



TRAINING DIRECTIVE No. 35

1 January 1945

CAP GROUND AND PREFLIGHT TRAINING PROGRAM



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## PART I — GENERAL

### 1. Purpose

The purpose of this Training Program is to provide practical ground and preflight instruction in aviation subjects and elementary military matters for cadet and adult members of Civil Air Patrol on a uniform basis throughout the United States.

### 2. Scope

The courses of instruction included in this Program are intended (a) to give the students a sound, practical working knowledge of fundamentals necessary for effective service to Civil Air Patrol in the performance of its varied activities as an auxiliary of the Army Air Forces, (b) to assist the students in laying the groundwork for a successful career in either military or civil aviation; and (c) to prepare the students to work intelligently for the general promotion of aviation in all its phases. Upon completion of the prescribed courses, students are encouraged to organize classes for specialized training.

### 3. General Plan

a. The courses presented in this Program are divided into three series: (1) Basic Training, (2) Secondary Training, and (3) Advanced Training.

b. The *Basic Training* consists of 175 hours of instruction, divided into four terms and covering 10 major subjects presented in a total of 33 courses, as set forth in Schedules 1 and 2 (pages 3 and 4). Descriptions of these courses are given in Part II. All CAP members, both cadet and adult, are required to take this basic training, except that Infantry Drill in

excess of 20 hours of instruction and the course in International Morse Code are optional with adult members.

c. The *Secondary Training* consists of 80 hours of instruction covering a series of 13 courses, as listed in Schedule 3 (page 4) and described in Part III, and is open to all members who have completed the basic training. These courses are designed to round out the training of the individuals in such manner as to qualify them for more important CAP assignments and to prepare them to meet the requirements for the Private Pilot written examination of the Civil Aeronautics Administration. While all cadet members, and also all pilots and observers desiring to enter the Flight Proficiency Program, are required to complete the courses of this series, all members should be urged to take these courses.

d. The *Special and Advanced Training* consists of a number of special and advanced courses intended primarily for members desiring to prepare themselves for special CAP assignments. These courses are listed in Schedule 4 (page 4) and are described in Part IV.

e. The *Teaching Hours* for each course are shown in Schedules 1, 3, and 4 and are exclusive of the time required for examinations.

f. *CAP Credits* are given for the successful completion of each training course, as indicated in Schedules 1, 3, and 4.

g. *Laboratory Demonstrations and Field Exercises*—In cases where the nature of the subject is such as to call for laboratory, shop, or field demonstrations or exercises, the number of teaching hours scheduled exceeds the number of CAP credits. Two hours of laboratory, shop, or field demonstrations,

or drill are normally considered to be the equivalent of one hour of classroom instruction.

h. The *Sequence of Instruction* recommended for the basic training is set forth in Schedule 2 and follows the order in which the courses of this series are presented in the Preflight Study Manual. The sequence of instruction for the courses of the secondary training series is left to the judgment of unit training officers and will be governed largely by local circumstances. As none of the members of Civil Air Patrol are required to take all the courses included in the special and advanced series, it is anticipated that special classes will be organized to take courses selected from this series and that these courses will be scheduled in such manner as circumstances may dictate.

#### 4. Texts

The Preflight Study Manual prepared for Civil Air Patrol by Headquarters Army Air Forces is the master text for all of the basic courses. War Department technical manuals and field manuals, CAP training manuals and directives, Civil Aeronautics Bulletins, and other official publications are used as reference texts for the basic courses and as texts and reference texts for the secondary courses and for the special and advanced courses, as indicated in each case under the descriptions of courses presented in Parts II, III, and IV. CAP units are free to use such supplementary text material as they may desire.

#### 5. Library of Reference Texts

The Army Air Forces maintains at each CAP Unit Headquarters a reference library of technical manuals, field manuals, and other War Department publications used in this Training Program. The publications included in this library are listed in Part VI. Each unit should supplement its AAF reference library with copies of all CAP training manuals and directives, Civil Aeronautics Bulletins and other publications of the Civil Aeronautics Administration used in the Training Program. Lists of these manuals, directives, bulletins and other publications are included in Part VI.

#### 6. Library of Training Films

A library of training films and film strips has been furnished by the Army Air Forces to each Wing Headquarters and to some Group Headquarters for circulation among local units to assist in the Training Program. The films to be used with the different courses are indicated in each case in Parts II, III,

and IV under the descriptions of the courses. A list of the films comprising this library is presented in Part VII.

#### 7. Training Aids

An extensive list of specialized training aids and Class 26 (restricted to use for ground instruction purposes only) AAF mechanical equipment has been made available to CAP units by the Army Air Forces for use in the Training Program. A number of very helpful training aids have also been made available by the Bureau of Aeronautics of the Navy Department.

#### 8. Examinations

A written examination will be given upon completion of each of the four terms of basic training. After the last of these examinations has been given, there will be a review of the work of the four terms followed by a final written examination, prescribed by National Headquarters, covering all of the 33 component courses. A final written examination will also be given covering the entire series of secondary training courses. Each of the prescribed final written examinations will be of the multiple-choice type. Examinations covering the courses prescribed by National Headquarters, presented in the advanced training series, are optional with the instructor.

#### 9. Training Schedules

The training schedules presented in this directive supersede all schedules of training courses, schedules of sequence of instruction, and other similar training schedules previously issued by this Headquarters.

#### 10. AAF Training Liaison Officers

Headquarters Army Air Forces has assigned a number of Training Liaison Officers to assist Civil Air Patrol units throughout the United States in the promotion, organization, and stimulation of the Training Program. These officers work directly with the Wing Commanders and with the lower echelons of each Wing through the Wing Commander. They are available (a) for consultation and advice on training problems and organization of training programs, (b) to assist in the formulation of instructor courses, and (c) to discuss training methods and teaching techniques. While the securing of instructors is primarily a CAP function and not a Training Liaison Officer function, when desirable and locally practical, these officers will solicit the aid of qualified Army Air Forces personnel to assist in teaching specified subjects to instructor classes or training groups.

**SCHEDULE 1—BASIC TRAINING COURSES**

SECTION	PREFLIGHT MANUAL PAGES	COURSES	TEACHING HOURS	CAP CREDITS
<b>1 CADETS OF THE CAP</b>	1-1 — 1-4	CAP Orientation .....	2	2
	2-1 — 2-4	Organization of the Army .....	1	1
<b>2 SOME FACTS OF ARMY LIFE</b>	2-5 — 2-6	Military Courtesy and Discipline .....	2	2
	2-7 — 2-8	Organization of the Army Air Forces .....	1	1
	2-9 — 2-10	Safeguarding Military Information .....	1	1
	2-11	Articles of War .....	1	1
	2-12	Military Correspondence .....	1	1
	2-13	Duties of Command and Staff Officers .....	1	1
	2-14	Leadership and Command .....	1	1
	2-15— 2-18	Infantry Drill .....	40	20
	2-19— 2-20	Interior Guard .....	1	1
	2-21— 2-22	Reviews and Inspections .....	1	1
<b>3 HOW TO SPOT PLANES IN A FLASH</b>	3-1 — 3-20	Aircraft Identification .....	15	15
<b>4 GETTING IN SHAPE TO FLY</b>	4-1 — 4-8	Physical Training .....	10	10
<b>5 COMMUNICATIONS</b>	5-1 — 5-5	Communications .....	2	2
	5-6 — 5-26	International Morse Code .....	28	10
	5-27— 5-32	Radiotelephone Procedure .....	3	3
<b>6 WHAT MAKES AN AIRPLANE FLY</b>	6-1 — 6-10	Theory of Flight .....	4	4
	6-11— 6-13	Structure of Aircraft .....	2	2
	6-14— 6-18	Instruments .....	5	4
	6-19— 6-24	Powerplants .....	5	4
<b>7 WEATHER IN THE MAKING</b>	7-1 — 7-20	Meteorology .....	15	15
<b>8 YOUR BODY IN FLIGHT</b>	8-1 — 8-10	Physiological Aspects of Flying .....	2	2
	8-6 — 8-8	First Aid .....	2	2
	8-11— 8-14	Flying Safety .....	2	2
<b>9 GROUND WORK</b>	9-1 — 9-8	Airfields .....	4	4
	9-9 — 9-12	Airfield Personnel .....	1	1
	9-12— 9-14	Duties of Servicemen .....	2	2
	9-15— 9-20	Aircraft Inspections .....	3	3
	9-21— 9-24	Crash Procedures and Fire Fighting .....	2	2
<b>10 HOW TO FIND YOUR WAY IN THE SKY</b>	10-1 — 10-12	Introduction to Navigation—Maps and Charts .....	6	6
	10-13— 10-22	Direction, Distance and Time .....	2	2
	10-22— 10-28	Elementary Navigation .....	7	7

**Totals 175 135**

**SCHEDULE 2**  
**SEQUENCE OF INSTRUCTION**  
**BASIC TRAINING**

Term	Section	Course	Teaching Hours
<b>1st</b>	1	Cadets of CAP .....	2
	2	Some Facts of Army Life ...	21
	3	How to Spot Planes in a Flash	6
	4	Getting in Shape to Fly .....	4
	5	Communications .....	11
			<b>44</b>

<b>2nd</b>	6	What Makes an Airplane Fly	16
	2	Some Facts of Army Life ...	10
	3	How to Spot Planes in a Flash	4
	4	Getting in Shape to Fly .....	2
	5	Communications .....	12
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<b>3rd</b>	7	Weather in the Making .....	15
	8	Your Body in Flight .....	6
	2	Some Facts of Army Life ...	10
	3	How to Spot Planes in a Flash	3
	4	Getting in Shape to Fly .....	2
5	Communications .....	8	
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<b>4th</b>	9	Ground Work .....	12
	10	How to Find Your Way in the Sky .....	15
	2	Some Facts of Army Life ...	10
	3	How to Spot Planes in a Flash	2
	4	Getting in Shape to Fly .....	2
5	Communications .....	2	
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**SCHEDULE 3**  
**SECONDARY TRAINING COURSES**

