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THE  
PREFLIGHT SCHOOLS  
IN  
WORLD WAR II

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AIR HISTORICAL STUDIES NO. 90

<p>101-90 1941-1953</p>	<p>RETURN TO:  Director Aerospace Studies Inst ATTN: Archives Branch Maxwell AFB, Alabama</p>
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HISTORY OF PREFLIGHT TRAINING IN THE AAF

1941-1953

USAF  
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Air University, U. S. Air Force  
June 1953

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CONTENTS

	Page
FOREWORD . . . . .	i
I BACKGROUND OF WORLD WAR II PREFLIGHT SCHOOLS, 1907-1941 . . .	1
Early Military Flying Schools . . . . .	2
World War I . . . . .	3
Peacetime Pilot Training, 1919-1939 . . . . .	7
Expansion of the Air Corps, 1939-1941 . . . . .	14
II ESTABLISHING THE PREFLIGHT SCHOOLS . . . . .	20
The Replacement Training Centers . . . . .	21
Separate Bombardier and Navigator Schools . . . . .	25
The Classification Centers . . . . .	27
The College Training Program . . . . .	35
Evaluation of the College Training Program . . . . .	44
The College Flying Training Program . . . . .	46
Evaluation of the College Flying Training Program . . . . .	48
Proposal to Abolish Preflight Training . . . . .	51
Summary of Preflight Developments, 1941-1944 . . . . .	53
III THE EVOLUTION OF THE PREFLIGHT CURRICULUM, 1940-1945 . . . . .	55
The Five-Week Plan . . . . .	56
The Ten-Week (Pilot) Preflight Program . . . . .	59
The Nine-Week (Pilot) Preflight Program . . . . .	63
Bombardier and Navigator Preflight Curriculum . . . . .	71
The College Curriculum . . . . .	73
The New Ten-Week Preflight Program . . . . .	82
Preflight Academic Subjects . . . . .	83
Aural and Visual Code . . . . .	84
Aircraft Recognition . . . . .	85
Applied Aero Mathematics . . . . .	87
Maps, Charts, and Aerial Photos . . . . .	88
Applied Aero Physics . . . . .	89
Naval Vessel Recognition . . . . .	90
Aircraft and Principles of Flight . . . . .	90
Military Training . . . . .	91
Physical Training . . . . .	93
Other Preflight Training Subjects . . . . .	94
IV PREFLIGHT INSTRUCTION . . . . .	96
The Civilian Instructor . . . . .	97
The Militarization of the Preflight Schools . . . . .	100
Instructor Qualification . . . . .	107
Instructor Training and Supervision . . . . .	109
Grading and Testing . . . . .	115
Instructional Aids . . . . .	117

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~~CONFIDENTIAL~~

~~UNCLASSIFIED RESTRICTED~~





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AHS-90

~~CONFIDENTIAL~~  
RESTRICTED

V PREFLIGHT STUDENTS . . . . . 119

    Student Load and Flow . . . . . 119

    Holdovers and Eliminations . . . . . 124

    Foreign Preflight Students and Programs . . . . . 128

    Negro Preflight Training . . . . . 132

    The Class System . . . . . 132

    Student Organization and Student Officers . . . . . 135

    Student Morale . . . . . 137

VI EVALUATION OF THE WARTIME PREFLIGHT PROGRAM, 1941-1945 . . . . . 141

    Achievements of Preflight . . . . . 141

    Criticisms of Preflight . . . . . 145

VII PREFLIGHT TRAINING SINCE WORLD WAR II, 1945-1952 . . . . . 151

    The Informal Preflight Program, 1946-1948 . . . . . 152

    The Proposed Formal Preflight Training Program, 1947-1948 . . . . . 156

    Expansion of Informal Preflight Training, 1948 . . . . . 161

    The Four-Week Preflight Training Program, 1949-1952 . . . . . 162

    Aircraft Observer (Bombardment) Training, 1945-1952 . . . . . 165

    The Civilian Contract Schools . . . . . 169

VIII THE PRESENT CONSOLIDATED PREFLIGHT PROGRAM, 1952-1953 . . . . . 177

    The Proposed Twelve-Week Program Plan, 1949 . . . . . 177

    The Proposed 18-Week Consolidated Preflight and Light-Plane  
    Screening Program, 1951 . . . . . 178

    The Present 12-Week Preflight Program . . . . . 182

    Aircraft Observer Preflight Training . . . . . 187

IX Brief Summary of Preflight Training Since World War I . . . . . 192

GLOSSARY . . . . . 194

FOOTNOTES . . . . . 195

BIBLIOGRAPHY . . . . . 222

INDEX . . . . . 227

iii UNCLASSIFIED SECURITY INFORMATION  
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FOREWORD

This monograph is a study of preflight training in the AAF from 1941 to 1953. As used in this study "preflight" refers to the phase of training prior to actual flight instruction. The origin and organization of preflight training are described in detail, with particular emphasis upon pilot preflight. Before the United States began to expand its air forces, there was little need for training cadets prior to their entrance into primary. But the large expansion in pilot, bombardier, and navigator training quotas during World War II made necessary the inauguration of some kind of indoctrination program to compensate for the wide differences in the quality of trainees: preflight therefore was an attempt--during World War II--to raise the common level of learning and avoid the high elimination rates that were characteristic of the post-war training programs. Since the fall of 1952 the principal purpose of preflight, however, has been one of motivation.

This writer has attempted to trace briefly, for background purposes, the high points in the history of military aviation in the United States from its beginning to World War II. Various AAF training programs (primary, basic, and advanced) and pilot production quotas are discussed only in their relation to the preflight picture, and therefore constitute an insignificant aspect of the monograph. The present study was written by Dr. W. Eugene Hollon, Associate Professor of History, University of Oklahoma, Norman, Oklahoma.

Like other Historical Division studies, this history is subject to revision, and additional information or suggested corrections will be welcomed.

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1

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BACKGROUND OF WORLD WAR II PREFLIGHT SCHOOLS, 1907-1941

Half a century ago Wilbur Wright wrote, "When men have learned to balance and steer, the age of flying machines will have arrived." Since that memorable day, 17 December 1903, when a mechanically driven plane first supported itself in the air, methods of flying training have undergone changes no less revolutionary than the airplanes themselves.

Wilbur and Orville Wright did not at first foresee that their "creation" would be used as an instrument of war. Nevertheless, they opened the way for man's conquest of the air, and nothing was to contribute more to the tremendous growth and development of the airplane and the training of pilots in mass numbers than the impetus of war. The Wright brothers had learned to fly their machines after thousands of gliding experiments; their final success gave confidence to others. Before many years had passed, daring pilots throughout the world were surpassing them in mastering the techniques of flying and the air age had at last arrived.

The improvements and advances that have made the air age possible have often been made at the expense of simplicity of structure, and the modern plane is an extremely complex machine. If the first planes were clumsy and inefficient, they were also simple in construction; and learning to fly now requires this, and a great deal more. The pilot does not have to be a graduate aeronautical engineer, but training him to handle skillfully and with confidence so complicated and delicate a mechanism as the modern plane has become a job of considerable magnitude. One important training development has been the emergence and application of a "preflight" concept, and it is this with which the present study is concerned.

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~~RESTRICTED~~ SECURITY INFORMATION 2Early Military Flying Schools~~CONFIDENTIAL~~

On 1 August 1907 the United States Congress established an aeronautical division in the office of the Chief Signal Officer and stipulated that this division would have charge of matters pertaining to military ballooning, air machines, and all kinds of "airships."<sup>1</sup> A few months later the Chief Signal Officer called for bids on a heavier-than-air "flying machine." On 10 February 1908 a contract for such a machine was awarded to the Wright brothers; and on 3 September 1908, Orville Wright began making test flights at Fort Meyer, Virginia. On 17 September Orville took Lt. T. E. Selfridge with him as a passenger. During the flight a rudder guy wire broke and caused the machine to crash; Lieutenant Selfridge was killed, and Orville was seriously injured. When Orville had recovered, the Wrights, having secured an extension of time for completing their contract, built another machine. This was test flown the following July and was accepted by the Signal Corps on 2 August 1909. To fulfill their contract, the Wrights had to train two Army officers to fly the machine;<sup>2</sup> thus began the first military pilot training program in the United States.

The two officers selected for flight training were Lt. F. P. Lahm and Lt. F. E. Humphreys. Wilbur Wright began their instruction at College Park, Maryland on 8 October 1909 by giving them instructional trips of about five minutes each. By 26 October 1909 both trainees had accumulated approximately three hours' flying time and were ready to solo. Lt. Humphreys was the first to pilot the plane alone, followed by Lt. Lahm a few minutes later. A third officer, Lt. E. D. Foulois, received flight instruction from Wilbur Wright and Lt. Humphreys at College Park.

Because cold weather had set in, the Chief Signal Officer decided to discontinue further training at College Park and transfer operations to Ft. Sam

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3

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Houston, San Antonio, Texas, where the climate was much more suitable for winter flying. Lt. Humphreys and Lt. Lahm, however, were recalled to their respective permanent assignments in the Army, and only Lt. Foulois, who had had approximately three hours' flight training, was left of the so-called "U. S. air forces." It should be mentioned that in addition to Foulois, there were eight enlisted men in the U. S. air force at this time, but they were not taking flight training. In February 1910, Foulois arrived at Fort Sam Houston, the plane arriving shortly thereafter.

