-Printer, using one solution materials, is as follows:

(1) Place a yellow or orange filter on the printing glass.

(2) Place the negative, paper emulsion side up, on the filter.

(3) Place the original, image side down, on the film (lift the image from a manual without removing the page from the book).

(4) Expose the film for approximately 15 seconds.

(5) Place the photocopy film, emulsion side down, on the right-hand chute of the processing unit.

(6) Place the exposed negative paper, emulsion side down, on the left-hand chute of the processing unit.

(7) Slowly turn the unit crank clockwise, so it takes 15 seconds for the papers to pass through.

(8) Observe that the image turns from white to dark brown.

(9) Peel the material apart, and project it to demonstrate the speed of the process.

c. Whenever materials become too dark, they have been underexposed. To correct this error, repeat the process and increase the exposure time. Materials that are too light are overexposed. To correct this error, decrease exposure time.

d. Reflex materials to be discussed include the following:

(1) Emulsions requiring conventional photochemical processing.

(2) Emulsions requiring one solution development.

(3) Auto-positive emulsions used for halftones and continuous tone.

(4) Sensitized papers for line drawings. These materials are least expensive and can be transparentized. Highlight transparent paper does not require transparentizing.

e. Display samples of each type of material and discuss each in detail.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 12.

Lesson Title: Mixing Chemicals for Photo-Reflex Process.

Objectives: To familiarize students with photographic chemicals used in subsequent lessons.

References: Instructions and directions stated on chemical containers.

Training Aids: Four photographic processing trays; auto-positive paper; auto-positive film; originals; photographic paper; developer; short stop (acetic acid); acid fixer; water; three gallon bottles; graduate (one quart size); funnel; glass stirring rod; blackboard.

Method of Instruction: Demonstration.

Total Time: 30 minutes.

Introduction: Introduce the lesson.
Have students copy formulas from the blackboard. Make applicable introductory statements.

Demonstration and Explanation: Proceed with the mixing of chemicals, retaining the following order:

a. *The developer stock solution.*

(1) Pour three quarts of water into a one-gallon bottle.

(2) Prepare the stock solution by pouring the dry-contents of the developer container into the three quarts of warm water (100° Fahrenheit). Stir the mixture continuously to keep the chemicals suspended.

(3) Add water to make one gallon of solution. Continue stirring until all chemicals are dissolved and the solution is uniform and free of solid matter.

(4) Pour 32 ounces of stock solution into the developer tray, and add 64 ounces of water; then stir.

b. *The short stop bath.*

(1) Add 3 ounces of acetic acid to 8 ounces of water to prepare a stock solution.

(2) Pour 32 ounces of water into the tray, add 1½ ounces of stock solution of acetic acid, and stir.

c. *The acid fixer.*

(1) Pour the contents of the fixer container into three quarts of water (not above 80° Fahr-

enheit). Stir continuously until the powder is completely dissolved.

(2) Add one quart of water, and stir.

(3) Pour the desired amount into a photographic tray.

d. *The water wash bath.* Pour water into the fourth tray for material washing. Water should be continuously replenished, if possible, to speed up the process of washing out chemical traces of acid fixer in the printing material.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 13.

Lesson Title: Printing from Opaque Material on Auto-Positive Paper and Film and Repro-Negative Paper.

Objectives: To familiarize students with photoreflex printing and developing.

References: Instructor notes; cost data sheet.

Training Aids: Printing and Dry Developing Machines ES–19; Projecto-Printer; white light fluorescent tubes; filter; chemicals (mixed in previous lesson); auto-positive paper and film; repro-negative paper; originals.

Method of Instruction: Demonstration.

Total Time: 15 minutes.

Introduction: Introduce the lesson.
Give brief statement to familiarize students with lesson subject.

Demonstration and Explanation: Discuss principal points in lesson.

a. Proceed according to paragraph 1 of demonstration and explanation in lesson plan 11.

b. Print the repro-negative paper in an identical manner.

c. Emphasize the effect white light has on auto-positive film and paper and point out that film will not print when exposed to blue light.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 14.

Lesson Title: The Photo-Reflex Process and Field Expedient Preparations.

Objectives: To demonstrate transparency production by the photo-reflex method, without projecto-printer.