Courses	Teaching Hours	CAP Credits
Aircraft Instruments .....	5	3
Air Navigation .....	10	10
Airplane Structures .....	3	3
Civil Air Regulations .....	10	10
Crash Procedure .....	3	2
Duties of Servicemen .....	3	2
First Aid .....	20	18
Inspection and Care of Aircraft and Engines .....	6	4
Meteorology .....	10	10
Operations Orders .....	1	1
Parachutes .....	2	1
Restricted Radiotelephone Operator Permit .....	2	2
Theory of Flight .....	5	4
<b>Totals</b>	<b>80</b>	<b>70</b>

**SCHEDULE 4**  
**SPECIAL AND ADVANCED TRAINING COURSES**

Courses	Teaching Hours	CAP Credits
Administration—Military Units .....	6	6
Aerial Photography .....	15	15
Aircraft Powerplants .....	20	20
Air Marking .....	2	2
Airplane Hydraulic Systems .....	5	5
Airport Design .....	5	5
Airport Traffic Control Procedures ..	6	6
Celestial Air Navigation .....	12	12
Combined Flight Problems .....	15	15
Electrical and Radio Fundamentals ..	20	20
Elementary Surveying and Mapping	18	10
Fabrication and Repair of Aircraft ..	20	20
First Aid—Advanced .....	10	10
Fundamentals of Instruction .....	10	10
Instrument Flying .....	15	15
Physiological Aspects of Flying ....	5	5
Prevention of Hangar Fires .....	2	2
Theory of Flight .....	10	10

## PART II — COURSES OF INSTRUCTION — BASIC TRAINING

### CIVIL AIR PATROL

#### 11. CAP Orientation

(2 Teaching hours; 2 CAP credits.)

##### a. General

The purpose of this course is to familiarize the students with Civil Air Patrol, its organization and purposes, its connection with the Army Air Forces, its history and traditions, and its various activities. Students will also be instructed in the organization of their particular local units and State Wings and in the purpose, scope, and general plan of the Training Program. CAP Training Manual No. 6, "Civil Air Patrol—History, Organization and Purpose," will be required as outside reading.

##### b. Text

"Preflight Study Manual"

##### c. Reference Texts

CAP TngM 6—"Civil Air Patrol—History, Organization and Purpose"

WD Pub LB X-51—"How CAP Cadet Training Helps You Win Your Wings"

##### d. Films

TF 1-153—"Modern Aladdin's Lamp" (Running Time: 22 min.)

FS 1-63—"Effective Study Methods"

### SOME FACTS OF ARMY LIFE

#### 12. Organization of The Army

(1 Teaching hour; 1 CAP credit.)

##### a. General

This course is designed to familiarize the personnel of the Civil Air Patrol with the organization of the Army of the United States in order that the Patrol may be better prepared for effective service to the armed forces. CAP Training Manual No. 1, "Organization of the Army," will be required as outside reading.

##### b. Text

"Preflight Study Manual"

##### c. Reference Texts

CAP TngM 1—"Organization of the Army"

TM 12-252—"The Army Clerk" (Chapter I—Organization of the Army)

"Official Guide to the Army Air Forces"

#### 13. Military Courtesy and Discipline

(2 Teaching hours; 2 CAP credits.)

##### a. General

The success of the Civil Air Patrol in carrying

out its missions as a volunteer Auxiliary of the Army Air Forces depends upon the loyalty, steadfastness and teamwork of alert men and women of civil aviation who, in the spirit of team-play, are willing to put the interests of the "team" above their own in order that the "team" might win. Such teamwork, and the morale and high devotion to duty which go with it, calls for the voluntary self-discipline, cheerful obedience to the will of the leader, and consideration for others which constitute the basis of military discipline and courtesy as practiced in the armed forces of the United States. This course is designed to serve as a guide in the attainment of this objective. AAF Training Manual—"The Military Triad", (Honor, Discipline, and Leadership) will be assigned as required reading.

##### b. Text

"Preflight Study Manual"

##### c. Reference Texts

AAF TngM—"The Military Triad"

FM 21-50—"Military Courtesy and Discipline"

##### d. Film

TF 21-2048—"Military Courtesy" (Running Time: 22 min.)

#### 14. Organization of the Army Air Forces

(1 Teaching hour; 1 CAP credit.)

##### a. General

In order that Civil Air Patrol may best perform its functions as an Auxiliary of the Army Air Forces, it is important that each member be thoroughly familiar with Army Air Forces organization. This is a familiarization course to accomplish this purpose. Assigned outside reading will cover the first 100 pages of the "Official Guide to the Army Air Forces".

##### b. Text

"Preflight Study Manual"

##### c. Reference Text

"Official Guide to the Army Air Forces"

#### 15. Safeguarding Military Information

(1 Teaching hour; 1 CAP credit.)

##### a. General

The ENEMY wants the information you have and is ever on the alert to pick it up wherever it may be found. A careless word dropped in an unsuspecting moment may be all that is needed to complete piecing together the jig-saw puzzle on which some enemy agent is working, and thus give him information that will lead to the defeat of an important Allied undertaking. The loss or disclosure of military information is a very serious offense, particularly so in time

of war. The fundamentals of Safeguarding Military Information are presented in this course.

b. *Text*

"Preflight Study Manual"

c. *Reference Text*

AR 380-5—"Safeguarding Military Information"

16. **Articles of War**

(1 Teaching hour; 1 CAP credit.)

a. *General*

The Articles of War govern the lives of every soldier from Private to General. There are 121 of these Articles. No one need fear the Articles of War provided his or her conduct is in keeping with the general standard of good behavior. The purpose of this course is to familiarize the student with the Articles of War.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

CAP TngM 7—"Articles of War" (Formerly CAP TngM 32-4)

WD Doc 14a—"A Manual for Courts-Martial—U. S. Army"

TM 12-250—"Administration" (Appendix VIII—Courts-Martial)

17. **Military Correspondence**

(1 Teaching hour; 1 CAP credit.)

a. *General*

The purpose of this course is to acquaint members of the Civil Air Patrol with the fundamentals of military correspondence. CAP Training Directive No. 29, "Military Correspondence," will be assigned as required outside reading.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

TD 29—"Military Correspondence"

AR 340-15—"Correspondence—How Conducted"

18. **Duties of Command and Staff Officers**

(1 Teaching hour; 1 CAP credit.)

a. *General*

This course is intended to give each member of the Civil Air Patrol a practical working knowledge of the duties and responsibilities of command and staff officers and an appreciation of the manner in which the work of these officers should fit together to round out an organization capable of doing an effective job. CAP Training Manual No. 4, "Duties of Command and Staff Officers", will be required as outside reading.

b. *Text*

"Preflight Study Manual"

c. *Reference Text*

CAP TngM 4—"Duties of Command and Staff Officers"

19. **Leadership and Command**

(1 Teaching hour; 1 CAP credit.)

a. *General*

The primary purpose of this course is to give the student an understanding of the fundamentals of military leadership and exercise of command. CAP Training Manual No. 5, "Leadership and Exercise of Command", will be required as outside reading.

b. *Text*

"Preflight Study Manual"

c. *Reference Text*

CAP TngM 5—"Leadership and Exercise of Command"

20. **Infantry Drill for Foot Troops without Arms**

(40 Teaching hours; 20 CAP credits.)

a. *General*

The ease of movement from place to place, the precision of action, and the general efficiency of units of the Civil Air Patrol will be greatly increased by thorough instruction in the fundamentals of Infantry Drill. Well drilled units present a pleasing appearance when participating in parades or other public ceremonies and possess a pride of organization and a spirit of cohesion which are very enhancing to the morale of the organization. Infantry Drill in excess of 20 hours of instruction (10 CAP credits) is optional with adult members.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

FM 21-15—"Equipment, Clothing, and Tent Pitching"

FM 21-100—"Soldier's Handbook"

FM 22-5—"Infantry Drill Regulations"

d. *Films*

TF 7-143—"Infantry Drill—The Squad" (Running Time: 10 min.)

TF 7-144—"Infantry Drill—The Platoon" (Running Time: 14 min.)

TF 7-248—"Instruction of The Soldier Dis-mounted—Without Arms, Positions and Facings" (Running Time: 22 min.)

TF 7-249—"Instruction of The Soldier Dis-mounted—Without Arms, Steps and Marchings" (Running Time: 22 min.)

21. **Interior Guard**

(1 Teaching hour; 1 CAP credit.)

a. *General*

The object of this course is to give the student an understanding of the fundamentals of Interior Guard Duty. Selected sections of FM 26-5, "Interior Guard Duty", will be assigned as outside reading. In addition to classroom instruction, the class will be given practice in Guard Mount.

b. *Text*

"Preflight Study Manual"

c. *Reference Text*

FM 26-5—"Interior Guard Duty"

d. *Film*

TF AF-119—"Beyond the Line of Duty" (Running Time: 25 min.)

22. **Reviews and Inspections**

(1 Teaching hour; 1 CAP credit.)

a. *General*

The purpose of this course is to instruct Civil Air Patrol units in the procedure to be followed in the conduct of reviews and inspections as prescribed for the Army Air Forces.

b. *Text*

"Preflight Study Manual"

c. *Reference Text*

FM 1-60—"Reviews and Inspections"

**HOW TO SPOT PLANES IN A FLASH**

23. **Aircraft Identification**

(15 Teaching hours; 15 CAP credits.)

a. *General*

The purpose of this course is to familiarize the students so completely with the distinguishing features of outstanding American aircraft as to make recognition instinctive, quick, and positive.

b. *Text*

"Preflight Study Manual"

c. *Films*

TF 1-293—"Identification of Aircraft—Training of Ground Observers in Aircraft Recognition" (Running Time: 10 min.)

TF 1-619—"Identification of U. S. Army Aircraft—B-25 Medium Bomber" (Running Time: 10 min.)

TF 1-900—"Identification of U. S. Army Aircraft—B-17F Douglas Heavy Bomber" (Running Time: 9 min.)

TF 1-901—"Identification of U. S. Army Aircraft—B-24D Consolidated Heavy Bomber" (Running Time: 9 min.)

TF 1-902—"Identification of U. S. Army Aircraft—A-20B Douglas Light Bomber" (Running Time: 9 min.)