By the end of the month the plane had been reassembled, and the officer then began the hazardous task of completing his own flying instruction, since there was no one to instruct him. He did, however, carry on an extensive correspondence with the Wrights. "Thanks to the . . . 'correspondence course' with the Wright Brothers," he reflected many years later, "I learned to fly safely, and to the best of my knowledge, am probably the only U. S. Air Force pilot who ever learned to fly by this method of remote control instruction."<sup>3</sup>

By 1911 the Army was taking more interest in military aviation. On 20 May the first real pilot training school was opened at College Park, Maryland; and by the end of that year the air strength of the U. S. Army air forces consisted of six officers with airplane certificates and five airplanes. Other schools were subsequently opened in the Philippines, California, Ohio, and Texas. Nevertheless, by the time the United States entered World War I, the total strength of its air arm amounted to no more than 52 officers and 1,100 men, plus approximately 200 civilian mechanics. According to one authority, only 26 men were "really qualified" out of a total of 130 "so-called pilots."<sup>4</sup>

#### World War I

Because circumstances had not forced the United States into an intensive build-up of its strength it was, in 1917, far behind the other leading nations

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4

of the world; but there now existed a compelling reason for developing a formidable air weapon. Soon after war was officially declared (6 April 1917), the Allied nations sent air advisers to the United States to help in the planning of a large scale training program. Meanwhile, before the advisers arrived, a board of American officers had made a rapid survey of Canadian air training methods and facilities and had recommended that immediate steps be taken to copy them in the United States.<sup>5</sup>

The Canadian program called for assembling all pilot candidates in ground schools for eight weeks of indoctrination before sending them to preliminary (primary) schools for six to eight weeks of flying instruction. This indoctrination training was the forerunner of the preflight training given on an extensive scale during World War II. Interestingly enough, both World War I and World War II preflight training programs were originally copied from the Canadians. In both instances the need for establishing a training program for cadets prior to their receiving actual flight training was obvious: in a large scale training program, educational and military qualifications naturally have to be lowered, and some type of preflight material helps to reduce the number of eliminations that would otherwise occur.

General John J. Pershing planned that 260 American squadrons--approximately 5000 pilots--should be ready to participate in the war against Germany by 1918. The qualifications for pilot trainees in 1917-18 were that they must be honest, athletic, under 25 years of age, and possess two years of college or three years of scientific training. To train the thousands of men required to meet the 5000 quota, it was necessary to solicit the help of various educational institutions. Accordingly, the following universities were selected: Cornell University, the University of California, Ohio State University, Georgia School of Technology, the University of Illinois, the Massachusetts Institute of Technology, Princeton

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5

University, and the University of Texas.<sup>6</sup> Approximately 38,700 men eventually volunteered for flying training during 1917-18 and were sent to one of the above institutions for eight weeks of indoctrination training somewhat similar to the program which would be instituted in the preflight schools in 1941.

The World War I ground schools were set up hurriedly and at first without much thought about the course of study. The word preflight was not generally used during World War I. All training prior to actual flight training was called ground training, or indoctrination training, but this phase might well be considered the antecedent of modern preflight. Lt. Gen. Barney M. Giles recently described his ground school experience at the University of Texas, which furnishes an apt illustration of the so-called preflight training picture in 1917:<sup>7</sup>

Upon arrival at Austin, I was deeply impressed with the strict military discipline that was enforced and also with the number of subjects we had to study and on which we had to pass an examination in eight weeks. It appeared that no one in the army had much of an idea as to what to teach. So, the curriculum was left up to the college professors who, naturally, wanted to teach their pet subjects, and they came out with thirty-two. Mind you, thirty-two various subjects. A failure in one subject or the slightest violation of military orders or discipline would result in the cadet's being called before the commanding officer for an explanation. In most cases, the explanation would not be considered satisfactory, and the cadet would be eliminated from further training.

The situation soon changed, however; working toward a uniform course of study, the Army eventually adopted the following program, which remained unaltered for approximately a year:<sup>8</sup>

<u>Courses</u>	<u>Hours</u>
1) Engines	35
2) Observation	31
3) Meteorology	2
4) Signaling	20
5) Gunnery and bombing	24
6) Airplanes	21
Total	<u>133</u>

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6

To keep the men in ground school until the overcrowded flight schools could accommodate the load, the length of the course was, late in 1918, extended from 8 to 20 weeks.<sup>9</sup> Each of the above subjects was expanded, and a new course in navigation instruction (15 hours) was added; but most of the additional time was given to drill and physical fitness: "We learned early in the [first] war," an AAF official reflected in 1943, "that the people who returned from overseas were the people who were in the best physical condition."<sup>10</sup> The emphasis placed upon physical fitness foreshadowed an argument about the proper subjects for this training that was to reach a climax in World War II.

After completing the ground phase at one of the colleges or universities mentioned above, the World War I cadets entered preliminary (primary) flight training, which was conducted at the 25 separate flight schools that had been opened by the end of the war.<sup>11</sup> Cadets graduated after six to eight weeks of flight training, depending upon flying conditions and availability of training facilities and instructors. They were then commissioned and sent to advanced schools: "Bombing instruction was given chiefly at Ellington Field, Texas; observation pilot courses were given at Taliaferro Field, Texas, and at other establishments; and all pursuit training was carried on in France, due to the absence of the necessary equipment in the United States."<sup>12</sup>

The "Jenny" was a simple airplane, and it did not take much "book-learning" or flying practice to handle it: after approximately 90 hours of flying time the pilots of World War I were considered qualified for front-line duty. By way of contrast--for twin engine ratings--World War II pilots, by the spring of 1944, were receiving ten weeks training in each of the following phases before being considered ready for combat: preflight,<sup>13</sup> primary,<sup>14</sup> basic,<sup>15</sup> advanced,<sup>16</sup> and transition.<sup>17</sup> This represents a total of 50 weeks of actual ground and flight training, or 716 and 330 hours respectively. The magnitude

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of the World War II program is even more impressive when the number of pilots trained during the two periods is compared: from 1917 to 1 January 1919, approximately 16,000 men graduated from ground school,<sup>18</sup> whereas from 31 December 1942 to 31 August 1945 the number graduating from preflight was approximately 325,000.<sup>19</sup>

Nevertheless, the training program expanded sufficiently during World War I that the machinery for supervising it had to be modified. In the early months of World War I, pilot training functioned under the supervision of the Signal Corps Training Section. Early in 1918, all pilot training was placed under a separate Division of Military Aeronautics directed by Colonel H. H. Arnold. The Training Section of this division, headed by Colonel M. F. Davis, "supervised methods of instruction and curricula, carried on inspections and liaison, maintained data, records and reports, and directed the movement of the personnel."<sup>20</sup> Though the average proficiency of pilots was very low compared with modern standards, the results obtained by the end of 1918 were by no means minor,<sup>21</sup> especially when the shortage of training equipment and instructors and the absence of cumulative training experience is considered. The Air Corps in subsequent years was frequently able to profit by the experience gained during 1917-18.

Peacetime Pilot training, 1919-1939

Because most of the ground training was completed before the cadets entered flying training, the former actually served as a "preflight" phase of training during World War I. From the end of the war, however, until the establishment of the replacement training centers in 1941, there was no formalized preflight program in existence. Flight training started the second week of primary and was conducted concurrently with ground training until the trainees had completed advanced training. One reason that the air forces did not, in the period between the two wars, include any formalized training prior to a student's actual

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flight instruction was that they were, in some degree, assured of high educational standards and/or prior military experience in their trainees. Consequently, they did not feel the necessity for an extended indoctrination and processing phase. But there is some evidence, as will be seen, that the above reason could not have held for long; another was, perhaps, more cogent: immediately after World War I, our whole aviation training program dropped back into the doldrums, and the aviation forces suffered for two full decades from a program of retrenchment. Training activities during the period between the two wars might be separated into three time periods: 1919-1922, 1922-1926, and 1926-1939.

During the first period, pilot training was divided into two phases--a four-month preliminary phase and a three-month advanced phase. Preliminary flight training was conducted at Carlstrom Field, Florida and March Field, California, while advanced training was conducted at Post Field, Oklahoma, Kelly Field, Texas, and Ellington Field, Texas. Instruction was supervised by the School Section, Division of Military Aeronautics, which was composed of four officers and a few civilians.<sup>22</sup> The ground school courses taught in the preliminary phase were practically the same as those courses offered by the educational institutions at the end of World War I.

The total number of students who entered preliminary training during the first and second peacetime training period (1919-1926) was 2,488. Approximately five-eighths, or 1,494, entered as flying cadets directly from civilian life. The remainder consisted of officers of the Regular Army, Organized Reserve, National Guard, Marine Corps, United States Navy; certain officers who had received lighter-than-air training; and non-commissioned officers. Of the 2,488 students who entered preliminary during this period, only 793 had graduated from advanced by the end of 1926.<sup>23</sup>

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The conclusion is obvious: a preflight program would have lowered this high elimination rate by getting rid of misfits at an early date and by better preparing the more apt students so that they could survive the later training. It would, in fact, have effected tremendous financial savings at a time when total appropriations for the air forces were relatively small. Indeed, this factor was one of the primary considerations that led to the recent (1952) establishment of a 12-week preflight school for pilot and aerial observer trainees. (See Chapter VIII.)