References: Instructor notes.

Training Aids: Printing frame; No. 2 photoflood lamp; clamp socket and cord; 4 trays; photo chemicals (mixed in lesson 12); yellow or orange filter; auto-positive paper and film; repro-negative paper.

Method of Instruction: Demonstration.

Total Time: 15 minutes.

Introduction: Introduce the lesson.
Discuss the requirements for, and the conditions under which, field expedients are used in transparency preparation.

Demonstration and Explanation: Explain the steps involved in using a printing frame.

a. Load the printing frame as follows:
   (1) Place filter next to glass.
   (2) Place auto-positive film next to filter, emulsion side away from glass.
   (3) Place original face down on auto-positive film.

b. Close the printing frame.

c. Expose the glass surface of the printing frame to a No. 2 photoflood lamp for approximately one minute.

d. Remove the film and develop in photographic processing solution.

e. Repeat the procedure, using auto-positive paper and also repro-negative paper.

f. Repeat the demonstration, using auto-positive paper and exposing the printing frame to sunlight instead of the photoflood lamp.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 15.

Lesson Title: Photo-Reflex Printing and Developing.

Objectives: To give students practical experience in the preparation of masters for transparencies by the photo-reflex method.

References: Cost data sheet; instructor notes.

Training Aids: Same as for lesson 13.

Method of Instruction: Practical application.

Total Time: 1 hour, 45 minutes.

Introduction: Introduce the lesson.
Distribute materials, explain handling of sensitized materials, and give instructions on the application of equipment.

Demonstration and Explanation: Discuss principal points in lesson.

a. Supervise preparation of masters by students in accordance with instructions given in lessons 9 through 14.

b. Check results as work progresses.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 16.

Lesson Title: Transfer Process Reflex Printing.

Objectives: To teach students the transfer reflex process.

References: Operating instructions for Projecto-Printer; instructor notes.

Training Aids: Projector-Printer; orange or yellow filter; negative standard paper and opaque positive paper; negative waterproof paper and translucent positive paper and transparent positive film (8½ x 11 inches); processing solution; original material to be reproduced.

Method of Instruction: Lecture-demonstration.

Total Time: 1 hour.

Introduction: Introduce the lesson.

a. The transfer process is used when a Projecto-Printer is available.

b. This process uses a chemical and a mechanical processor to produce paper copies, masters, or transparencies from opaque originals.

c. This process is recommended for use in reproducing line drawings. It is not as reliable for halftones as the photo-reflex process.

Demonstration and Explanation: Discuss principal points in lesson.

a. To mix the chemicals, proceed as follows:

(1) Study the instructions on the container.

(2) Mix the chemicals according to instructions.

b. Display the various materials, and explain their application.

c. Load the paper safe with standard negative paper.

d. Pour the chemical solution into the processor, and describe the correct operation of the processor.

e. Prepare a negative paper print from an original, as follows:

(1) Place the filter on the projecto-printer stage.

(2) Place the original, face up, on the printer stage.

(3) Take a sheet of standard negative paper from the paper safe.

(4) Place the sheet of negative paper, emulsion side down, on the original.

(5) Pick up both the original and negative paper, turn them over in unison, and place both on the printer stage with the negative paper sheet next to the light source.

(6) Close the printer.

(7) Set the timer for approximately 25 seconds.

(8) Expose the sensitized paper.

f. Develop the positive paper as follows:

(1) Place the sheet of positive paper on the short flap. Let it engage the roller, with the emulsion side turned toward the flap.

(2) Remove the negative paper from the printer and place it on the opposite flap, with the emulsion side next to the flap.

(3) Insure that both negative and positive sheets are snug against the respective rollers.

(4) Turn the photocopy processor slowly in a clockwise direction, allowing about 15 seconds for the papers to go through.

(5) Complete the development process (about 10 seconds).

(6) Finally, separate the positive and negative sheets.

g. Check results for clarity and contrast. The following conditions require specific measures.

(1) If the print background is too dark, repeat the process and increase exposure.

(2) If the print image is too light or burned out, repeat the process and decrease exposure.

h. Repeat the process, using waterproof negative paper, translucent paper, and transparent film.

i. Carefully check the results to determine image quality.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 17.