TF 1-906—"Identification of U. S. Army Aircraft—P-38E Lockheed (2-Engine) Pursuit" (Running Time: 9 min.)

TF 1-907—"Identification of U. S. Army Aircraft—C-54 and DC-4 Douglas (4-Engine) Heavy Transport" (Running Time: 9 min.)

TF 1-909—"Identification of U. S. Army Aircraft—The C-60A Lockheed (2-Engine) Medium Transport" (Running Time: 8 min.)

TF 1-910—"Identification of U. S. Army Aircraft—The North American P-51 Pursuit" (Running Time: 11 min.)

TF 1-912—"Identification of U. S. Army Aircraft—The P-39L Bell Pursuit" (Running Time: 9 min.)

**GETTING IN SHAPE TO FLY**

24. **Physical Training**

(10 Teaching hours; 10 CAP credits.)

a. *General*

The best military airplane in the world is only as good as the man who flies it. His strength, speed, power, and endurance must be commensurate with that of his aircraft. He must be able to fly at high altitudes for long hours. He must be able to stand the strain of antiaircraft fire and frequent dogfights. He will be more likely to come safely through a crash landing or to survive a serious accident if his physical stamina is great. Civilian and combat flying require the best physical fitness at all times. Regular participation in a sensible, well-planned program of physical education is one of the most important ways to achieve such fitness. The purpose of this course is to start the students on such a program.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

AAF Pub—"Physical Fitness Handbook"

FM 21-20—"Physical Training"

FM 35-20—"Physical Training" (Women)

TM 21-221—"Informal Games for Soldiers"

d. *Films*

TF 1-486—"Swim and Live" (Running Time: 21 min.)

TF 8-155—"Personal Hygiene" (Running Time: 36 min.)

**COMMUNICATIONS**

25. **Communications**

(2 Teaching hours; 2 CAP credits.)

a. *General*

A properly organized and operated communications system is the nerve center of effective aviation operations, whether military or civil. It is important

that pilots be familiar with all communication facilities at their disposal as communications increase their confidence and add immeasurably to the efficiency and the safety of their operations. This course is intended to familiarize the students with the various forms of communication.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

FM 1-45—"Signal Communication"  
FM 24-5—"Signal Communication"  
FM 24-18—"Radio Communication"  
CABul 29—"Pilots' Radio Manual"

*d. Film*

TF 1-3310—"Radio Operator" (Running Time: 20 min.)

**26. International Morse Code**

(28 Teaching hours; 10 CAP credits.)

*a. General*

While Morse Code is usually associated with railroad stations or telegraph offices, it is used to transmit much valuable information to both combat and civilian fliers. Each pilot should be able to receive and send at least 4 words per minute with accuracy. The purpose of this course is to accomplish this end. Morse Code is best learned through constant practice and not through quick memorizing. Therefore, code practice is given throughout basic training in order that the students may gradually become accustomed to this method of communication.

*b. Text*

"Preflight Study Manual"

*c. Reference Text*

CAP TngM 8—"Morse Code" (Formerly CAP TngM 38-2A)

**27. Radiotelephone Procedure**

(3 Teaching hours; 3 CAP credits.)

*a. General*

Because the transmission and reception of verbal messages by aircraft radiotelephone are usually performed under difficult and noisy conditions, a uniform procedure is essential. The pilot or radio operator usually speaks from the noisy cockpit of an airplane where much static is present. It is imperative that all such messages be transmitted in a business-like manner and that they be as brief as possible in order to minimize interference with other important messages. The purpose of this course is to train the students in proper radiotelephone procedure.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

CAP TngM 9—"Radiotelephone Procedure"  
(Formerly CAP TngM 34-9)  
TM 1-460—"Radiotelephone Procedure"

## WHAT MAKES AN AIRPLANE FLY

**28. Theory of Flight**

(4 Teaching hours; 4 CAP credits.)

*a. General*

This is an elementary course dealing with the fundamentals upon which the science of aviation is built.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

TM 1-400—"Theory of Flight"  
CABul 23—"Civil Pilot Training Manual" (Part One, Chapter I, "Theory of Flight")  
CABul 26—"Aerodynamics for Pilots"

*d. Films*

TF 1-160—"Aerodynamics—Air Flow" (Running Time: 18 min.)  
TF 1-161—"Aerodynamics—Forces Acting on an Airfoil" (Running Time: 26 min.)  
FS 1-8—"Aerodynamics"

**29. Structure of Aircraft**

(2 Teaching hours; 2 CAP credits.)

*a. General*

Every pilot should know the structure of his airplane and approximately what it will withstand in combat or storm. This course is intended to familiarize the student with some of the elements of airplane construction.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

TM 1-410—"Airplane Structures"  
CABul 27—"Pilots' Airplane Manual"

*d. Film*

FS 1-418—"Introduction to Airplane Structures"

**30. Instruments**

(5 Teaching hours; 4 CAP credits.)

*a. General*

The object of this course is to familiarize the student with the purposes, principles of operation, construction, and common errors of the basic flight instruments.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

TM 1-413—"Aircraft Instruments"  
CABul 23—"Civil Pilot Training Manual" (Part One, Chapter III, "Instruments")

d. *Films*

- TF 1-800—"Aircraft Instruments Part I—Introduction" (Running Time: 13 min.)
- FS 1-23—"Introduction to Airplane Instruments"

31. **Powerplants**

(5 Teaching hours; 4 CAP credits.)

a. *General*

This course is intended to give the student a general understanding of complete aircraft powerplants, including engines, propellers, and engine accessories.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

- TM 1-404—"Turbosupercharger and Aircraft Power Plant"
- TM 1-405—"Aircraft Engines"
- CABul 28—"Pilots' Powerplant Manual"

d. *Films*

- FS 1-15—"Principles of Internal Combustion Engines"
- FS 1-104—"General Principles of the Propeller"

## WEATHER IN THE MAKING

32. **Meteorology**

(15 Teaching hours; 15 CAP credits.)

a. *General*

This course presents an elementary study of the atmosphere and of the changing atmospheric conditions, commonly known as weather.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

- TM 1-230—"Weather Manual for Pilots"
- TM 1-231—"Elementary Weather for Air Crew Trainees"
- TM 1-232—"Basic Weather for Pilot Trainees"
- FM 1-50—"Weather"
- CABul 25—"Meteorology for Pilots"

## YOUR BODY IN FLIGHT

33. **Physiological Aspects of Flying**

(2 Teaching hours; 2 CAP credits.)

a. *General*

Because man does not take to the air naturally like a bird, he has had to solve more problems than the principal one of finding a way to fly. When he rises from the ground, his body is almost immediately affected in a manner which it rarely experiences on

earth. As soon as he begins to move around in the sky, his body is subjected to still other situations and conditions for which it is not naturally prepared. A person who intends to fly cannot learn too early how to prepare his body for moving through the air at high speeds. This course outlines the major physiological problems that arise during flying and the proved solutions to these problems.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

TM 1-705—"Physiological Aspects of Flying"  
TO 30-105-1—"Your Body in Flight"

d. *Film*

TF 1-797—"Survival of the Fittest" (Running Time: 17 min.)

34. **First Aid**

(2 Teaching hours; 2 CAP credits.)

a. *General*

This war has taught many people the fact that lives can be saved in great numbers by First Aid being applied at the proper time. First Aid is not only useful to a pilot, but is equally useful in everyday life and can be of service wherever one may be. The material presented in this course is of an introductory nature and deals only with the rudiments of First Aid.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

FM 21-11—"First Aid for Soldiers"  
ARC—"First Aid Text-Book"

d. *Film*

MN-299a—"Essentials of First Aid" (Running Time: 30 min.)

35. **Flying Safety**

(2 Teaching hours; 2 CAP credits.)

a. *General*

The purpose of this course is to develop an understanding and appreciation of fundamentals of flying safety.

b. *Text*

"Preflight Study Manual"

c. *Reference Texts*

AAF Pub—"I've Got Wings"  
"Official Guide to the Army Air Forces" (Page 122)

d. *Films*

- TF 1-3300—"Learn and Live" (Running Time: 45 min.)
- TF 1-3314—"Keep 'Em Flying" (Running Time: 32 min.)

**GROUND WORK****36. Airfields**

(4 Teaching hours; 4 CAP credits.)

*a. General*

This course presents in brief form a perspective of fundamental requirements for safe and adequate airports and landing fields.

*b. Text*

"Preflight Study Manual"

*c. Reference Text*

CAA Pub—"Airport Design"

**37. Airfield Personnel**

(1 Teaching hour; 1 CAP credit.)

*a. General*

This is a familiarization course covering highlights of airfield organization and procedure.

*b. Text*

"Preflight Study Manual"

*c. Reference Text*

Army - Navy - CAA Pub—"Standard Airport Traffic Control Procedures"

**38. Duties of Servicemen**

(2 Teaching hours; 2 CAP credits.)

*a. General*

An important factor in the smooth and safe operation of an airfield is the manner in which the servicemen perform their work. The object of this course is to present a brief outline of the duties of servicemen.

*b. Text*

"Preflight Study Manual"

*c. Reference Text*

TD 28—"Duties of Servicemen"

**39. Aircraft Inspections**

(3 Teaching hours; 3 CAP credits.)

*a. General*

This course deals with the various periodic and special aircraft inspections required by the Army Air Forces and by the Civil Aeronautics Administration as a means of insuring maximum safety and reliability of operation.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

CABul 23—"Civil Pilot Training Manual" (Part One, Chapter II, "Inspection and Care of Aircraft and Engines")

TM 1-415—"Airplane Inspection Guide"

**40. Crash Procedures and Fire Fighting**

(2 Teaching hours; 2 CAP credits.)

*a. General*

The intent of this course is to familiarize the student with the basic aspects of crash procedure and fire fighting.

*b. Text*

"Preflight Study Manual"

*c. Reference Text*

TD 8—"Crash Procedure"

**HOW TO FIND YOUR WAY IN THE SKY****41. Introduction to Navigation—Maps and Charts**

(6 Teaching hours; 6 CAP credits.)