The second post-war period (1922-1926), however, saw an important change in the organization of pilot training. In June 1922 all training activities were centralized at San Antonio, Texas, in order to effect a saving of funds and at the same time take advantage of a climate suitable for flying. Primary was conducted at Brooks Field, advanced at nearby Kelly Field; both courses lasted for 26 weeks. This centralization of training was in line with Air Service peacetime policy, as opposed to expansion in time of war.<sup>24</sup>

As previously stated, there was no formalized preflight program in existence during the peacetime period. However, there did exist an informal period of training, lasting from one to two weeks, that might well be considered as preflight. In 1924 one of America's foremost future aviators, Charles A. Lindbergh, entered primary training at Brooks Field. His description of his activities prior to receiving actual flight training furnishes a brief but adequate picture of the so-called informal preflight training that cadets received at this period:<sup>25</sup>

Two weeks were required to become organized and learn the preliminary duties of a cadet. During these two weeks we were inoculated against typhoid and small-pox at the hospital, taught the rudiments of cadet etiquette, given fatigue duty, required to police the grounds surrounding our barracks, inspected daily, and instructed and given examinations in five subjects. In our spare time we were allowed to look around the post or take the bus to San Antonio, provided, however, that we were back in bed not later than ten o'clock on Sunday, Monday, Tuesday, Wednesday, Thursday and Friday nights. At all other times we could stay out as late as we desired.

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When we did have a few spare moments in the afternoon, they were usually spent in trying to "chizzle" a hop from one of the instructors on the line.

Another training feature that should also be mentioned in connection with the 1922-1926 period was the adoption of the Gosport method of instruction. This system originally had been copied from the Canadians during World War I, but was abandoned in 1919 in favor of the stage system. Under the Gosport system the same instructor went through the entire course with a particular group of students, whereas under the stage system the students passed to a new instructor for each new phase. The Gosport system had many advantages in a centralized training program, but obviously could not operate as efficiently where training was decentralized. It was tried several times on an experimental basis between 1926 and 1940, but it was again abandoned when the Air Corps began its large expansion programs prior to World War II, programs which required the assembly-line techniques of the stage system.

Many changes took place during the third (1926-1939) peacetime period of flying training. On 2 July 1926 the Air Service was designated the Air Corps and it began a five year expansion program, designed to raise the United States air strength to 1,518 officers, 2,500 flying cadets, 16,000 enlisted men, and 1,800 serviceable planes.<sup>26</sup> A significant result of the Air Corps Act was the establishment of the Air Corps Training Center at Duncan Field, near San Antonio, and the centralization of supervision here under Brig. Gen. Frank P. Lahm. General Lahm took over his new duties on 1 September 1926. The function of the training center was defined as "to instruct and train students . . . as airplane pilots to a degree of proficiency which will qualify them to perform military missions with tactical organizations of the Air Corps and which will give them a foundation that will enable them to qualify for duties of a junior officer of the Air Corps."<sup>27</sup>

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The actual over-all management and supervision of flying training has remained in the hands of the training center since 1926.

General Lahm expressed a determination in 1926 to establish closer supervision of flying training activities and to coordinate primary and advanced training so that there would be a higher elimination rate among primary and a lower one among advanced students.<sup>28</sup> The following table indicates the results of his efforts during the five year expansion period:<sup>29</sup>

<u>Year</u>	<u>Students entering primary</u>	<u>Students entering advanced</u>	<u>Students completing advanced</u>
1927	738	137	74
1928	1065	204	191
1929	1167	328	313
1930	1187	263	247
1931	1327	325	300

It may be noted that approximately 20 per cent of those who entered primary during the above period eventually completed advanced training. This final graduation rate was about the same as for the preceding five year period (1922-1926), when approximately 50 per cent of the total entering students completed primary and approximately 20 per cent of the initial group eventually graduated from advanced.<sup>30</sup>

General Lahm's policy of eliminating most of the misfits in primary resulted in a saving of funds, but even more could have been saved had there been a preflight program at this time. Subsequent experience gained during World War II and the post-war period has proved that the earlier flying trainees are eliminated, the greater saving in money in the long run. "It costs a lot less to eliminate the misfits early in a preflight program than to wait until after we have given them a lot of expensive flight training in primary or basic," a USAF official recently remarked to the writer.<sup>31</sup> Unfortunately many years had to pass and large sums of money had to be spent

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before the Air Corps accepted the idea of establishing preflight training as a permanent arrangement.

In addition to the inauguration of the five year expansion program and the establishment of the Air Corps Training Center in 1926, the period saw a major change in the curriculum to provide for eight months of primary and basic training and four months of advanced. Students were to receive 152 hours of flight instruction and 360 hours of ground school instruction during the primary period. The ground school curriculum was as follows:<sup>32</sup>

<u>Courses</u>	<u>Hours</u>
1. Aerial navigation	24
2. Buzzer practice (12 w.p.m. proficiency)**	48
3. Combat orders	4
4. Engineering	100
5. Ground gunnery	48
6. Maps	20
7. Meteorology	20
8. Military organization and equipment	4
9. Personal equipment of the pilot	4
10. Photography	8
11. Reconnaissance	8
12. Signal communication	12
13. Theory of flight	20
14. Infantry drill with rifles	40
Total	<u>360</u>

This course of study, with alterations, remained in effect until 1939.<sup>33</sup> In March 1929 the course, in combat orders, reconnaissance, signal communications, and photography were transferred from primary to advanced training, and the courses in military organization and employment were dropped.<sup>34</sup> Additional changes were made in the allocation of hours to various subjects each year from 1931 to 1939, but the basic pattern of courses remained the same.<sup>35</sup> In 1941 when the replacement training centers (preflight schools) were established, many of the above subjects were included in the various curricula subsequently adopted: e. g., navigation, code, combat orders, maps, meteor-

\*International Morse code.

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ology, military organization, personal equipment, theory of flight, and drill.

Besides the adoption of the above course of study, there was a further development that looked forward to the World War II preflight schools. This was an attempt to formulate a classification system which would define the potentialities of candidates for flight training. In 1928 the Air Corps introduced psychological tests which candidates had to pass, along with a thorough physical examination, before being admitted to flying training. The psychological tests were supposed to measure various mental aptitudes, but they did not prove too successful and were soon abandoned.<sup>36</sup>

From the late 1920's to the period immediately preceding our entrance into World War II, no further attempt was made to process cadets for various types of flying training or to provide any formal indoctrination prior to actual flight training. In 1940, when the Air Corps began its tremendous expansion in preparation for war, the absence of such a program became an acute problem; but the matter was eventually solved by the establishment in 1941 of the preflight schools. Indeed, the initial processing, indoctrination, and classification of aviation cadets became the nucleus of the preflight curriculum. (See Chapter III.)

On 1 October 1931 the Air Corps Training Center headquarters was transferred to the newly activated Randolph Field; there it remained until World War II. From the former date until July 1939 primary and basic training for the Air Corps was conducted at "The West Point of the Air," while advanced instruction was, until 1940, carried on at Kelly Field.<sup>37</sup> The decision to keep Kelly Field and not consolidate all training at Randolph Field, even though the latter was sufficiently large to accommodate all training, proved to be a wise one: the new field provided a base for future expansion. In the autumn of 1941 Kelly Field became the home of the replacement training

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AHS-90 ~~RESTRICTED~~SECURITY INFORMATION  
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14

center (preflight school) for the Gulf Coast Training Center, and from 4 July 1942 until the end of the war it was known as the San Antonio Aviation Cadet Center (SAACC). From May 1944 until 30 June 1945 all preflight training was conducted here.

Expansion of the Air Corps, 1939-1941

In 1938 the Air Corps produced 411 pilots.<sup>38</sup> This marked the second time since the end of World War I that more than 300 pilots had been graduated from advanced training in a single year. The other occasion was in 1929 when 313 were graduated from advanced training. It took the dramatic events in Europe in 1938 and the outbreak of war in 1939 to demonstrate the urgent need for a tremendous expansion of our air forces. Fortunately, the basic training pattern which had been developed during the peacetime period was well established and could be expanded to a much larger network of stations. Furthermore, the quality of the few hundred graduates of advanced flying was perhaps the best in the world; these officers constituted an excellent initial force for the desperate race against time to overtake the Axis air forces.

As the year 1939 began, the Air Corps consisted of 1,600 officers, 18,000 enlisted men, and 1,700 tactical and training planes.<sup>39</sup> President Roosevelt addressed Congress on 12 January of that year and strongly urged that \$300,000,000 be appropriated for the purchase of aircraft and the personnel expansion of the Air Corps. Congress responded a short time later (3 April 1939) by passing a measure which authorized the procurement of 3,251 additional aircraft, an increase in the number of officers to 3,203, and an increase of enlisted men to 45,000.<sup>40</sup>

Even before the appropriations to expand the Air Corps were made, plans

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AHS-96

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15

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to increase the output of pilots had already been formulated. Maj. Gen. H. H. Arnold, Chief of the Air Corps, appointed a board of Air Corps officers early in November 1938 to study the existing training facilities and to make recommendations for expansion. The board produced a plan on 25 November 1938 which in essence was as follows:<sup>41</sup>

- 1) Enter 666 cadets every six weeks in primary civil flying schools.
- 2) Give all basic training at Randolph Field, with emphasis upon military indoctrination.
- 3) Give advanced training at Kelly Field and Brooks Field.
- 4) Turn over specialized training to the tactical units of GHQ Air Force, rather than the training center.
- 5) Reduce flying training to 36 weeks -- 12 weeks each for primary, basic, and advanced.