Lesson Title: Reflex Printing with Negative and Positive Materials.

Objectives: To give students practical experience in producing reflex copies, masters, and transparencies by the transfer processes.

References: Same as for lesson 16.

Training Aids: Same as for lesson 16.

Method of Instruction: Practical application.

Total Time: 2 hours.

Introduction: Introduce the lesson.

a. Explain the procedure and the application of materials and equipment.

b. Describe the type of printing to be performed.

Demonstration and Explanation: Discuss principal points in lesson.

a. Direct students to follow procedures outlined in lesson 16.

b. Supervise student work, observe production steps, and discuss results.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 18.

Lesson Title: Types of Masters.

Objectives: To acquaint students with the different types of masters that may be used in making Diazo prints.

References: Instructor notes; TM 11–2323.

Training Aids: Drawing ink; tracing paper; transparentized original (printed on one side only); carbon coated plastic; typed carbon on tracing paper; photographic master; reflex masters; auto-positive film; auto-positive paper; transparent paper; positive film; auto-positive paper; transparent paper; positive film; special papers and foils; material to be reproduced.

Method of Instruction:	Demonstration and lecture.
Total Time:	30 minutes.
Introduction:	Introduce the lesson. Diazo prints can be made from a variety of masters. This lesson will cover the most common types of masters. Diazo printing requires a contrasty master to insure clear and contrasty results.
Demonstration and Explanation:	Exhibit different types of masters, and show their practical application.
Summary:	Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	19.
Lesson Title:	Preparation and Printing of a Plain Master.
Objectives:	To show students the comparative effectiveness of transparencies made from masters prepared with pencil, india ink, and opaque tape.
References:	None.
Training Aids:	Tracing paper; No. 2 pencil; india ink; speed ball pen; opaque tape; Diazo film; Projecto-Printer or Printing and Dry Developing Machine ES–19; ammonia developers; ammonia; Projector PH–637/PFP.
Method of Instruction:	Practical application.
Total Time:	45 minutes.
Introduction:	Introduce the lesson. Explain objective of the lesson and the range of subject matter.
Demonstration and Explanation:	Discuss principal points in lesson. a. Instruct class to copy a selected sketch from an overhead projector on tracing paper, using pencil, india ink, and opaque tape. b. Print the image on red film. c. Develop the exposed film in ammonia vapor.
Summary:	Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	20.

Lesson Title: Principles of Diazo Printing.

Objectives: To introduce the principles of the Diazo process.

References: Instructor notes; TM 11–2323.

Training Aids: Projecto-Printer; Printing and Dry Developing Machine ES–30; printing frame; No. 2 photoflood lamp; ammonia developers; Diazo paper and film; 26 percent ammonium hydroxide solution; Projector PH–637/PFP; masters.

Method of Instruction: Lecture-demonstration.

Total Time: 1 hour.

Introduction: Introduce the lesson.
Refer to the introduction on Diazo papers and films, and repeat pertinent points.

Demonstration and Explanation: Discuss principal points in lesson.

a. Display Diazo papers and films.
   (1) Show and identify Diazo materials listed in cost data sheet (pages 1 and 2).
   (2) Teach recognition of the sensitized dye side of Diazo materials.
      (*a*) Explain the notch method of Diazo films.
      (*b*) Explain recognition of the paper material by sight.
      (*c*) Explain the recognition of materials by touch and taste.

b. Demonstrate the principles of printing exposure.
   (1) Show the effect of ammonia vapor on unexposed Diazo film.
   (2) Show the effect of ultraviolet radiation on unexposed Diazo film by placing exposed film in ammonia vapor.
   (3) Using a printing frame and a pickle jar, show the effect of ultraviolet radiation on the master.
   (4) Check the printing results after developing.
      (*a*) If image background appears, the film is underexposed. For good results, printing exposure time must be increased.
      (*b*) If the image is burned out or weak, the film is overexposed. For good results, printing exposure time must be decreased.

c. Demonstrate and repeat the above processes using the Projecto-Printer.