*a. General*

This course is an introduction to air navigation with particular reference to the elements and the use of maps and charts.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

TM 1-205—"Air Navigation"

FM 21-25—"Elementary Map and Aerial Photograph Reading"

CABul 24—"Practical Air Navigation"

*d. Films*

TF 1-245—"Aerial Navigation—Maps and the Compass" (Running Time: 15 min.)

TF 1-290—"Celestial Navigation—Introduction and Location of Celestial Points" (Running Time: 18 min.)

FS 1-69—"Cross Country by Maps"

FS 1-191—"Aerial Navigation—Lambert-Conformal and Mercator Projections"

FS 1-250—"Aerial Navigation—Vector Diagrams and Graphic Solutions"

**42. Direction, Distance, and Time**

(2 Teaching hours; 2 CAP credits.)

*a. General*

This course deals with such phases of navigation as the measurement of distances on charts, determination of direction, determination of compass course, measurement of time, sunset tables, and use of the navigation computer.

*b. Text*

"Preflight Study Manual"

**43. Elementary Navigation**

(7 Teaching hours; 7 CAP credits.)

*a. General*

This course explains the effect of wind drift; how to draw wind triangles; and how to determine

compass heading, true heading, and magnetic heading; and also presents the solution of a practical problem in air navigation. Other problems will be assigned by the instructor in order to develop a working knowledge of map symbols and familiarity with the fundamental navigation problems of contact flight.

*b. Text*

"Preflight Study Manual"

*c. Reference Texts*

TM 1-205—"Air Navigation"

CABul 24—"Practical Air Navigation"

## PART III — COURSES OF INSTRUCTION — SECONDARY TRAINING

### 44. Aircraft Instruments

(5 Teaching hours; 3 CAP credits.)

*a. General*

This course is devoted to a general study of the principal aircraft instruments, with particular reference to the purpose of each instrument, the principle on which it operates, its limitations and errors, the agencies of deterioration most likely to affect it, and the indications by which such deterioration will be evidenced.

*b. Text*

CABul 23—"Civil Pilot Training Manual" (Part One, Chapter III—"Instruments")

*c. Reference Text*

TM 1-413—"Aircraft Instruments"

*d. Film*

FS 1-111—"Typical Instrument Installations in Cockpits"

### 45. Air Navigation

(10 Teaching hours; 10 CAP credits.)

*a. General*

The object of this course is to develop a practical working knowledge of pilotage, elementary dead reckoning, and the use of the Federal aids to air navigation.

*b. Text*

TM 1-205—"Air Navigation"

*c. Reference Text*

CABul 24—"Practical Air Navigation" (Chapters I to IX, inclusive)

*d. Films*

TF 1-326—"Aerial Navigation—Dead Reckoning Procedure" (Running Time: 26 min.)

TF 1-327—"Aerial Navigation — Radio Aids" (Running Time: 29 min.)

TF 1-328—"Aerial Navigation—Airways Flying" (Running Time: 29 min.)

TF 1-329—"Aerial Navigation — Search and Interception" (Running Time: 18 min.)

TF 1-330—"Aerial Navigation—Radius of Action" (Running Time: 10 min.)

FS 1-67—"Aerial Navigation—Radius of Action Returning to Same Base"

FS 1-68—"Aerial Navigation—Radius of Action Returning to Alternate Base"

FS 1-813—"Aerial Navigation—Search"

### 46. Airplane Structures

(3 Teaching hours; 3 CAP credits.)

*a. General*

The purpose of this course is to familiarize the student with the principal structural details of modern airplanes in order that he may have an intelligent approach to the problems of airplane handling and maintenance and an understanding of the structural limitations imposed on the loading and operation of airplanes.

*b. Text*

TM 1-410—"Airplane Structures"

*c. Reference Text*

CABul 27—"Pilots' Airplane Manual"

*d. Films*

TF 1-211—"Airplane Structures — Structural Units, Materials, and Loads for which Designed" (Running Time: 8 min.)

TF 1-212—"Airplane Structures—Wing Construction" (Running Time: 10 min.)

TF 1-213—"Airplane Structures—Fuselage Construction" (Running Time: 8 min.)

FS 1-16—"Structural Units of the Airplane"

FS 1-29—"Airplane Flight Control Surfaces and Wing Flaps"

### 47. Civil Air Regulations

(10 Teaching hours; 10 CAP credits.)

*a. General*

This course covers those provisions of the Civil Air Regulations which most directly affect the pilot

and a knowledge of which is required in order to pass the CAA examinations for the issuance of a pilot's certificate.

**b. Text**

CABul 22—"Digest of Civil Air Regulations for Pilots"

**c. Reference Texts**

AAF Reg 60-16 —"Flying—Air Traffic Rules"  
 AAF Reg 60-16A—"Flying—Air Traffic Rules"  
 AAF Reg 60-16B—"Flying—Air Traffic Rules"  
 AAF Reg 60-16C—"Flying—Air Traffic Rules"  
 AAF Reg 60-16D—"Flying—Air Traffic Rules"  
 AAF Reg 60-16E—"Flying—Air Traffic Rules"

**d. Film**

TF 1-3312—"Army Flying Regulations" (Running Time: 13 min.)

**48. Crash Procedure**

(3 Teaching hours; 2 CAP credits.)

**a. General**

It is important that all CAP members have a practical working knowledge of airplane crash procedure in order that they may be able to render intelligent assistance should occasion arise. This course presents fundamental information on this subject.

**b. Text**

TD 8—"Crash Procedure"

**49. Duties of Servicemen**

(3 Teaching hours; 2 CAP credits.)

**a. General**

The purpose of this course is to outline the duties of servicemen as they relate to the servicing, handling, and care of aircraft and the servicing of airport facilities and to present some practical suggestions regarding this work.

**b. Text**

TD 28—"Duties of Servicemen"

**50. First Aid**

(20 Teaching hours; 18 CAP credits.)

**a. General**

This is the Standard First Aid Course of the American Red Cross. Many lives may be saved and many disabilities prevented by intelligent first aid treatment given in case of injuries or sudden illness before the services of a physician can be secured. In all cases, proper first aid measures reduce suffering and place the patient in the physician's hands in better condition to receive treatment. In order that CAP may be prepared to meet emergency situations as they arise, each member is urged to take this course of instruction.

**b. Text**

ARC—"First Aid Text-book"

**c. Films**

TF 8-2047—"First Aid for Battle Injuries" (Running Time: 18 min.)  
 TF 8-2049—"First Aid for Non-Battle Injuries" (Running Time: 29 min.)  
 FS 8-26—"The Roller Bandages—Barton, Modified Barton, and Parker"  
 FS 8-27—"The Roller Bandages—Circular, Modified Gibson, Knotted Recurrent Bandage of Head"  
 FS 8-28—"The Roller Bandages—Four-Tailed, First Aid Packet, Figure-of-Eight, Crossed (One Eye), Crossed (Both Eyes)"  
 FS 8-30—"Triangular Bandages—Face and Jaw Wounds, Triangles, Cravats"  
 FS 8-31—"Roller Bandages—Face and Jaw Wounds"  
 FS 8-32—"Extra-Oral Traction Appliances—Wooden Tongue Depressor Traction Appliance, Metal Coat Hangar Traction Appliance"  
 FS 8-35—"Control of Hemorrhage—Face and Jaw Wounds"  
 FS 8-36—"Care and Treatment of Face and Jaw Wounds"  
 FS 8-41—"Emergency Measures for Wounds and Their Immediate Complications"  
 FS 8-60—"Sanitation—Disposal of Waste"  
 FS 8-70—"First Aid for Non-combat Injuries"

**51. Inspection and Care of Aircraft and Engines**

(6 Teaching hours, 4 CAP credits.)

**a. General**

The frequent and thorough inspection and the proper care of airplanes and engines are absolutely essential to their safe and efficient operation and add materially to the useful life of such equipment. The purpose of this course is to give the student a working knowledge of the fundamentals of this subject.

**b. Text**

CABul 23—"Civil Pilot Training Manual" (Part One, Chapter II—"Inspection and Care of Aircraft and Engines")

**c. Reference Texts**

TM 1-405—"Aircraft Engines"  
 TM 1-415—"Airplane Inspection Guide"

**d. Films**

TF 1-246—"Airplane Propellers—Principles and Types" (Running Time: 17 min.)  
 FS 1-9—"Classification of Engine Types"  
 FS 1-17—"Aircraft Storage Batteries"  
 FS 1-72—"Aircraft Engine Operation"  
 FS 1-152—"The Airplane Mechanic"

**52. Meteorology**

(10 Teaching hours; 10 CAP credits.)

*a. General*

The successful execution of flying missions frequently depends upon accurate judgment of weather. To obtain this accuracy in judgment a thorough working knowledge of meteorological phenomena is required. This knowledge is necessary in judging the factors involved in determining the best course to follow when flying in stormy weather, the cruising altitude with the most favorable winds, whether weather conditions will permit flight to be continued, etc. This course is designed to give the student the basic knowledge of meteorology required by all flight personnel and with which all CAP personnel should be familiar.

*b. Text*

TM 1-232—"Basic Weather for Pilot Trainees"

*c. Reference Texts*

FM 1-50—"Weather"

TM 1-230—"Weather Manual for Pilots"

TM 1-231—"Elementary Weather for Air Crew Trainees"

CABul 25—"Meteorology for Pilots"

*d. Films*

TF 1-133—"Modern Weather Theory and Structure of Storms—Primary Circulation" (Running Time: 19 min.)

TF 1-134—"Modern Weather Theory and Structure of Storms—Development and Characteristics" (Running Time: 14 min.)

TF AF-104—"Meteorology — Fog" (Running Time: 22 min.)

TF AF-105—"Meteorology — Ice" (Running Time: 30 min.)

TF AF-106—"Meteorology—Temperature and Winds" (Running Time: 41 min.)

FS 1-51—"Thermometer"

SN 814—"Air Ocean"

SN 815—"Air Masses"

**53. Operations Orders**

(1 Teaching hour; 1 CAP credit.)