The above program was designed to train 4,500 pilots within two years, and was correlated with the 24-group program. It was approved on 21 December by General Arnold, who pronounced it "a wonderful opportunity to put into operation, on a small scale, the plan we would use in the event of a major war."<sup>42</sup> As soon as funds were available, steps were taken to implement the above recommendations. Contracts were made with nine civilian air schools to offer primary training,<sup>43</sup> the first class to begin 1 July 1939. Actual transfer of personnel and equipment from Randolph Field to the civil schools took place in June 1939, and the contract schools were able to open on schedule.

The ground school curriculum used in the civil primary schools was almost identical with the one formerly in use at Randolph Field, except for the dropping of code and the reduction of the program to 12 weeks. In addition to 65 hours of flight training, cadets were to receive 225 hours of ground school instruction in the primary schools. The following academic

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course of study operated until the establishment of the preflight schools in the fall of 1941.<sup>44</sup>

<u>Courses</u>	<u>Hours</u>
1. Personal equipment of the pilot	3
2. Mathematics	20
3. Theory of flight	20
4. Airplane engines	72
5. Maps and air navigation	42
6. Federal aids to air navigation	12
7. Meteorology	24
8. Military hygiene	4
9. Airplanes	28
Total	225

Mathematics and military hygiene were later transferred into the first preflight school curriculum. On 21 April 1943<sup>45</sup> the course in maps was also made part of the preflight curriculum, followed on 23 May 1944 by the courses on airplane and theory of flight.<sup>46</sup> Thus, the civil primary schools were one of the modern antecedents of the wartime preflight schools. Indeed, there was strong sentiment in the autumn of 1940 to expand the primary civil schools to include separate preflight training, but this move did not develop for reasons that are discussed in the following chapter.

In addition to the establishment of the civil primary school, all the other recommendations made by the board were adopted. A further step to expand the Air Corps training program was likewise taken in September 1939 when the first of some 435 colleges accepted the government's invitation to conduct ground school and flying training for young civilians. It was hoped that by this action some 20,000 young men would receive preliminary training in light planes, to supplement the regular Air Corps program. The (college) civil pilot training program--~~OPF~~--"achieved the objectives, in the main, for which it was set up,"<sup>47</sup> and paved the way for the utilization of educational institutions during World War II as pre-preflight schools.

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AHS-90

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17

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The program to train 4,500 pilots in two years was only a preliminary step in a gigantic expansion of the Air Corps. On 10 May 1940 Germany began her invasion of western Europe, and the startling success of her air forces awakened the United States to the urgency of still further increases in number of American pilots and planes. Four days later, General Arnold obtained approval from President Roosevelt to increase the production of pilots to 7,000 per year and of navigators and bombardiers to 3,600 per year.<sup>48</sup> The 7,000-pilot program was correlated with the 41-group program. On 16 May 1940 the principal officers of the Air Corps Training Center were ordered to Washington to assist in drafting plans for the 7,000 program.<sup>49</sup> In order to meet new quotas it was ultimately decided to reduce the training period from 12 weeks to 10 weeks for each phase. An additional five weeks was established for specialized training. Bombardiers and navigators were to be salvaged from pilot training failures and were to have a 10-week course and be commissioned after their former classmates had received their commissions as pilots.<sup>50</sup>

Several new military schools were needed to carry out the 7,000-pilot program. Nine more civil flying schools were eventually opened for primary training; basic was to be conducted at Randolph Field, Texas, Maxwell Field, Alabama, and Moffett Field, California; advanced training was to be conducted at Kelly Field, Texas, Brooks Field, Texas, and at new stations to be opened in South Texas, the San Joaquin Valley in California, and near Montgomery, Alabama. The plan was approved by Gen. George C. Marshall, Chief of Staff, on 6 June 1940.<sup>51</sup>

Another significant feature that had a far-reaching effect upon World War II training was the breaking up of the Air Corps Training Center, which had been at San Antonio since 1926, into three organizations: the Gulf Coast

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AHS-90

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18

Air Corps Training Center, with headquarters at Randolph Field; the West Coast Air Corps Training Center, with headquarters at Moffett Field, subsequently moved to Santa Ana, California; and the Southeast Training Center, with headquarters at Maxwell Field.<sup>52</sup>

No sooner had the plans for the 7,000-pilots-per-year training program been put into operation than it became necessary to make further revision. By midsummer 1940 Germany had completed the conquest of France, and it was now quite clear that she did not plan to stop until all of the countries of the western world had been subdued. As a further preparedness move, formal planning began on 8 August 1940 to increase our annual production of pilots to 12,000.<sup>53</sup> To realize this goal it would be necessary to construct three new basic flying schools and five more advanced schools, which would increase the former to seven and the latter to twelve.<sup>54</sup>

In connection with the 12,000-pilots-per-year program, or 54-group plan, a suggestion was initiated on 1 October 1940 to establish three replacement training centers for processing and indoctrinating the cadets prior to their entrance into primary flight training.<sup>55</sup> The proposal to establish the replacement centers near the training center headquarters was postponed temporarily for reasons that are discussed in Chapter II. However, it is important to note at this point that the Air Corps fully realized that its training program would not stop at 12,000 pilots per year. It was also aware that the time would ultimately arrive when there would not be enough candidates with two years' college training to meet the demands for aviation cadet training. Hence, some type of additional training would ultimately have to be introduced to compensate for the lowered entrance standards: the Air Corps was firm in its determination not to reduce the quality of its graduates.

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Events in Europe during the fall and winter of 1940-41 accelerated training goals once again. On 25 March 1941 the Office of Chief of Air Corps outlined, before the Senate subcommittee of the Committee on Appropriations, the need to increase the 12,000-pilots program to 30,000 pilots per year.<sup>56</sup> The 30,000-pilot program was correlated with the 84-group plan. In addition to 30,000 pilots per year, original plans also called for the training of 4,888 navigators, 5,590 bombardiers, and 16,822 gunners per year. The program was assured a short time later when a similar subcommittee of the House approved a measure to provide the necessary funds.<sup>57</sup> The stage was now set for another tremendous expansion of training facilities which would result in the definite establishment of preflight schools as part of the general training picture.

Before the ambitious expansion program had gone much beyond the initial planning stage, the Japanese struck at Pearl Harbor on 7 December 1941. Once again the goals for pilots, bombardiers, and navigators were raised, first to 50,000, then to 75,000, and eventually to 100,000.<sup>58</sup> The details of these gigantic training programs belong to a separate study; but it may be said here that, beginning with the 30,000 program, the preflight schools were directly affected by each new expansion program, a point which subsequently will become clear.

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AHS-90

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Chapter II

ESTABLISHING THE PREFLIGHT SCHOOLS

As noted in Chapter I, the beginning of World War II brought unprecedented expansion of the Air Corps and the launching--in rapid succession--of various training programs, each new program larger than its predecessor. Thousands of young men enlisted in the Air Corps to provide a tremendous backlog of cadet candidates even before the United States entered the war in December 1941. But in order to encourage enlistments and meet its quotas, the Air Corps gradually had to relax its educational requirements. The Aviation Cadet Qualification Examination (AC20A) was used by the AAF after 15 January 1942 in lieu of the former two years of college requirement.

Thus the educational backgrounds of the thousands of recruits were now considerably below what had formerly been considered adequate--and they varied widely. At the same time, the Air Corps could not afford to eliminate men during training at the rates possible in peacetime. Maj. Gen. Barton K. Yount, in an article published 20 months after we had declared war, stated the problem in a slightly different way, and indicated the solution to it:<sup>1</sup>

It was inevitable that some form of preflight eventually would have to be set up in order to assure a common level of academic background as well as to give the newly recruited cadets the fundamentals of military discipline. . . . You can't take just any kid from high school or college, walk him over to a fighter plane, and talk him into being a good pilot.

As early as 1940 the Air Corps had begun to prepare for preflight training. In that year plans were laid to establish a program that would enable cadets to reach primary schools "properly equipped and inoculated with a thorough indoctrination in ground training, physically and academically conditioned for difficult flying training ahead."<sup>2</sup> The planning, however, had to start practically from scratch, for there had been no such formalized training since the end of World War I.

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21

The Replacement Training Centers

In June 1940 Germany's conquest of France was complete; and as previously noted, it seemed certain that Hitler would not stop short of world domination. A short time later plans were made by the War Department to establish a 12,000-pilots-per-year program to help meet the impending threat to our own security.<sup>3</sup> In order to train 12,000 pilots per year with available Air Corps training facilities, it would be necessary to reduce the time of pilot training to something less than the previous 37 weeks. Maj. Gen. H. H. Arnold believed that the time for elementary, basic, and advanced could be shortened to 32 weeks,<sup>4</sup> and by 12 October 1940 plans for the adoption of the reduced program were announced.<sup>5</sup>

The idea of preflight training appears in rudimentary form as part of the planning for the 32-week program. On 2 October 1940 the Office of the Chief of the Air Corps wrote letters to each of the three training centers which make it clear that the preflight concept was being considered even though the primary objective was to reduce the time for pilot training.<sup>6</sup>

It is contemplated that a Flying Cadet Reception Depot will be established in each Training Center, as soon as it is practicable to do so. Cadet Reception Depots will perform the following functions:

- a. Complete processing of Flying Cadets.
- b. Physical training, close order drill, and training in military discipline.
- c. Such additional training as may be practicable during the period allotted (4 weeks) that will serve to further qualify trainees for instruction as pilots, bombardiers, or navigators.