Summary: Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	21.
Lesson Title:	Preparation of Masters for Diazo Printing.
Objectives:	To give students practical experience in preparation of masters for Diazo printing.
References:	TM 11–2323; instructor notes; miscellaneous instructions prepared by manufacturers of materials.
Training Aids:	Drafting instruments; tracing paper; black drawing ink; speed ballpoint pens; opaque tapes; orange and black carbon paper; special papers and foils; photographic letters; art letters; transparentizing solution; transparent tape; absorbent cotton; paper towers; masters.
Method of Instruction:	Practical exercise.
Total Time:	2 hours, 15 minutes.
Introduction:	Introduce the lesson. Introduce each type of master, and give applicable instructions on actual preparation.
Demonstration and Explanation:	Discuss principal points in lesson.

a. Proceed as follows:

(1) Give students originals for tracing.

(2) Direct students to mount an original on a drawing board.

(3) Have students place tracing paper over original.

(4) Direct students to trace originals with pen and black drawing ink.

(5) Let each student file his tracing for future use.

b. Explain what is involved in the production of four-color multicolor masters. Proceed as follows:

(1) Give students originals for tracing.

(2) Direct students to mount an original on a drawing board.

(3) Direct students to place registration marks on the original.

(4) Let each student trace a 4-color separation master from an original in accordance with instructions.

(5) Make sure that each student marks his tracing as to color and exposure time.

(6) Insure that each student files his material for future use.

c. Explain the production of masters for flipover transparencies. Then proceed as follows:

(1) Give each student a DA Form 11–44.

(2) Direct students to place the following items on the drawing board in the given order:

(*a*) An orange carbon, with the carbon side up.

(*b*) A sheet of tracing paper.

(*c*) An orange carbon, with the carbon side down.

(*d*) A DA Form 11–44.

(3) After assembling the various sheets, have students place them in a typewriter so that the keys will strike the face of the form.

(4) Have students fill out the form with the typewriter.

(5) Upon completion, have students remove the sheets from the typewriter, separate the tracing paper, and file the form for future printing with the reflex master of DA Form 11–44 prepared in lesson 17.

(6) Give students another sheet of tracing paper, and have them proceed as in (2), (3), and (4) above, using the same form. Direct them to fill in showings and attendance.

(7) Have students proceed as in (5) above.

(8) Insure that students mark the masters of DA Form 11–44 and the typed overlays for color and time. Direct them to refile the masters for future Diazo printing.

d. Explain the steps involved in color separation master production, using special paper and ultrafoil film. Then proceed as follows:

(1) Direct students to remove the lesson 17 masters from folder, and have them print two extra copies.

(2) Have students prepare one ultrafoil film print from the same original.

(3) Let students cut out color separation elements from the ultrafoil film.

(4) Have students tape the ultrafoil elements to the two sheets of special paper, making sure that they coincide with images on the transparent tape. Properly done, the procedure achieves color registration.

(5) Direct students to mark masters for color and exposure time and file materials for future printing.

e. Using selected originals, direct students in the preparation of masters with superfoil, red-brown foil, sepia film, and sepia paper. Materials may be used with special or tracing paper. Production steps should be as in d above.

f. Explain the use of masters for making a book cover. Then proceed as follows:

(1) Use ultrafoil masters prepared from phototype and art letters, and others ultrafoil masters, tracing paper, transparent tape, and opaque tape, to guide students in the preparation of a master for a book cover.

(2) Upon completion, have students file the masters for future printing.

g. Using transparentizing solution, absorbent cotton, and paper towels, have student transparentize autopositive masters prepared in lesson 15.

Summary: Summarize the lesson, and insure that students have properly marked and filed masters prepared in this lesson for future use.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 22.

Lesson Title: Enlarging Illustrations Using Still Picture Projector AP–5(1).

Objectives: To give students practical experience in enlarging material by projection and in preparing masters from projected opaque illustrations.

References: Instructor notes on projector; TM 11–2330A.

Training Aids: Still Picture Projector AP–5(1); selected small illustrations; red pencil; black drawing ink; speed ball pen.

Method of Instruction: Practical application.

Total Time: 1 hour.

Introduction: Introduce the lesson.
Demonstrate the use of opaque projectors, and direct the students to select a small illustration from a technical manual or other text source for an 8- x 10½-inch enlargement.