*a. General*

This course deals with the purpose, form, preparation, issuance, and distribution of operations orders. As all official Civil Air Patrol flight missions are required to be authorized by proper operations orders, it is important that all CAP members be familiar with this subject.

*b. Text*

TD 15—"Operations Orders"

**54. Parachutes**

(2 Teaching hours; 1 CAP credit.)

*a. General*

The object of this course is to familiarize the student with the construction, inspection, maintenance, handling, and use of conventional type, man-carrying parachutes. A parachute is a life-saving device, and every precaution should be exercised in handling, stowing and maintaining this equipment to insure proper performance, low maintenance and continued service.

*b. Text*

CABul 23—"Civil Pilot Training Manual" (Part One, Chapter IV, "Parachutes")

*c. Reference Text*

TO 13-5-2—"Operation and Service Instructions—Parachutes—Conventional Type, Man Carrying"

*d. Films*

TF 1-536—"Parachutes — Construction and Types" (Running Time: 10 min.)

TF 1-3665—"Parachuting into Water" (Running Time: 31 min.)

FS 1-46—"Parachutes—Construction and Care of the Parachute"

**55. Restricted Radiotelephone Operator Permit**

(2 Teaching hours; 2 CAP credits.)

*a. General*

This course is designed to prepare the student to pass the written examination prescribed by the Federal Communications Commission for applicants for Restricted Radiotelephone Operator Permit.

*b. Text*

CAP TngM 10—"Radiotelephone Licenses" (Formerly CAP TngM 38-2E)

**56. Theory of Flight**

(5 Teaching hours; 4 CAP credits.)

*a. General*

The purpose of this course is to enable the student to understand the principles of flight and the simple scientific facts associated with the various flight maneuvers.

*b. Text*

CABul 23—"Civil Pilot Training Manual" (Part One, Chapter I)

*c. Reference Texts*

TM 1-400—"Theory of Flight"

CABul 26—"Aerodynamics for Pilots"

*d. Films*

SN 805—"Lift and Drag"

SN 807—"Forces in Flight"

## PART IV—COURSES OF INSTRUCTION—SPECIAL AND ADVANCED TRAINING

### 57. Administration—Military Units

(6 Teaching hours; 6 CAP credits.)

#### a. General

The purpose of this course is to familiarize CAP command and staff officers with the administration of military units as patterned by the Army and to give them a sound working knowledge of the fundamental processes essential to the efficient administration of their particular units.

#### b. Text

TM 12-250—"Administration"

#### c. Reference Text

TM 12-252—"The Army Clerk"

### 58. Aerial Photography

(15 Teaching hours; 15 CAP credits.)

#### a. General

This course is designed to give a practical understanding of the methods used by military organizations in the preparation of maps from aerial photographs.

#### b. Text

TM 5-240—"Aerial Photography"

#### c. Reference Texts

TM 1-219—"Basic Photography"

TM 1-220—"Aerial Photography"

TM 5-246—"Interpretation of Aerial Photographs"

### 59. Aircraft Powerplants

(20 Teaching hours; 20 CAP credits.)

#### a. General

This is a comprehensive course devoted to a study of complete aircraft powerplants. Included in the course are such subjects as fundamental powerplant requirements, powerplants available, cycles of operation, valve mechanisms, engine design and construction, powerplant installations, lubricants and lubrication systems, fuel and fuel systems, carburetion, fuel injection, supercharging, ignition systems, propellers, powerplant operation, and powerplant maintenance.

#### b. Text

CABul 28—"Pilots' Powerplant Manual"

#### c. Reference Texts

TM 1-404—"Turbocharger and Airplane Power Plant"

TM 1-405—"Aircraft Engines"

TM 1-406—"Aircraft Electrical Systems"

TM 1-407—"Aircraft Induction, Fuel and Oil Systems"

TM 1-412—"Aircraft Propellers"

#### d. Films

FS 1-24—"Hamilton Standard 2-Position Propellers"

FS 1-141—"Ignition Systems—Principles"

### 60. Air Marking

(2 Teaching hours; 2 CAP credits.)

#### a. General

Proper air markings constitute one of the simplest and least expensive aids to air navigation and at the same time one of the most effective and most necessary, particularly for the private or non-scheduled flyer. This course presents the fundamentals of effective air marking.

#### b. Text

CABul 12—"Air Marking"

### 61. Airplane Hydraulic Systems

(5 Teaching hours; 5 CAP credits.)

#### a. General

This course is designed to give a comprehensive understanding of the hydraulic systems used in modern aircraft.

#### b. Text

TM 1-411—"Airplane Hydraulic Systems"

#### c. Film

FS 1-22—"Principles of Liquids and Gases"

### 62. Airport Design

(5 Teaching hours; 5 CAP credits.)

#### a. General

This course is intended primarily for members of local airport committees and others charged with the responsibility for the site selection, planning, design, and construction of airports. It presents the basic information necessary for an understanding of the problems involved and for working out a sound program of airport development.

#### b. Text

CAA Pub—"Airport Design"

### 63. Airport Traffic Control Procedures

(6 Teaching hours; 6 CAP credits.)

#### a. General

The object of this course is to familiarize CAP operations and flight personnel with the standard airport traffic control procedures officially adopted by the Army Air Forces, the Navy Bureau of Aeronautics,

and the Civil Aeronautics Administration for use by all government airport traffic control towers.

b. *Text*

Army-Navy-CAA Pub—"Standard Airport Traffic Control Procedures"

64. **Celestial Air Navigation**

(12 Teaching hours; 12 CAP credits.)

a. *General*

This is an elementary course dealing with the fundamentals of celestial air navigation and the celestial navigation instruments and methods currently in use by the Army Air Forces.

b. *Text*

TM 1-206—"Celestial Air Navigation"

c. *Reference Texts*

CABul 24—"Practical Air Navigation" (Chapter X—"Celestial Navigation")

TM 1-208—"Air Navigation Tables"

H.O. 211—"Dead Reckoning, Altitude, and Azimuth Table"

H.O. 214—"Tables of Computed Altitude and Azimuth" (Vol. IV, Latitudes 30° to 40°, inclusive; Vol. V, Latitudes, 40° to 50°, inclusive)

d. *Film*

MN-83b—"Celestial Navigation Charts"—(Running Time: 15 min.)

65. **Combined Flight Problems**

(15 Teaching hours; 15 CAP credits.)

a. *General*

The purpose of this course is to train the student in the solution of practical flight problems involving the simultaneous application of a number of the subjects studied in the basic and secondary training courses, such as Operations Orders, Civil Air Regulations, Air Navigation, Meteorology, and Communications. This course bears essentially the same relation to ground instruction that the Link Trainer bears to instruction in Instrument Flying.

b. *Text*

CAP TngM 11—"Combined Flight Problems"

66. **Electrical and Radio Fundamentals**

(20 Teaching hours; 20 CAP credits.)

a. *General*

The object of this course is to develop a sound working knowledge of the basic laws which govern electrical phenomena and of the applications of these basic principles to radio transmitters and receivers.

b. *Texts*

TM 1-455—"Electrical Fundamentals"

TM 11-455—"Radio Fundamentals"

c. *Reference Texts*

TM 1-470—"Aircraft Radio Shop Practice"  
CABul 29—"Pilots' Radio Manual"

d. *Films*

TF 1-470—"Vacuum Tubes—Electron Theory and the Diode Tube" (Running Time: 16 min.)

TF 1-471—"Vacuum Tubes—The Triode and Multiple-Purpose Tubes" (Running Time: 14 min.)

TF 1-472—"Radio Receivers—Principles and Typical Circuits" (Running Time: 17 min.)

TF 1-474—"Radio Antennas—The Creation and Behavior of Radio Waves" (Running Time: 11 min.)

TF 1-475—"Radio Antennas—Fundamentals of the Antenna" (Running Time: 12 min.)

TF 1-476—"Radio Transmitters—Principles and Typical Circuits" (Running Time: 18 min.)

67. **Elementary Surveying and Mapping**

(18 Teaching hours; 10 CAP credits.)

a. *General*

This course is intended to develop a practical working knowledge of elementary surveying and mapping in order to qualify the student for such CAP assignments as the preparation of a simple topographic map of a proposed landing field site and surrounding terrain or the mapping of local airports and landing fields. The course will include field work involving simple sketching, traverse, triangulation, execution of topography, leveling, contouring and the mapping of a small assigned area showing topographic detail and contours.

b. *Text*

FM 21-35—"Field Service Pocketbook—Sketching"

c. *Reference Texts*

TM 5-230—"Topographic Drafting"

TM 5-235—"Surveying"

68. **Fabrication and Repair of Aircraft**

(20 Teaching hours; 20 CAP credits.)

a. *General*

The purpose of this course is to give an understanding of the fundamentals of the following major processes of aircraft fabrication and repair:—(1) Woodwork, (2) Welding, (3) Sheet Metal Work, (4) Fabric Work, and (5) Application of Finishes.

b. *Texts*

TM 1-414—"Aircraft Woodwork"

TM 1-417—"Aircraft Fabric Work and Application of Finishes"

TM 1-430—"Welding"

TM 1-435—"Aircraft Sheet Metal Work"

**69. First Aid—Advanced**

(10 Teaching hours; 10 CAP credits.)

*a. General*

This is the Advanced First Aid Course of the American Red Cross. It is devoted to the practical application of the principles and procedures taught in the Standard First Aid Course described in paragraph 50.

*b. Text*

ARC—"First Aid Text-Book"

**70. Fundamentals of Instruction**

(10 Teaching hours; 10 CAP credits.)

*a. General*

The purpose of this course is to assist CAP training officers and instructors in the efficient performance of their duties by giving them instruction in such subjects as (a) lesson planning and preparation, (b) classroom management, (c) methods of presentation, (d) application of principles, (e) examinations, (f) discussion and critique, (g) supervision of instruction, and (h) use of training aids.

*b. Text*

TM 21-250—"Army Instruction"

*c. Reference Text*

CABul 30—"Ground Instructor's Manual"

**71. Instrument Flying**

(15 Teaching hours; 15 CAP credits.)

*a. General*

This course is devoted to a comprehensive study of the art and technique of basic and advanced instrument flying.