The training centers were also asked to submit, by 15 October 1940, recommendations covering courses of study relative to the above program. They were also supplied copies of the training syllabus already being used by the Royal Canadian Air Forces in their initial training schools, a syllabus which was to serve as guide in drawing up the new courses of study. Each of the centers submitted program plans according to instruction, and

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AHS-90

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22

on 8 November 1940 the Chief of the Air Corps announced the adoption of a four-week preflight program.<sup>7</sup>

As originally announced, the program was to be conducted by civilian contract schools; but before it could be put into operation the Chief of the Air Corps, acting on the advice principally of Brig. Gen. Walter R. Weaver, commanding general of the SETC, decided to substitute military for civilian schools.<sup>8</sup> General Weaver had for several months been attempting to obtain recognition for a plan of preflight training that would be conducted at military posts, where a good physical and academic course of study could be carried on under military direction. He believed that any preflight program, to be acceptable, would have to be so organized as to permit rapid expansion, and that this could be best accomplished within the military structure. There could be little doubt about the expansion; as Brig. Gen. W. W. Welsh, Acting Chief of Staff, remarked on 22 December 1943, "We knew that the program was not going to stop at 30,000, but that it would go to 100,000 a year,"<sup>9</sup> And future events would prove General Weaver's plan the best for accommodating it.

There had been a "lot of opposition" to General Weaver's plan for establishing the preflight schools at military posts. Several officials in Washington felt that it was an unnecessary duplication of existing program objectives.<sup>10</sup> Even after the war, some USAF officials expressed the belief that the idea was merely a "stop-gap" measure designed to get the men in training more rapidly and relieve public criticism of maintaining large pools of idle manpower--that the whole program could have been omitted without loss of efficiency.<sup>11</sup> Undoubtedly there is some truth in the argument that at first it was a stop-gap measure; yet, the program eventually proved its worth, and it is difficult to see how it could have been dispensed with under the

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wartime necessity of training large numbers of men from all walks of life. The fact that the USAF has recently adopted a preflight program even more extensive than that which existed during the peak of training in World War II may be an argument in favor of the plan.

Definite orders for the establishment of the preflight schools, originally designated "replacement training centers"--the term preflight was officially adopted on 30 April 1942--were not issued by the War Department until several weeks after the 30,000-pilot program had been announced on 17 December 1940.<sup>12</sup> Appropriations had to be assured before the Air Corps could order the expansion of its facilities; but by the middle of February 1941 there was little doubt that Congress would grant the necessary funds for expansion. Consequently, a letter went out from the War Department on 21 February 1941 to each of the training centers announcing the establishment of the following replacement training centers:<sup>13</sup>

- 1) Air Corps Replacement Training Center (Pilot), Maxwell Field, Alabama, in the SETC.
- 2) Air Corps Replacement Training Center (Pilot), Kelly Field, Texas, in the GCTC.
- 3) Air Corps Replacement Training Center (Pilot), Moffett Field, California, in the WCTC.

These centers were to be established for the three-fold purpose of processing the men, giving physical and military training, and imparting such "other instruction of value to pilots, navigators, and bombardiers as might be given in a period of four weeks."<sup>14</sup> Quotas of 1,200, 1,300, and 800 flying cadets, along with a staff of 20 officers, were to be accommodated at each of the respective centers. It was also expected that the three stations would be ready for operation about 1 March 1941. However, because of construction difficulties, it was not until 27 August 1941 that Maxwell

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AHS-90

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24

Field, the first of the three schools to be made ready, opened; it received its first class of cadets on 6 September.<sup>15</sup>

The Kelly Field Replacement Training Center began operation on 21 November 1941, and on 4 July 1942 this school was made a branch of the newly created San Antonio Aviation Cadet Center (SAACC).<sup>16</sup> Moffett Field was returned to the Navy in the late spring of 1941, and the Santa Ana base was decided upon for the location of the West Coast preflight school. This latter base was completely new, and it was not until 29 April 1942 that it received its first class of preflight trainees. Meanwhile, temporary homes for the cadets were provided at Minter Field, California, and at Williams Field, Arizona.<sup>17</sup>

The first months of the replacement training centers were marked by a great deal of confusion, especially at Maxwell Field, which had opened first and therefore had no precedents to guide it in providing for the flood of cadets that poured in. The problems that arose were serious enough that it was felt necessary to hold two preflight conferences during January of 1942, one at Maxwell Field and the other at Randolph Field.<sup>18</sup> The subjects discussed reflected the administrative difficulties in processing and providing housing for the flood of cadets that was pouring in, in procuring adequate teaching staffs for them, and in working out adequate courses of study. In particular, the agenda defined these as major problems: 1) the desirability of separating the pilot preflight program from that for bombardiers and navigators; 2) the classification of cadets: their status upon enlistment, processing them, and disposition of those found qualified; and 3) the desirability of changing the length of the preflight course.

The effects of these conferences was felt during subsequent months in directives which brought about changes in the above mentioned aspects of the

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AHS-90

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25

program. Preflight training of pilots, bombardiers, and navigators was separated; classification centers were established to process the cadets; and the training period for all preflight students was increased from four to nine weeks. With the adoption of these and other changes, the preflight program was destined to play a much more important role in producing an adequate number of pilots, bombardiers, and navigators to aid in winning the war.

Separate Bombardier and Navigator Preflight Schools

When it opened, the preflight school at Maxwell Field offered a single curriculum for pilots, bombardiers, and navigators; but this was soon found unsatisfactory for two reasons. One was that the Field was badly overcrowded, and it appeared wise to ship some of the candidates to other bases, if possible. The other was more complex, but it fortunately gave a further reason for shipping out certain of the men--and it showed clearly in what terms the transfer should be made effective: the second problem was one of morale.

Immediately before and after Pearl Harbor practically all of the men who enlisted in the Air Corps wanted to be pilots; and to supply the personnel for the aircrews (bombardiers and navigators), the Air Corps used those cadets who had not been able to pass the flight training. The practice had been to return them to the preflight phase for retraining; but since it appeared necessary (for morale reasons) to separate the washouts from the new men, two wings were established.

This, however, did not solve the morale problem. The use for aircrews of personnel who had "washed out" had already placed a certain stigma on bombardier and navigator training; and the separation of these men from the pilots further damaged their morale, even though the curriculum was approximately

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AHS-90

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26

the same for the two wings, or perhaps because the curricula were so nearly the same. In any case, the decision resulting from the conferences mentioned above was to make the separation even more complete, and establish separate curricula for aircrews and for pilots. While the Air Corps began a campaign to glamorize the role of navigator and bombardier,<sup>19</sup> it also modified the preflight curricula in the direction of greater specialization: more attention was given to mathematics, physics, meteorology, and target identification, which gave a definite and distinctive character to their course of training. By directives of 13 May 1942, all preflight training for aircrews was formally made independent of that for pilots, and on 14-15 August all personnel in the aircrew program at Maxwell Field were moved to Selman Field, Louisiana.<sup>20</sup>

At the Kelly Field preflight school only pilot cadets were in training from its very opening, 21 November 1941, meanwhile, on 20 September 1941 a special school for bombardiers and navigators was established at Ellington Field, Texas for the GCTC. The opening of the latter school was unique in that the cadets were able to go into comfortable quarters. On 7 November 1942 the Ellington Field Preflight School was organized into two wings, one for bombardiers and one for navigators. The academic curriculum for the two aircrew wings was identical.<sup>21</sup>

The training for bombardiers and navigators did not actually get under way at Santa Ana until 1 April 1942. As at Maxwell Field, eliminated cadet pilots at first were assigned to bombardier-navigator training, and the morale problem again arose because the washouts were kept with the cadet pilots.<sup>22</sup> On 9 May 1942 the bombardier-navigator trainees were moved to barracks separate from the pilot trainees, but remained at the same base. The problem of morale was not solved immediately by this measure, for pilot washouts were still assigned to bombardier-navigator training and therefore

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AHS-90

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27

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forced to repeat much of the work which they previously had taken as pilot trainees. This situation continued until the Santa Ana Classification Center was set up a short time later.

The Classification Centers

We have briefly traced the evolution of the preflight program from its first conception in 1940 to the establishment of the three replacement training centers in 1941-42: Santa Ana for the WOTC, Kelly Field for the GCTC, and Maxwell Field for the EFTC; and we have defined the serious morale problem which arose during the early phases of the operations of the Santa Ana and Maxwell Field schools. This, in turn, was merely one aspect of an over-all problem of selection and classification of cadets which was at this time demanding the Air Corps' concentrated attention.

The matters of selecting and classifying cadets and meeting flow quotas were important considerations of the two preflight conferences. Indeed, the problem of classifying men for Air Corps training goes back to World War I, when the first attempts to select men with flying aptitudes were made, though these tests were designed principally to measure physical standards.<sup>23</sup> The first efforts to improve them came in 1928, with the designing of various tests which would measure mental as well as physical aptitude; but they were soon abandoned (as noted in Chapter I). The results of the tests sometimes offended the candidates; and as one official tersely explained, "We had to write too many letters to congressmen."<sup>24</sup> With the accelerated program demanded by the conditions of 1942, however, the need for some efficient system of classification became urgent.