Demonstration and Explanation: Point out and explain the principal parts of Still Picture Projector AP–5(1). Instruct the students to proceed as follows:

a. Select a small illustration.

b. Place the illustration in the stage of the opaque projector.

c. Project the illustration upon the wall.

d. Tape an 8- x 10½-inch sheet of tracing paper on the wall in a horizontal position.

e. Move the projector until the projected image fits within the 8- x 10½-inch sheet of tracing paper.

f. Focus the image carefully.

g. Trace the image outline with a red pencil.

h. Remove the tracing paper from the wall; return to the worktable and fill in the traced outline with black drawing ink.

i. Remove the small illustration from the projector.

Summary: Summarize the lesson.

a. The projector simplifies enlarging and reproduction of small, simple illustrations.

b. The produced material should be filed for future use.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	23.
Lesson Title:	Reversing Positive Master to a Negative.
Objectives:	To give students practical experience in reversing masters.
References:	Manufacturers' instructions; instructor notes.
Training Aids:	Projecto-Printer; reversing film; ultrafoil; photo tray; water.
Method of Instruction:	Practical application.
Total Time	45 minutes.
Introduction:	Introduce the lesson. Explain the reversal process and why ultrafoil is used for the final master production.
Demonstration and Explanation:	Instruct students to proceed as follows: a. Take the ultrafoil master of the book cover (made in lesson 21) out of the file. b. Place the master on the printer stage. c. Set the timer of the printer to conform with the marking on the master. d. Place the copy film over the master (either side up).

e. Close the printer and expose the copy film.

f. Remove the copy film from the printer, and develop the copy film in water.

g. Hang the film up to dry.

h. When dry, mark the film for expcsure.

i. Remove the positive ultrafoil from the printer and file it.

j. Place the reversed film on the printer stage.

k. Place ultrafoil film over the reversed film.

l. Set the prínter timer and expose the film.

m. Remove the ultrafoil from the printer and develop it in ammonia.

n. Remove the master from the printer and file the master and ultrafoil negatives for future use after marking it for exposure time and color.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 24.

Lesson Title: Diazo Printing.

Objectives: To give students practical experience in Diazo printing, developing, and transparency mounting.

References: Same as for lesson 20.

Training Aids: Projecto-Printer; ammonia developers; assorted colors of Diazo film; 26 percent aqua ammonia; masters made in previous lessons; mounts; marking tape.

Method of Instruction: Practical application.

Total Time: 4 hours, 15 minutes.

Introduction: Introduce the lesson.

a. Conduct a short review of Diazo process and materials needed.

b. Outline the scope of the work to be performed.

Demonstration and Explanation: Discuss principal points in lesson.

a. Supervise students in the preparation of Diazo transparencies (as outlined in lesson 20), using masters prepared in lessons 5, 7, 15, 17, 19, 21, 22 and 23.

b. Have students mount transparencies in accordance with instructions.

(1) One color transparencies.

(2) Multicolor transparencies.

(3) Flipover transparencies.

c. Have students prepare book covers, using aluminum Diazo paper from master made in lessons 21 and 23.

d. Check results of the class work by projecting a selection of Diazo transparencies prepared by students.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 25.

Lesson Title: Diazo Printing using Field Expedients.

Objectives: To give students practical experience in using field expedients to produce Diazo transparencies.

References: Instructor notes; directions for use of field expedients in Diazo printing.

Training Aids: Printing frame; No. 2 photoflood lamp; plate glass; masonite or plywood; pickle jar; 26 percent aqua ammonia, assorted colors of diazochrome film.

Method of Instruction: Practical application.

Total Time: 45 minutes.

Introduction: Introduce the lesson.

a. Briefly review equpiment and materials.

b. Instruct the class on what is to be done in this lesson.

Demonstration and Explanation: Discuss principal points in lesson.

a. Instruct the class to proceed with transparency production as outlined in lesson 14.

b. Supervise and assist the students in any phase requiring guidance.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 26.

Lesson Title: Preparing Diazo Transparencies for Still Picture Projector AP–4.

Objectives: To familiarize students with the preparation of 3¼- x 4-inch slides for lantern slide projectors.