*b. Text*

TO { 30-100A-1 "Instrument Flying—Basic  
30-100B-1 and Advanced" (Special Edi-  
30-100F-1 tion for Distribution to all  
Pilots—15 January 1944)

**72. Physiological Aspects of Flying**

(5 Teaching hours; 5 CAP credits.)

*a. General*

This course presents in everyday terms an explanation of the various physical and physiological problems that arise during flying and gives in detail the latest knowledge of proved solutions to these problems. It also deals with some of the causes of pilot's error in flight and how they can be avoided.

*b. Texts*

TM 1-705—"Physiological Aspects of Flying"  
TO 30-105-1—"Your Body in Flight"

**73. Prevention of Hangar Fires**

(2 Teaching hours; 2 CAP credits.)

*a. General*

The purpose of this course is to familiarize the student with the precautions to be exercised in the prevention of fires in and around hangars.

*b. Texts*

AAF Reg 85-6—"Buildings and Grounds—  
Fire Prevention in Hangars  
and Technical Buildings"  
AR 850-20—"Precautions in Handling Gaso-  
line"  
TO 19-1-105—"Fuel Servicing Equipment—  
Fire Prevention—Discharge of  
Accumulated Static Electricity"

**74. Theory of Flight**

(10 Teaching hours; 10 CAP credits.)

*a. General*

The object of this course is to develop a practical working knowledge of the mechanical and physical laws which govern airplane performance and thereby create a proper respect for the limitations of the airplane and a corresponding increase in efficiency of operations.

*b. Text*

TM 1-400—"Theory of Flight"

*c. Reference Text*

CABul 26—"Aerodynamics for Pilots"

## PART V—CONDUCT OF THE TRAINING PROGRAM

**75. General**

It is important that the Training Program be so conducted as to afford equal opportunity for thorough and uniform training for every CAP member, whether cadet or adult. Therefore, special effort should be made to establish and maintain a uniformly high standard of instruction in every unit throughout the United States. While National Headquarters will cooperate and assist in every way possible in the attainment of this objective, the success of the Pro-

gram is dependent upon the thoroughness, judgment, imagination, enthusiasm, and initiative exercised by unit commanders, training officers, and instructors in carrying out the Program within their respective units.

**76. Responsibility**

Each unit commander should hold his training officer responsible for the organization and conduct of the Training Program within his unit and should

delegate to him the authority necessary for the proper execution of his assignment.

#### 77. Coordination with Home and High School

a. It is important to bear in mind that most of the young people entering the CAP Cadet Program are already being cared for by two great institutions:—(a) the home and (b) the high school, both of which institutions are rightfully interested in all the activities in which these young people engage. The Cadet Program, in all its phases, is designed to supplement the work of these two institutions and should never be permitted to interfere or compete with them. Therefore, every CAP unit throughout the United States should strive to develop the closest possible coordination with the homes and the high schools in the organization and furtherance of the Cadet Training Program.

b. Applicants for enrollment in CAP Cadets are required to obtain the consent of parent or guardian. Also, parents are required to attend Cadet meetings periodically in order that they may at all times be closely in touch with the Program. By the same token, one of the first steps in the organization of the Training Program should be to visit the high school principals and give them full information regarding the Program and make every effort to enlist their wholehearted cooperation and assistance. In fact, a number of very successful CAP units require Cadet applicants to present written recommendations from their high schools.

c. High schools can furnish information regarding the character, physical fitness and scholastic standing of applicants and thus assist in selecting for membership in CAP Cadets desirable young men and women of good scholastic standing who can afford to give the necessary time to the CAP Training Program. High schools can often provide classrooms, gymnasium halls and other facilities necessary for the success of the Program.

d. High school teachers should be encouraged to join Civil Air Patrol. They make excellent instructors and advisors and can be of great assistance in the organization and conduct of the Program.

#### 78. Instructors

a. Special care should be exercised in the selection and training of instructors to the end that the instruction staff be made up of the best available personnel. Characteristics to be considered in the selection of instructors include the following:—(a) military bearing and appearance, (b) physical fitness, (c) general behavior and reputation, (d) leadership, (e) mental alertness, (f) willingness to take responsibility, (g) initiative and aggressiveness, (h) ability to make and carry out plans, (i) mastery of subject, (j) enthusiasm, (k) interest in teaching and in the CAP Program, (l) instructional ability, and (m) ability as a speaker. Many returned servicemen, while disqualified for active military duty, are making excellent CAP instructors.

b. All instructors should have a thorough knowledge of the purpose, scope, and general plan of the CAP Ground and Preflight Training Program and should keep in mind the fact that each course is a part of this Program and should be approached in light of the entire Program. Also, all instructors should be thoroughly familiar with the material presented in the Preflight Study Manual, as this is the basic text for the training required of all CAP members.

c. It is highly desirable that each instructor take the course, "Fundamentals of Instruction", described in paragraph 70. In cases where this is not practicable, the instructors should thoroughly familiarize themselves with the material presented in Technical Manual 21-250, "Army Instruction".

#### 79. Formation of Classes

So far as practicable, classes should be limited to a total of not to exceed 40 students and should be carried through each course as a unit without adding new students after the course has started.

#### 80. Classrooms

Time and effort devoted to making arrangements for the use of comfortable classrooms affording adequate facilities for the accommodation of the classes will pay good dividends in the successful conduct of the Training Program.

#### 81. Securing Training Aids

It is important that arrangements for securing the necessary training aids be made sufficiently in advance of the time when this equipment is actually required, in order that it may be available when needed and thus avoid confusion and interruption of the Training Program.

#### 82. Preparation of Training Schedules

a. Training schedules should be carefully planned well in advance in order that students and instructors may know what is expected of them and that their work is part of a well-organized program. A sample training schedule is presented in Schedule 5 (page 19). In planning the schedules, it is important that the training officer have the previous training of the students clearly in mind. Repetition is a waste of time and tends to destroy interest. On the other hand, if the course is too advanced for the students, they are likely to become confused.

b. As stated in paragraph 3 e, Part I, the teaching hours shown for each course in Schedules 1, 3, and 4 are exclusive of time required for examinations. Therefore, in order not to infringe upon scheduled teaching hours and upset the Training Program, additional time should be allowed for tests, examinations, general assembly, organization work, and other activities necessary for the execution of the Program.

**83. Supervision**

Training Officers, either directly or through their assistants, should exercise careful supervision over all phases of the Training Program in their units. Supervision is that phase of training management which insures efficiency of training. The Training Program within the unit may be well planned, and adequate facilities and training aids may be available, but unless the execution of these plans is efficient, instruction will not be effective. Proper supervision of the conduct of the training courses is essential to maintain the high standards necessary for the success of the Program.

**84. Organization of Cadet Training in High Schools**

The following procedure, developed by one of the CAP units for the organization of cadet training in high schools, has met with outstanding success and has resulted in excellent cooperation from the schools:

a. Visit the high school principal and explain the purpose and scope of the CAP Training Program.

b. Enlist the cooperation of the school and arrange for the nomination of a faculty member as liaison officer for the CAP Program.

c. Request permission to use classrooms, gymnasium halls, or other school facilities.

d. Arrange for a meeting of all interested faculty members for the purpose of explaining the Training Program and enlisting their cooperation and assistance.

e. Arrange for an assembly of all students of 15 years of age and over. Plan to have the school principal, the designated faculty liaison officer and one or two CAP officers address the assembly to explain the Program, hold a question-and-answer session, and distribute applications.

f. Applications should be turned in to the designated faculty liaison officer within one week, at which time said liaison officer will screen applicants with regard to (a) character and reliability, (b) physical fitness, and (c) scholastic standing.

g. When applicants have been selected, cadet training classes should be carefully organized with not to exceed 40 students per class.

**85. Keys to a Successful Training Program**

A CAP officer with a broad background of successful experience in preflight training schools of the Army Air Forces has offered the following suggestions for the conduct of the CAP Training Program:

a. Tests are important. They keep the students and instructors alert. Allow time for frequent tests in your schedule.

b. Do not plan for more than can be expected of the students and instructors in the time allotted, and with the facilities available.

c. Do not plan to go beyond the prescribed scope of the courses. The general plan has been built carefully. Do not disturb its balance.

d. Form Flights or classes of 20 to 40 students. Plan for each Flight according to its specific needs and take each Flight through the whole course as a unit.

**86. Credit for Previous Training in Required Subjects**

Students who have had previous training in subjects required in the Training Program and who can demonstrate their proficiency in these subjects to the satisfaction of their CAP instructors, will be given corresponding CAP credit. In cases where the schools give preflight courses equivalent to required CAP courses, credit will be given for these courses. In other words, there will be no duplication between the CAP Program and that of the schools.