Soon after the Maxwell Field and Kelly Field preflight schools opened in 1941, a psychological testing program was inaugurated for one area of training. The development of fast, maneuverable multi-engine planes, and

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AHS-90

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28

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particularly the emergence of the medium and heavy bombers, were giving new importance to the bombardiers and navigators; but as already suggested, many of these trainees were little interested in their program: some of them were dissatisfied with becoming anything less than pilots; others did not really possess an aptitude for the training to which they had been assigned. The result was a high elimination rate that caused the Air Corps to become greatly concerned.<sup>25</sup>

The testing program was, therefore, instituted, at first on an experimental basis, in the hope of giving more efficient direction to a cadet's training.<sup>26</sup> It did not affect preflight training, but required the preflight trainee, before graduation, to take a series of tests which measured his psychological aptitudes, skills, knowledge, interest, physical qualifications, and other characteristics. After each cadet was tested, he was required to appear before a faculty board to learn how he would be classified. The board considered the results of the tests and the trainee's personal preference in reaching its decision. Those who were unfit for further aircrew training were assigned to gunnery or ground school.

Soon after the Air Corps adopted this system of classification for the preflight schools, plans for the reorganization of the entire preflight program began, and out of these plans grew an elaborate testing and classification program that would affect all trainees. During January, February, and March, 1942 the replacement training centers became so overcrowded that they were unable to take care of the students. Officials at the three centers began to beseech FTC headquarters for some relief from the situation.<sup>27</sup> One of the solutions to the overcrowded conditions was the decision early in 1942 to establish separate classification centers as part of an expanded preflight program. Since they were part of this program and since they do

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AHS-90

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29

not receive more detailed study later, it will be necessary to examine them more closely here.

In March 1942, just as the 50,000-pilot training program was getting under way, the FTC informed the training centers that the following aircrew classification centers would be established:<sup>28</sup>

<u>Training Centers</u>	<u>Location</u>	<u>Student Capacity</u>	<u>Daily Inflow*</u>
Southeast	Nashville	6,945	205
Gulf Coast	Kelly Field	5,209	154
West Coast	Santa Ana	3,469	102

The reasoning behind these locations was explained by an official of the Training Command in 1943:<sup>29</sup> the plan was based on the population areas of the United States, and the country was divided into 4/9, 3/9, and 2/9 with a classification center conveniently located in respect to each population area; the idea was to classify the trainees and keep them moving west--the West Coast would call upon the Gulf Coast, which in turn would call upon the Southeast Training Command for the required number. The plan for the population flowing into and out of the centers worked well until the college training program entered the picture.

The purpose of the centers was to process and classify units and thus enable the Air Corps to build up a reserve pool of classified students. They were, essentially, pooling places where the thousands of civilians coming into the Army for aviation cadet training would receive physical examinations and inoculations and be quarantined for several weeks. Also, the trainees would receive uniforms and equipment, be indoctrinated into military life, classified for aircrew training as bombardiers, navigators, or pilots, or if eliminated from aircrew training, be assigned to combat-crew training or ground duty or not sent to preflight at all.<sup>30</sup> Thus,

\*Six days per week.

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with a backlog of classified men, the Air Corps now would be able to meet future expansions in the training program.

By the fall of 1942 the three classification centers were operating in facilities designed and constructed especially for the purpose of classifying aviation cadets. As in the early days of the preflight schools, a period of trial and error followed the opening of the three classification centers, but all three operated their respective programs in the same general manner. The Nashville classification center, for example, processed the cadets thus: during the first day of his arrival the cadet was shown how to make his bed and to prepare his room for inspection. Then he attended a transition and later an orientation lecture, given by the commanding officer, which stressed the duties and responsibilities that would be incumbent upon each cadet after graduation into the officer ranks of the United States Army.<sup>31</sup>

Group psychological testing began on the second day and lasted approximately seven hours, while the third day was devoted to the psychomotor tests. Meanwhile, as time allowed, the trainees listened to talks on customs and courtesies of the Army. Physical and medical examinations took up the fourth and fifth days. Later, the schedule was changed to use the fourth day for certain indoctrination lectures (for example, "Safeguarding Military Information"). These were the essentials, and the remaining time was devoted to supplementing the military training and indoctrination received in the first few days.

It was explained to the trainee during the early part of his stay at the classification center that the purpose of the physical, psychological, and psychomotor tests was to place him in the type of aircrew, combat, or ground training that best suited his aptitudes. It was also explained to

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31

him that three factors determined his classification: aircrew aptitude, individual preference, and quota availability. This order of priority was followed throughout 1942 and the early part of 1943; but when the peak of training had been reached, the priority was changed to suit the needs of the Air Forces rather than to encourage enlistment: quota availability was considered first, followed by aircrew aptitude and individual preference.<sup>32</sup>

Perhaps a brief explanation of the use of "stanines" by the classification centers should also be made at this point. By properly weighing different sections of the psychomotor and psychological examinations administered to each prospective trainee during his stay at the classification center, it was possible to determine the relative aptitude score or "stanine" in navigation, bombardiering, and piloting. The term stanine (standard nine) came into general use in the AAF in 1942 "to denote a score in terms of a standard scale of measurement which runs from one (the lowest) to nine (the highest). Translated into aptitude the stanine scores progress from the least apt to the most apt."<sup>33</sup> As a result of the classification tests, each trainee was assigned stanine scores in navigation, bombardiering, and piloting. These scores provided the common index used to place all trainees in the proper type of training.

Approximately two weeks after the processing program began at the classification center, each man learned what his subsequent training was to be. Those who were classified for assignment to aircrew training were notified to appear at the personnel office, and if satisfied with their classification, sign a certificate of acceptance. Those men classified contrary to their preferences had 48 hours in which to appeal their cases to the faculty board. In addition to the aircrew trainees, the board interviewed all who had been classified for combat or ground training.

SECURITY INFORMATION  
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AHS-90

RESTRICTED SECURITY INFORMATION 32

~~CONFIDENTIAL~~

Cadets who received classification as bombardiers, navigators, and pilots discovered that their remaining seven or eight days at the classification center were as arduous as before. During the rest of their stay they spent most of their time training. Late in 1943 both the Nashville classification center and the Santa Ana classification center established an informal pre-preflight program of instruction for classified aircrew trainees who were awaiting assignment to preflight schools.

Eliminations at classification centers, especially in the early months of the war, were due chiefly to physical defects. Beginning 15 November 1943, with each raising of the minimum stanine requirement,<sup>34</sup> the elimination rate continued upward. Before the eliminee was sent to a basic training center of the Technical Training Command for reassignment, he was informed of the various alternative types of training which were available to him, but it was important for morale purposes to dispose of the eliminee as quickly as possible.

When the college training program began early in 1943, classification procedures were radically altered, and provisions were made for prospective cadets to enter the Army Air Corps through the basic training centers of the Technical Training Command rather than through the classification centers.<sup>35</sup> Here they were given the Aviation Cadet Educational Examination (AC20A) and a modified medical examination. Those who failed were sent to technical training. Those who passed were accepted temporarily as aircrew trainees and sent to one of the 153 selected colleges, where special training was given them before reporting to the classification center for final processing. The trainees who scored in the upper quintile, or upper 20 per cent, were sent directly to the classification centers and bypassed the college training program. Consequently, instead of starting at the classification centers, as previously had been the practice, those cadets who

SECURITY INFORMATION

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AHS-90

~~RESTRICTED~~ SECURITY INFORMATION  
~~CONFIDENTIAL~~ 33

attended the college training program were not finally classified until approximately six months after enlistment.

The result of the long delay in classifying aircrew for pilot, bombardier, or navigator training was that many trainees later were disqualified from aircrew training after the AAF had already invested several thousand dollars in their college work: there was also considerable expense involved in shifting men from one place to another before they began their actual preflight training.<sup>36</sup> If the trainees could be finally classified for aircrew training before entering college, obviously a great deal of money and time could be saved; for those who were disqualified for aircrew training could then be sent immediately to technical training.

Consequently, AAF headquarters asked the Technical Training Command on 21 June 1943 to prepare a plan whereby it could assume the responsibilities of classifying the trainees prior to college training.<sup>37</sup> A few days later the Technical Training Command announced that it would assume the added duties--at the basic training centers--provided "psychological equipment and personnel were made available" to them.<sup>38</sup> Before the process of classification was shifted to the basic training centers, however, plans were approved by FTC headquarters to liquidate the whole college training program during the spring of 1944. The basic training centers therefore took over all the duties of processing and classifying aviation cadets, and the separate classification centers were abolished when all preflight training was consolidated in the late spring of 1944.

From February 1942 to March 1944 the three classification centers processed some 400,000 aircrew candidates. Approximately 100,000 more were processed before the end of the war by the basic training centers, making a total of half a million men. Of the first 400,000 men processed at the

SECURITY INFORMATION  
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AHS-90

~~SECURITY INFORMATION~~

34

~~RESTRICTED~~ ~~CONFIDENTIAL~~

three centers, approximately 260,000 (65 per cent) were classified as pilot trainees, another 40,000 (10 per cent) as navigator trainees, and another 40,000 (10 per cent) as bombardier trainees. The remainder, 60,000 (15 per cent), were eliminated from aircrew training for various reasons: physical disability and low aptitude, for example.