References: Operating instructions for Projecto-Printer; operating instructions for portable transparency printer; instructor notes on Still Picture Projector AP–4.

Training Aids: Still Picture Projector AP–4; Diazo foils; tracings of 6 slides; 20 sheets clear acetate; masking tape; negative and film; Projecto-Printer; reflex film with six 3¼- x 4-inch lantern slides prepared in previous lesson.

Method of Instruction: Demonstration and practical exercise.

Total Time: 30 minutes.

Introduction: Introduce the lesson.

This lesson will cover the preparation of 3¼- x 4-inch lantern slides for Still Picture Projector AP–4. The projector is particularly suited for auditorium use, when large audiences are involved. Because of the relatively modest transparency size, preparation can be quick and simple. Six transparencies can be prepared on an 8½- x 11-inch sheet of Diazo foil or reflex material at one time.

Demonstration and Explanation: Point out the principal parts of the projector and proceed with the preparation of a slide.

a. Show proper mounting and binding of transparencies.

b. Have each student mount a sheet of transparencies, using reflex materials and Diazo materials.

c. Direct each student to—

(1) Cut and bind one reflex slide.

(2) Cut and bind on Diazo slide.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 27.

Lesson Title: Special Methods of Producing Multicolor Transparencies.

Objectives: To familiarize students with special methods of preparing a multicolor transparency and a paper print.

References: Instructor notes.

Training Aids: Projecto-Printer; Projector PH–637/PFP; printing frame; photoflood lamp; color separation masters prepared in previous lessons; special films; special copying paper; special developing powders; multicolor dispenser cans.

Method of Instruction: Lecture-demonstration.

Total Time: 1 hour.

Introduction: Introduce the lesson.

Multicolor transparencies may be prepared by any one of the following methods:

a. Through handwork and the application of colored inks.

b. Through the ammonia Diazo process, using a separate overlay for each color and requiring a separate master for each color as demonstrated in previous lesson.

c. Through the multicolor process, producing all colors on one film from one master.

Demonstration and Explanation: Discuss principal points in lesson.

a. Identify and explain the use of the following materials:

(1) *Copy films.*
- (*a*) Explain how colors are applied to one side.
- (*b*) Explain how colors are applied to both sides.
- (*c*) Explain the use of the material for making masters only.

(2) *Copying papers.*
- (*a*) Explain how colors are applied thinly, for making quick copies.
- (*b*) Explain how colors are applied heavily, for making glossy paper copies with white background.
- (*c*) Explain how an aluminum background is made for a book cover.

(3) *Developers*
- (*a*) Explain the use of chemical powders to produce the following colors:
  - *1.* Black.
  - *2.* Blue.
  - *3.* Brown.
  - *4.* Red.
  - *5.* Yellow.
- (*b*) Explain the use of premeasured chemicals in dispenser cans to produce the following colors:
  - *1.* Black.
  - *2.* Blue.
  - *3.* Brown.
  - *4.* Red.
  - *5.* Yellow.

b. Demonstrate and explain the application of developers to paper and film.

(1) Apply developers to unexposed paper to demonstrate the formation of dyes before the paper is exposed to ultraviolet light.

(2) Expose the paper for one minute to ultraviolet light in the printer. Then apply the developer to demonstrate that dye will not form after exposure to ultraviolet light.

(3) Taking selected masters, prepare actual prints using all papers and films. Follow the printing by developing exposed materials with both types of developers. Demonstrate the technique of applying chemicals to film over masters to achieve color separation.

c. Check results after developing.

(1) If image backgrounds appear too dark, the print is overexposed. Repeat the process and increase exposure time.

(2) If image is too light or burned out, the print is overexposed. Repeat the process and reduce exposure time.

Summary: Summarize the lesson.

LESSON PLAN

Course: Transparency Preparation.

Lesson No: 28.

Lesson Title: Mixing Developing Powders for Multicolor Process.

Objectives: To familiarize students with chemical mixing techniques, and to prepare developing solutions for the next workshop lesson.

References: Instructions given on chemical packages.

Training Aids: 32-ounce graduate; stirring rod; five-quart size brown glass bottles; developing powders; water.

Method of Instruction: Lecture-demonstration; practical application.

Total Time: 45 minutes.