## SCHEDULE 5—SAMPLE TRAINING SCHEDULE

ALL CLASSES 50 MINUTES—10 MIN. BREAK BETWEEN CLASSES

FLIGHT A

7:30 TO 8:20		ROOM NO.	INSTRUCTOR	8:30 TO 9:20		ROOM NO.	INSTRUCTOR
First Meeting	CAP Orientation	1 hr		Infantry Drill	1 hr		
Second Meeting	CAP Orientation	1 hr		Infantry Drill	1 hr		
Third Meeting	Military Courtesy and Discipline	1 hr		Infantry Drill	1 hr		
Fourth Meeting	Organization of Army	1 hr		Infantry Drill	1 hr		
Fifth Meeting	Military Courtesy and Discipline	1 hr		Physical Training	1 hr		
Sixth Meeting	Organization of AAF	1 hr		Infantry Drill	1 hr		
Seventh Meeting	Safeguarding Military Information	1 hr		Infantry Drill	1 hr		
Eighth Meeting	Articles of War	1 hr		Aircraft Identification	1 hr		
Ninth Meeting	Military Correspondence	1 hr		Infantry Drill	1 hr		
Tenth Meeting	Duties of Command and Staff Officers	1 hr		Aircraft Identification	1 hr		
Eleventh Meeting	Leadership and Command	1 hr		Infantry Drill	1 hr		
Twelfth Meeting	Communications	1 hr		Physical Training	1 hr		
Thirteenth Meeting	Communications	1 hr		Infantry Drill	1 hr		
Fourteenth Meeting	Interior Guard	1 hr		Aircraft Identification	1 hr		
Fifteenth Meeting	Review and Inspections	1 hr		Aircraft Identification	1 hr		

## PART VI—LIBRARY OF REFERENCE TEXTS

**87. Army Texts**

*a. Technical Manuals*

- TM 1-205 Air Navigation
- TM 1-206 Celestial Air Navigation
- TM 1-208 Air Navigation Tables
- TM 1-219 Basic Photography
- TM 1-220 Aerial Photography
- TM 1-230 Weather Manual for Pilots
- TM 1-231 Elementary Weather for Air Crew Trainees
- TM 1-232 Basic Weather for Pilot Trainees
- TM 1-233 Elementary Physics for Air Crew Trainees
- TM 1-235 The Weather Observer
- TM 1-400 Theory of Flight

- TM 1-404 Turbosupercharger and Airplane Powerplant
- TM 1-405 Aircraft Engines
- TM 1-406 Aircraft Electrical Systems
- TM 1-407 Aircraft Induction, Fuel, and Oil Systems
- TM 1-408 Aircraft Engine Operation and Test
- TM 1-410 Airplane Structures
- TM 1-411 Airplane Hydraulic Systems
- TM 1-412 Aircraft Propellers
- TM 1-413 Aircraft Instruments
- TM 1-414 Aircraft Woodwork
- TM 1-415 Airplane Inspection Guide
- TM 1-417 Aircraft Fabric Work and Application of Finishes

- TM 1-430 Welding
  - TM 1-435 Aircraft Sheet Metal Work
  - TM 1-455 Electrical Fundamentals
  - TM 1-460 Radiotelephone Procedure
  - TM 1-465 Airground Communication
  - TM 1-470 Aircraft Radio Shop Practice
  - TM 1-472 Radio Equipment
  - TM 1-705 Physiological Aspects of Flying
  - TM 1-750 Applied Physics for Airplane Mechanics
  - TM 1-900 Mathematics for Air Crew Trainees
  - TM 1-1050 Fundamentals of Mechanical Drawing
  - TM 3-240 Meteorology
  - TM 5-230 Topographic Drafting
  - TM 5-235 Surveying
  - TM 5-240 Aerial Photography
  - TM 5-246 Interpretation of Aerial Photographs
  - TM 5-255 Aviation Engineers
  - TM 5-295 Water Supply and Water Purification
  - TM 11-432 Code Practice Equipment
  - TM 11-455 Radio Fundamentals
  - TM 11-459 Instructions for Learning International Morse Characters
  - TM 11-461 Air-Ground Liaison Code Training Edition No. 2
  - TM 12-220 Administration, the Division and Large Installations
  - TM 12-250 Administration
  - TM 12-252 The Army Clerk
  - TM 20-205 Dictionary of United States Army Terms
  - TM 21-220 Sports and Games
  - TM 21-221 Informal Games for Soldiers
  - TM 21-250 Army Instruction
- b. Field Manuals*
- FM 1-30 Air Navigation
  - FM 1-35 Aerial Photography
  - FM 1-45 Signal Communication
  - FM 1-50 Weather
  - FM 1-60 Reviews and Inspections
  - FM 21-5 Military Training
  - FM 21-10 Military Sanitation and First Aid
  - FM 21-11 First Aid for Soldiers
  - FM 21-15 Equipment, Clothing, and Tent Pitching
  - FM 21-20 Physical Training
  - FM 21-25 Elementary Map and Aerial Photograph Reading
  - FM 21-26 Advanced Map and Aerial Photograph Reading
  - FM 21-30 Conventional Signs, Military Symbols, and Abbreviations
  - FM 21-35 Field Service Pocketbook—Sketching
  - FM 21-50 Military Courtesy and Discipline
  - FM 21-100 Soldier's Handbook
  - FM 22-5 Infantry Drill Regulations
  - FM 24-5 Signal Communication
  - FM 24-6 Radio Operator's Manual, Army Ground Forces
- FM 24-18 Radio Communication
  - FM 24-22 Combined Visual Signaling (V/S) Procedure
  - FM 24-23 Combined Visual Signaling (V/S) Procedure—Abridged Version for Radiotelegraph (W/T) Operators
  - FM 26-5 Interior Guard Duty
  - FM 27-5 United States Army and Navy Manual of Military Government and Civil Affairs
  - FM 30-21 Role of Aerial Photography
  - FM 30-30 Recognition, Pictorial Manual, Aircraft
  - FM 35-20 Physical Training (Women)
  - FM 100-5 Operations
  - FM 100-10 Administration
  - FM 100-20 Command and Employment of Air Power
- c. Army Regulations*
- AR 340-15 Correspondence—How Conducted
  - AR 380-5 Safeguarding Military Information
  - AR 850-20 Precautions in Handling Gasoline
- d. AAF Regulations*
- AAF Reg 60-16 Flying—Air Traffic Rules
  - AAF Reg 60-16A Flying—Air Traffic Rules
  - AAF Reg 60-16B Flying—Air Traffic Rules
  - AAF Reg 60-16C Flying—Air Traffic Rules
  - AAF Reg 60-16D Flying—Air Traffic Rules
  - AAF Reg 60-16E Flying—Air Traffic Rules
  - AAF Reg 85-6 Buildings and Grounds — Fire Prevention in Hangars and Technical Buildings
- e. Technical Orders*
- TO 13-5-2 Operation and Service Instructions—Parachutes—Conventional Type, Man Carrying
  - TO 19-1-105 Fuel Servicing Equipment—Fire Prevention—Discharge of Accumulated Static Electricity
  - TO { 30-100A-1 Instrument Flying—Basic and  
30-100B-1 Advanced (Special Edition for  
30-100F-1 Distribution to all Pilots—15  
January 1944)
  - TO 30-105-1 Your Body in Flight
- f. AAF Manuals.*
- How To Use Film Strips
  - How To Use Training Films (AAF Manual No. 13)
  - Official Guide to the Army Air Forces Preflight Study Manual
  - The Military Triad
- g. Miscellaneous War Department Texts*
- AAF Pub I've Got Wings
  - AAF Pub Jungle-Desert-Arctic-Ocean Survival
  - AAF Pub Physical Fitness Handbook
  - Army-Navy-CAA Pub Standard Airport Traffic Control Procedures

- WD Doc 14a A Manual For Courts-Martial—U. S. Army
- WD LB-X-51 How CAP Cadet Training Helps You Win Your Wings
- WD Pamphlet 21-3 Your Job in the Army

- TD 28 Duties of Servicemen
- TD 29 Military Correspondence

b. *Training Manuals*

- TngM 1 Organization of the Army
- TngM 2 Organization of the Navy
- TngM 3 Organization of the Army Air Forces
- TngM 4 Duties of Command and Staff Officers
- TngM 5 Leadership and Exercise of Command
- TngM 6 Civil Air Patrol—History, Organization and Purpose
- TngM 7 Articles of War - (Formerly CAP TngM 32-4)
- TngM 8 Morse Code (Formerly CAP TngM 38-2A)
- TngM 9 Radiotelephone Procedure (Formerly CAP TngM 34-9)
- TngM 10 Radiotelephone Licenses (Formerly CAP TngM 38-2E)
- TngM 11 Combined Flight Problems

88. **CAA Texts**

- CABul 12 Air Marking (SD GPO 15¢)
- CABul 22 Digest of Civil Air Regulations for Pilots (SD GPO 20¢)
- CABul 23 Civil Pilot Training Manual (SD GPO 65¢)
- CABul 24 Practical Air Navigation (SD GPO \$1.00)
- CABul 25 Meteorology for Pilots (SD GPO 75¢; \$1.25 fabrikoid)
- CABul 26 Aerodynamics for Pilots (SD GPO 30¢)
- CABul 27 Pilots' Airplane Manual (SD GPO 30¢)
- CABul 28 Pilots' Powerplant Manual (SD GPO 75¢)
- CABul 29 Pilots' Radio Manual (SD GPO 25¢)
- CABul 30 Ground Instructor's Manual (SD GPO 15¢)
- CAA Pub Airport Design (SD GPO 15¢)

90. **Miscellaneous Texts**

a. *ARC Text*

- First Aid Text-Book (60¢)

b. *Hydrographic Office Texts*

- H.O. 211 Dead Reckoning, Altitude, and Azimuth Table
- H.O. 214 Tables of Computed Altitude and Azimuth (Vol. IV, Latitudes 30° to 40°, inclusive; Vol. V, Latitudes 40° to 50°, inclusive)

89. **CAP Texts**

a. *Training Directives*

- TD 8 Crash Procedure
- TD 15 Operations Orders

## PART VII—LIBRARY OF TRAINING FILMS

SERIAL NO.	SUBJECT	MINUTES RUNNING TIME	SERIAL NO.	SUBJECT	MINUTES RUNNING TIME
<b>91. Training Films</b>					
TF 1-133	Modern Weather Theory and Structure of Storms—Primary Circulation .....	19	TF 1-290	Celestial Navigation—Introduction and Location of Celestial Points .....	18
TF 1-134	Modern Weather Theory and Structure of Storms—Development and Characteristics.....	14	TF 1-293	Identification of Aircraft—Training of Ground Observers in Aircraft Recognition .....	10
TF 1-153	Modern Aladdin's Lamp .....	22	TF 1-326	Aerial Navigation—Dead Reckoning Procedure .....	26
TF 1-160	Aerodynamics—Air Flow .....	18	TF 1-327	Aerial Navigation—Radio Aids..	29
TF 1-161	Aerodynamics—Forces Acting on an Airfoil.....	26	TF 1-328	Aerial Navigation—Airways Flying .....	29
TF 1-211	Airplane Structures—Structural Units, Materials and Loads for Which Designed .....	8	TF-1-329	Aerial Navigation—Search and Interception .....	18
TF 1-212	Airplane Structures—Wing Construction .....	10	TF 1-330	Aerial Navigation—Radius of Action .....	10
TF 1-213	Airplane Structures—Fuselage Construction .....	8	TF 1-470	Vacuum Tubes—Electron Theory and the Diode Tube.....	16
TF 1-245	Aerial Navigation—Maps and the Compass .....	15	TF 1-471	Vacuum Tubes—The Triode and Multiple Purpose Tubes .....	14
TF 1-246	Airplane Propellers—Principles and Types .....	17	TF 1-472	Radio Receivers—Principles and Typical Circuits .....	17