There seems to be little doubt that the classification centers did a magnificent job of placing men in their proper niche in the Air Corps. Recent interviews by the writer with some 15 men who served as pilots, navigators, or bombardiers during World War II showed unanimity of opinion that the psychological and psychomotor tests given at the classification centers placed them where they belonged. A number of former instructors who saw service during World War II were among those interviewed; and they generally agree that the AAF actually turned out better pilots, bombardiers, and navigators during the last two years of the war than during the first two, despite a lower level of academic background on the part of the trainees generally. Three reasons were given for this achievement: better methods of training had evolved by 1943; a higher quality of instruction was being offered as a result of the accumulated experience on the part of the instructors; and, because of proper classification, the trainees were better suited for the particular task for which they were being trained.

Indeed, the classification centers seem to have justified the fondest hopes of their proponents. Not only did they help prepare the men psychologically for their particular jobs and eliminate those who were not qualified for aircrew training, they also facilitated greatly the cadet flow into the preflight and primary schools.

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SECURITY INFORMATION

AHS-90

~~CONFIDENTIAL~~

35

The College Training Program

Even though the preflight schools and the classification centers had been established by the AAF partly as means of getting recruits into training more rapidly, there were still long delays of six or seven months. By December 1942 the Aviation Cadet Examining Board had procured a backlog of 93,000 cadets who were being kept in inactive status, and it was obvious that this number would continue to increase because of selective service.<sup>40</sup> Not only were the extended delays causing a lowering of morale in the recruits, but the AAF was afraid that it would have to answer public criticism for maintaining this pool of idle manpower. This fear of criticism must have been expressed in official AAF correspondence, however this writer has been unable to turn up any evidence of congressional investigations on the matter; furthermore, a careful check in Time Magazine and the editorial pages of the New York Times failed to uncover any editorial comment on the policy during 1942-1944. The writer's personal recollections, however, are that there was much verbal criticism of the Armed Forces during World War II for maintaining large pools of idle manpower, particularly by people whose sons were overseas.

The college program was developed partially as a means of absorbing a backlog of idle cadets and keeping them active. But it had, in addition, a more positive educational purpose. On 13 December 1942 Lt. Gen. H. H. Arnold made the following observation regarding the problem:<sup>41</sup>

There is a definite need for a College Training Program for enlisted men who have qualified for Aviation Cadet Training whose prior education is deficient, chiefly in Mathematics and Physics. It is estimated that approximately 65 per cent of the present backlog should have this additional college training, and that this percentage will rise to approximately 80 per cent, due to a greater proportion of applicants without college training. Records indicate that 80 per cent of the applicants of less than high school education and 41 per cent of high school education fail to pass the Aviation Cadet Qualification Examination.

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AHS-90

SECURITY INFORMATION

36

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The General then outlined a broad program of college training for the enlisted men qualified for aviation cadet training. In essence the plan was as follows:

- 1) On or after 1 January 1943, to give all applicants for Aviation Cadet training an Educational Classification Test for the purpose of determining whether or not the applicant will be sent directly to AAF Classification Centers or to college training.
- 2) On 1 February 1943, to send to college training 70,000 enlisted men qualified for Aviation Cadet Training according to the Educational Classification Test.
- 3) To send monthly thereafter 14,000 of the above from college training to AAF Classification Centers (Air Crew) in equal weekly shipments starting 1 March 1943, replacing in college training a like number of enlisted men qualified for aviation cadet training.
- 4) To have the Services of Supply call to active duty and send to college training those Aviation Cadets who had no college training and who were enlisted prior to the establishment of the Educational Classification Test proposed for 1 January 1943.
- 5) To place in the Enlisted Reserve Corps all applicants for enlistment as Aviation Cadets who could not be absorbed at Classification Centers and Aviation Cadet College Training (Air Crew) and to maintain them on inactive status until such time as they could be absorbed in either of these two training quotas.

On 7 January 1943 the Secretary of War approved General Arnold's recommendations in substance. Some modifications, however, were stipulated; for example, the curriculum was to cover a period of five months, except at the beginning when it would be impossible for some students to complete more than one, two, three, or four months of training. The plan was further altered so as to include a small amount of CPT\* for each student during his last month in college. The Army Specialized Training Division was to assume the responsibilities of supervising and coordinating the college training program in cooperation with the AAF.<sup>42</sup>

Ten days after the college training program was approved and modified

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\*Civilian Pilot Training

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AHS-90

SECURITY INFORMATION

37

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by the Secretary of War, the commanding general of the AAFPTC was directed (17 January 1943) to take the necessary actions to place it in operation.<sup>43</sup> The directive also stipulated that a minimum of 35,000 students "will be in college not later than April 1, 1943." Contracts with various colleges "within reasonable distance of flying facilities" were to be negotiated as quickly as possible, and AAFPTC headquarters was to submit to the Army Specialized Training Division a detailed curriculum within two weeks.

The Flying Training Command acted upon the instruction almost immediately. On 20 January 1943 a directive went out to each of the commanding generals of the three flying training centers officially informing them of the new program.<sup>44</sup> Specific instructions and explanations related to quotas,<sup>45</sup> negotiation of contracts with various colleges, permanent detachment personnel, flow of students, and educational classification tests were included in the directive. The commanding generals of each of the training centers also were ordered to make daily reports to FTC headquarters after 25 January 1943 on the progress being made, and at the same time they were cautioned against publicity of any nature regarding the college training program. The latter policy was adopted in an obvious effort to minimize political pressure on the part of the colleges to obtain programs.

Since most of the larger colleges in each training area had already procured contracts with the Navy or the Army for various specialized training programs, it was natural that the small institutions would be given primary consideration by the AAF. The small colleges were experiencing drastic losses in male students and were anxious to obtain training contracts. Many of them took steps in this direction long before the college training program was officially approved. The following extract from a letter to

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AHS-90

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WFTC headquarters by the Lubbock, Texas, Chamber of Commerce in behalf of Texas Technological College is a typical example: "Enrollment here is dropping alarmingly. . . . Our first love has always been the Air Corps. . . . The College could turn over enough dormitory space and classroom space to accommodate 1200 . . . students."<sup>46</sup>

Apparently the efforts on the part of the various pressure groups to obtain training detachments had little or no effect, for the AAF was anxious to let as many institutions as wished participate in the war effort. The principal consideration was whether or not a particular school met the requirements laid down by the AAF, and apparently each one that met the requirements was awarded a training contract.

There was very little time for the inspection of the various colleges, and it was necessary for each center to send out several inspecting teams. Each team included a medical officer, one person qualified to judge the academic set-up, and a rated pilot and was instructed to concentrate especially on the liberal arts R. O. T. C. institutions. The teams traveled by air and made daily wire reports of their findings and recommendations, which in turn were forwarded to FTC headquarters. However, the final authority upon the selection of a particular school rested with a selection board consisting of representatives of the War Manpower Commission, Army Ground Forces, AAF, Navy, and CAA. Data gathered on each college visited included general information relative to educational, athletic, recreational, administrative, flying, and medical facilities.<sup>47</sup>

Despite the brief period allowed to inspect the schools, negotiate contracts, formulate a curriculum; and select military personnel to supervise it, the program got under way according to plans on 1 March 1943: by that date approximately 35,000 trainees had arrived at various institutions,

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SECURITY INFORMATION

AHS-90

~~RESTRICTED~~

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39

the flow being controlled by the Technical Command, and a similar group came in on 1 April 1943. The average capacity of the college awarded a contract was about 500 students, while the largest single school had a quota of 3,000 trainees.<sup>48</sup> Eventually 153 institutions participated, and the peak of enrollment was reached on 31 December 1943 when 68,109 were in training at one time.<sup>49</sup>

Prior to his arrival at college each aviation cadet was given the Aviation Educational Examination (AC20A). This examination was administered either at a Technical Training Command Reception Center or at the Aviation Cadet Examining Board at which the cadet was qualified.<sup>50</sup> The examination was divided into five parts: mathematics, physics, history, geography, and reading comprehension. It was used first to aid in the determination of those college subjects in which an educational deficiency existed for each aviation cadet, and secondly to determine what length of time each cadet should spend in the college program before he was sent to a classification center.<sup>51</sup> The test showed, in fact, that many men could bypass the college program altogether; and on 1 March 1943 some 14,000 were accordingly ordered direct to the classification centers,<sup>52</sup> a figure which was not so large that the centers could not accommodate it.

During the first few weeks there was, understandably, a good deal of confusion in the college program; there simply was not time for adequate planning by either the training centers or the colleges. The latter received practically no advice at first concerning the details of the training program and were in doubt as to what was expected of them, and there were few college textbooks applicable to the course outlines furnished by FTC headquarters. Some of the schools received trainees before they had arranged sufficient means of housing and feeding them.<sup>53</sup> Hospitals and medical

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AHS-90

SECURITY INFORMATION

40

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facilities were woefully inadequate in many instances; and to add to this problem, some schools reported that from 25 to 75 per cent of the first detachments were already suffering from respiratory diseases upon their arrival.<sup>54</sup>

On the other hand, there was much to be said for the college training program even during the first few weeks of its operation. It was estimated that approximately 85 per cent of the trainees that arrived during the first month were in need of some of the training given in the curriculum and that approximately 60 per cent needed almost all of it.<sup>55</sup> What is more important, the students generally desired the training; their morale was high and they were eager to learn. And the colleges were extremely cooperative, anxious to accept judicious guidance. Though it took a while to work out the extent of the guidance--too little at first, then too much--the Air Corps at this stage was more interested in flow than in training;<sup>56</sup> and it adopted the policy recommended by Col. Orin J. Bushey, Assistant Chief of Staff, College Training of Aviation Cadets: on 20 April 1943 he advised that "educational control be established in the Headquarters and that various administrative inspectors be restricted in their interference with the educational factors of the Program."<sup>57</sup> If students were often withdrawn before the end of their training period, the over-all effect of this had to be measured against the salutary efforts of limited interference in the training.