Introduction: Introduce the lesson.

a. Hand each student an applicable package of chemical developing powder.

b. Instruct students to read and follow the instructions on the package.

Demonstration and Explanation: Have students mix chemicals according to instructions. Direct them to pour the liquid into the brown glass bottles after mixing. Supervise each step. When the preparation of the developing solution is completed, explain how it will be used in future practical work.

Summary: Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	29.
Lesson Title.	Multicolor Process Printing.
Objectives:	To give students practical experience in using the Bruning process to produce multicolor transparencies and paper prints.
References:	Same as for lessons 27 and 28.
Training Aids:	Same as in lesson 27, plus the following: Five petri dishes for each student; absorbent cotton on sticks; masters prepared in lessons 15, 17, 21 and 23; water and moist cheesecloth; a 16- x 20-inch sheet of white paper; mounts and tape.
Method of Instruction:	Practical application.
Total Time:	2 hours, 45 minutes.
Introduction:	Introduce the lesson. a. Have students arrange the following materials on tables provided for practical work. (1) Five petri dishes. (2) A 16- x 20-inch sheet of white paper. (3) Absorbent cotton on sticks. (4) Moist cheesecloth. (5) Selected masters. b. Have students pour chemical solution from brown bottles into petri dishes, and mark dishes for color. c. Have students arrange materials in place near printers. d. Briefly outline the scope of the practical work.
Demonstration and Explanation:	Discuss principal points in lesson. a. Direct and supervise the printing and developing of films and papers in conformance with instructions given in lesson 27. b. Show students how the Projecto-Printer processor is used for one-color development and final-color development. c. Have students complete work on the book covers, using aluminum paper and dispenser cans and applying masters prepared in lessons 21 and 23. d. Have students mount transparencies. e. Check and comment on individual results.
Summary:	Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	30.
Lesson Title:	Material Costs and Sources.
Objectives:	To familiarize students with the price of materials and where they may be procured.
References:	Instructor notes.
Training Aids:	Material cost data handout; related manufacturers materials.
Method of Instruction:	Lecture-discussion.
Total Time:	45 minutes.
Introduction:	Introduce the lesson. Hand out material cost data sheets, making sure that each student has a copy. Students retain these permanently for future reference. Explain that the entire data sheet matter will be discussed.
Demonstration and Explanation:	Discuss principal points in lesson. a. Go over the data sheet, item by item, reviewing nomenclatures, usages, prices, and sources. b. Encourage the students to ask questions and discuss the material, emphasizing the items most frequently used and associating them with previous lessons and practical exercises.
Summary:	Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	31.
Lesson Title:	Display of Finished Transparencies and Other Materials.
Objectives:	To critique student work, compare results, and review subject matter previously covered.
References:	None.
Training Aids:	Projector PH–637/PFP; Still Picture Projector AP–4.
Method of Instruction:	Student discussion.
Total Time:	30 minutes.
Introduction:	Introduce the lesson. Outline the method and purpose of the lesson, indicating procedure to be used.

Demonstration and Explanation:	Instruct students to select one or two transparencies for presentation to class. a. Have each student come forward, in turn, to display the transparencies or 3¼- x 4-inch slides he produced during the course. b. Have each student explain the steps involved in producing the transparencies or slides being displayed. c. Have students comment on the quality of transparencies and slides displayed and how each could be improved. d. Point out exceptional examples, and add appropriate instructor critique.
Summary:	Summarize the lesson.

LESSON PLAN

Course:	Transparency Preparation.
Lesson No:	32.
Lesson Title:	Final Examination.
Objectives:	To determine the effectiveness of the course and to qualify students for an official certificate.
References:	None.
Training Aids:	Test sheets; paper; pencils.
Method of Instruction:	Examination.
Total Time:	1 hour
Introduction:	Introduce the lesson. a. Explain the rules of the examination. b. Start the examination.
Demonstration and Explanation:	Conduct and supervise the test.
Summary:	Summarize the lesson as follows: a. Have students exchange examination papers. b. Have students grade examination papers. c. Discuss the examination.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12–11 requirements for Film and Equipment Exchange Operations.

☆U.S. Government Printing Office: 1966—250-577/6154A