SERIAL NO.	SUBJECT	MINUTES RUNNING TIME	SERIAL NO.	SUBJECT	MINUTES RUNNING TIME
TF 1-474	Radio Antennas—The Creation and Behavior of Radio Waves.	11	TF 1-3350	Glider Technique	37
TF 1-475	Radio Antennas—Fundamentals of the Antenna	12	TF 1-3351	Camouflage Cartoon	31
TF 1-476	Radio Transmitters—Principles and Typical Circuits	18	TF 1-3361	Tactical Use of the CG-4A Glider	26
TF 1-486	Swim and Live	21	TF 1-3606	Recognition of Aircraft—British Quizcraft No. 7.	10
TF 1-536	Parachutes—Construction and Types	10	TF 1-3639	Recognition of the Vengeance A-31	10
TF 1-619	Identification of U. S. Army Aircraft—B-25 Medium Bomber.	10	TF 1-3655	Recognition of the HE111K Airplane	10
TF 1-797	Survival of the Fittest	17	TF 1-3665	Parachuting Into Water	31
TF 1-800	Aircraft Instruments Part I—Introduction	13	TF 1-3701	Recognition of the Mustang P-51	10
TF 1-900	Identification of U. S. Army Aircraft—B-17F Douglas Heavy Bomber	9	TF 7-143	Infantry Drill—The Squad.	10
TF 1-901	Identification of U.S. Army Aircraft—B-24D Consolidated Heavy Bomber	9	TF 7-144	Infantry Drill—The Platoon	14
TF 1-902	Identification of U. S. Army Aircraft—A-20B Douglas Light Bomber	9	TF 7-248	Instruction of the Soldier, Dismounted—Without Arms, Positions and Facings	22
TF 1-903	Identification of U. S. Army Aircraft—A-28 Lockheed Light Bomber	10	TF 7-249	Instruction of the Soldier, Dismounted—Without Arms, Steps and Marchings	22
TF 1-904	Identification of U. S. Army Aircraft—A-24 Douglas Light Bomber (One-Engine)	9	TF 8-155	Personal Hygiene	36
TF 1-905	Identification of U. S. Army Aircraft—A-31 Northrop and Vultee (One-Engine) Light Bomber	10	TF 8-2047	First Aid for Battle Injuries	18
TF 1-906	Identification of U. S. Army Aircraft—P-38E Lockheed (Two-Engine) Pursuit	9	TF 8-2049	First Aid for Non-Battle Injuries	29
TF 1-907	Identification of U. S. Army Aircraft—C-54 and DC-4 Douglas (Four-Engine) Heavy Transport	9	TF 21-2048	Military Courtesy	22
TF 1-909	Identification of U. S. Army Aircraft—The C-60A Lockheed (Two-Engine) Medium Transport	8	TF 60-73	Winning Your Wings	18
TF 1-910	Identification of U. S. Army Aircraft—The North American P-51 Pursuit	11	TF 528-127-29	Recognition of Aircraft—DB-7 Boston (British Film)	
TF 1-912	Identification of U. S. Army Aircraft—The P-39L Bell Pursuit	9	TF 528-127-30	Recognition of Aircraft—Curtiss SDC-4 Cleveland (British Film)	
TF 1-3300	Learn and Live	45	TF 528-127-32	Recognition of Aircraft—Glenn Martin 167 (British Film)	
TF 1-3305	Take-Offs and Landings—Take-Offs	25	TF 528-127-34	Recognition of Aircraft—Curtiss 8-75-A Mohawk (British Film)	
TF 1-3307	Straight and Level Flight and Effect of Controls	17	TF 528-127-36	Recognition of Aircraft—Vought 156 (British Film)	
TF-1-3310	Radio Operator	20	TF 528-127-42	Recognition of Aircraft—Test Film B—American Types (British Film)	
TF 1-3311	Cadet Classification	18	TF 528-560	Air Navigation—Map Reading	35
TF 1-3312	Army Flying Regulations	13	TF AF-100	The Rear Gunner	22
TF 1-3314	Keep 'Em Flying	32	TF AF-104	Meteorology—Fog	22
TF 1-3317	Bombardier-Navigator	14	TF AF-105	Meteorology—Ice	30
TF 1-3319	Landings	28	TF AF-106	Meteorology—Temperature and Winds	41
TF 1-3337	Bombers over North Africa	22	TF AF-119	Beyond the Line of Duty	25
			MN-83b	Celestial Navigation Charts	15
			MN-299a	Essentials of First Aid	30
			MN-1040j	Identification of Surface Vessels—Identification PB-2Y—Coronado (App.)	8
			MN-1040m	Identification of Surface Vessels—Identification PBO—Hudson (App.)	8

SERIAL NO.	SUBJECT	MINUTES RUNNING TIME	SERIAL NO.	SUBJECT	MINUTES RUNNING TIME
<b>92. Film Strips</b>			FS 1-191	Aerial Navigation—Lambert-Conformal and Mercator Projections	
FS 1-8	Aerodynamics		FS 1-224	Glider Instruments—General	
FS 1-9	Classification of Engine Types		FS 1-241	Glider Woodworking—Glues and Gluing	
FS 1-15	Principles of Internal Combustion Engines		FS 1-242	Glider Woodworking—Wood	
FS 1-16	Structural Units of the Airplane		FS 1-250	Aerial Navigation — Vector Diagrams and Graphic Solutions	
FS 1-17	Aircraft Storage Batteries		FS 1-276	Glider Covering Blanket Method	
FS 1-22	Principles of Liquids and Gases		FS 1-277	Repair of Glider Fabric Covers	
FS 1-23	Introduction to Airplane Instruments		FS 1-304	Glider Insignia and Code Markings	
FS 1-24	Hamilton Standard 2-Position Propellers		FS 1-418	Introduction to Airplane Structures	
FS 1-29	Airplane Flight Control Surfaces and Wing Flaps		FS 1-813	Aerial Navigation—Search	
FS 1-44	Training and Duties of a Bombardier and Navigator		FS 8-26	The Roller Bandages — Barton, Modified Barton, and Parker	
FS 1-46	Parachutes—Construction and Care of the Parachutes		FS 8-27	The Roller Bandages—Circular, Modified Gibson, Knotted Recurrent Bandage of Head	
FS 1-47	Properties of Photographic Lenses		FS 8-28	The Roller Bandages — Four Tailed, First Aid Packet, Figure-of-Eight, Crossed (One Eye), Crossed (Both Eyes)	
FS 1-51	Thermometer		FS 8-30	Triangular Bandages—Face and Jaw Wounds, Triangles, Cravats	
FS 1-63	Effective Study Methods		FS 8-31	Roller Bandages — Face and Jaw Wounds	
FS 1-67	Aerial Navigation—Radius of Action Returning to Same Base		FS 8-32	Extra-Oral Traction Appliances—Wooden Tongue Depressor Traction Appliance, Metal Coat Hangar Traction Appliance	
FS 1-68	Aerial Navigation—Radius of Action Returning to Alternate Base		FS 8-35	Control of Hemorrhage—Face and Jaw Wounds	
FS 1-69	Cross Country by Maps		FS-8-36	Care and Treatment of Face and Jaw Wounds	
FS 1-70	Aerial Traffic Patterns		FS 8-41	Emergency Measures for Wounds and Their Immediate Complications	
FS 1-72	Aircraft Engine Operation		FS 8-60	Sanitation—Disposal of Waste	
FS 1-73	Aircraft Inspection Procedures		ES 8-70	First Aid for Non-combat Injuries	
FS 1-80	Antennas		FS 10-61	The Storage Battery	
FS 1-81	Aircraft Maintenance Inspection—Inspection of Armament		SN 647-J	Inductive Reactance	
FS 1-90	Glider Training—Classes of Gliders		SN 648-J	Capacitive Reactance	
FS 1-91	Glider Training—Aerodynamics		SN 650-J	Vacuum Tubes	
FS 1-92	Glider Training—Care of Equipment		SN 651-J	Detection	
FS 1-93	Glider Training — Tow Ropes and Cables		SN 652-J	Audio Frequency Amplification	
FS 1-94	Glider Training — Launching Equipment		SN 653-J	Radio Frequency Amplification	
FS 1-95	Glider Training — Approaches and Landings		SN 655-J	Regeneration	
FS 1-98	Effect of Controls		SN 805	Lift and Drag	
FS 1-104	General Principles of the Propeller		SN 807	Forces in Flight	
FS 1-111	Typical Instrument Installations in Cockpits		SN 814	Air Ocean	
FS 1-141	Ignition Systems—Principles		SN 815	Air Masses	
FS 1-143	Glider Training—Airwork				
FS 1-146	Glider Training—Soaring Technique				
FS 1-147	Flight Control Mechanisms				
FS 1-152	The Airplane Mechanic				

## PART VIII—GLOSSARY OF ABBREVIATIONS

AAF	Army Air Forces	Doc	Document
AR	Army Regulations	FM	War Department Field Manual
ARC	American Red Cross	FS	War Department Film Strip
CAA	Civil Aeronautics Administration	HO	Hydrographic Office
CABul	Civil Aeronautics Bulletin (Published by CAA)	MN	Navy Motion Picture
CAP	Civil Air Patrol	Pub	Publication
		Reg	Regulation

SD-GPO Superintendent of Documents, Government  
Printing Office  
SN Navy Film Strip  
TD CAP Training Directive

TF War Department Training Film  
TM War Department Technical Manual  
TngM Training Manual  
TO AAF Technical Order  
WD War Department

By order of Colonel JOHNSON:

HARRY H. BLEE  
Colonel, Air Corps  
Operations & Training Officer

OFFICIAL:

WM. R. WILKINSON  
Captain, Air Corps  
Adjutant

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