The major problem encountered by the program was the difficulty the colleges had in interpreting the objectives of the courses of study sent them by FTC headquarters, and it is interesting to trace the steps by which this was ultimately resolved. As one observer points out, the program at first "lacked clear and unified aims."<sup>58</sup> For example, the following objective was set forth in the program of studies drawn up by FTC headquarters

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AHS-90

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41

on 20 January 1943: "Preparation of Air Crew Students, both mentally and physically, for intensive ground training in the Preflight Schools."<sup>59</sup> The prescribed academic courses contained in the program of studies were mathematics, physics, current history, geography, and English. Despite a detailed breakdown of each subject, the college authorities were still in doubt as to how they could reconcile the content of these courses with the stated objective.

The matter was clarified partially by the issuance of FTC memorandum 50-25-1 and a master schedule chart one month later (24 February 1943).<sup>60</sup> This directive stated that the main objective of the college training program was "to diminish individual differences in educational background for subsequent aircrew training." The colleges were to consider the scores made by each student on his educational classification test, as well as his educational history, and to assign each student a particular course of instruction to fit his individual needs. The colleges were subsequently furnished with each student's test score, together with interpretative statements to assist in the diagnosis. Many of the students were deficient in every subject, and it was impossible to assign them all the work that they needed.

Consequently, the institutions were anxious to obtain more specific direction and interpretation, and on 2 March 1943, FTC headquarters issued another memorandum (50-25-3).<sup>61</sup> This time the stated objectives of the college training program was "to prepare the student educationally to understand the basic principles of mechanics, physics, mathematics, and political geography, combined with physical and military training considered essential to operate and navigate modern high-powered aircraft in combat." No attempt

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AHS-90

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42

was made to elaborate upon this, but the memorandum went on to clear up the important matter of assigning students to particular courses: "each student should be assigned work to cover all curriculum deficiencies as nearly as possible [*italics mine*] prior to being given elective courses." This was of practical benefit to the colleges, for it not only named specific subjects considered essential preparation for pilot training, but it also gave the colleges considerable leeway in working out the details of scheduling and assigning students to particular fields of study. On the other hand, one writer observed that frequently the colleges piled as many courses upon the student as time permitted, with the result that he learned many subjects poorly rather than a few well.

No further statement about objectives was issued by FTC headquarters for several months, but a revision of the whole college training program was made on 22 November 1943. This new program came partly as a result of an evaluation experiment carried on by the WFTC. It provided for a more practical course of study, as seen in Chapter III; but within six months after the new course of study was adopted, the whole college training program was closed.

There were several reasons for abolishing the college training program in mid-1944. By late 1943 and early 1944, Air Corps authorities were increasingly of the opinion that their training facilities had been expanded sufficiently to permit them to fulfill their mission in the defeat of Germany and Japan, and in December 1943 the rising current of pilot training was allowed to begin a downward trend; this would make fewer facilities necessary.<sup>62</sup> The machinery for training now was turning out approximately 100,000 pilots a year; the attrition rates in combat were decreasing<sup>63</sup> and the backlog of inactive recruits, which had given rise to the college

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AHS-90

SECURITY INFORMATION  
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43

program, was rapidly being absorbed, so rapidly as to make sufficient college personnel a problem.<sup>64</sup>

Another factor in the decision to liquidate the college training program was that by the end of 1943 war plants were suffering from a shortage of manpower. Some people felt that young men could serve their country better by working in the factories until they were actually needed for military service. Too, there was an increasing amount of public criticism leveled against the AAF for holding combat-age personnel in colleges at this particular time.<sup>65</sup> Since the college training program had been designed partly as a "stop-gap" measure, it was obvious that by now it had lost much of its significance.

On 1 January 1944 the first orders were issued from FTC headquarters relative to closing the college training program. These directed an immediate reduction of the number of men sent to aircrew colleges to four-sevenths of a quintile.<sup>66</sup> Each class was divided into quintiles, or five equal groups, in accordance with scores made on the educational classification test. If a particular class or pool of cadets, for example, numbered 2,000, then one quintile (or 20 per cent) of this amount would be 400 trainees. Previously, the group in the first quintile was sent directly to classification centers and the bottom four groups were sent to college training. According to the above example, therefore, only four-sevenths of 400, or approximately 228 students, would be sent to college on 1 January 1944 and the remainder would be sent to classification centers.

The drastic cut in college students was not felt immediately because the institutions normally had five classes in attendance at one time. Theoretically, the total enrollment would diminish gradually. However, some schools with small enrollments were closed down completely by February 1944, and

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AHS-90

44

others experienced more than the normal withdrawals. The following table shows the gradual decrease in college enrollment:<sup>67</sup>

<u>Date</u>	<u>No. of Trainees in College</u>
31 Dec. 1943 -----	68,109
28 Jan. 1944 -----	63,802
3 March 1944 -----	55,094
31 March 1944 -----	49,616
28 April 1944 -----	28,566
2 June 1944 -----	27,404
30 June 1944 -----	4*

Evaluation of the College Training Program

It is difficult to make a thorough and scientific evaluation of the college training program. The consensus offered by various writers in the official AAF unit histories, plus seven former instructors and students associated with the college training program who were informally queried by this writer, is that the college training program was "beneficial." More important in the evaluation of the program are the following remarks made by Maj. Gen. Barton K. Yount some months after it was in operation: "It is remarkable how well these colleges are doing. The big problem is to keep them filled up, and if we keep them filled all the time, and keep that quota in there, it is just a question of time. They are getting better."<sup>68</sup>

According to the inspection reports sent in to the various training command headquarters, the instructors generally seem to have been well qualified, "extremely cooperative and eager to contribute their maximum effort to the training program."<sup>69</sup> Most of the instructors had to make changes in their teaching methods and techniques--particularly to abandon the lecture method and spend more time on drill. In some colleges they were handicapped at first by having to teach classes in several different programs,

\*The four students remaining in college by 30 June 1944 were hospitalized.

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AHS-90

SECURITY INFORMATION  
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but the college officials were advised to assign teachers full time to the college training program and most of them complied. In a few of the larger schools such as Washington State University, the University of Minnesota, and Drake University, it became necessary for the administrative officials to put on full-time coordinators at the head of the program, which ultimately resulted in more efficient operation.

Not only did the instructors adjust their methods of teaching to conform to the quality of their students and the aims and objectives desired, but they apparently maintained a high morale throughout the program. This statement is borne out consistently in the numerous inspection reports that have previously been referred to. It is not amiss to generalize that if the teacher morale was high, the quality of teaching was good. This generalization may be weak logic, but the writer is basing the statement upon his own 18 years' teaching experience in public schools and universities.

Undoubtedly the presence of coeds and the opportunities to participate in extracurricular activities were healthy morale factors for the students in college. For the most part they were eager and receptive, though some remained indifferent and felt "that certain subjects . . . [were] non-essential." In an effort to counteract such attitudes the detachment officers were instructed to point out "the importance of all phases of the program in their indoctrination talks."<sup>70</sup> What effect this had in causing students to study harder is not known, but doubtless it helped.

By the end of the summer of 1943 the Air Corps had developed means of determining with reasonable certainty the educational success of the program. The psychological research unit at the Santa Ana Classification Center--where trainees were sent at the close of their college period--developed a series

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AHS-90

~~RESTRICTED~~ ~~CONFIDENTIAL~~

46

of evaluation tests covering the five major fields of college study. When set against the student's performance on the Aviation Cadet Education Examination (AC20A), which he had taken earlier, it was possible to measure the relative proficiency acquired in the college subjects.<sup>71</sup> The tests, given at Santa Ana in August 1943, revealed certain weaknesses in the college training, most important of which was the fact that students did not retain much of the content of physics, geography, and mathematics courses. As a consequence, WOTC headquarters recommended that more emphasis be placed upon drill in these subjects.<sup>72</sup> Though the colleges complied, and a second series of tests was begun to determine the degree of success obtained by this measure, curtailment of the college program began soon and further evaluation was not feasible.<sup>73</sup>

The College Flying Training Program

A fundamental aspect of the training which should be included in a discussion of the college program relates to the 10-hour flight indoctrination course that college trainees received. Although General Arnold did not mention flight training in his original recommendation to establish the college (aircrew) training program in December 1942,<sup>74</sup> one of the modifications to the proposal made by the War Department a few weeks later was as follows: "CFT training for screening of aircrew personnel will be given to each qualified student during the month in which each student completes his course."<sup>75</sup>

However, considerable opposition to the use of CFT in the college training program had arisen from various officials in the AAF. Objections to it were summarized in a memorandum sent to Arnold on 10 January 1943.<sup>76</sup> The reasons for not favoring flight training for college students were as follows: 1) it was a wasteful expenditure of money, manpower, and critical

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11 11



AHS-90

SECURITY INFORMATION  
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47

material; 2) the program could not be operated efficiently; 3) it would not weed out obvious misfits; 4) it would accomplish nothing except "serve as a morale builder while the cadets were in college training." On 17 January 1943 General Arnold directed the Commanding General, FTC to delay on CPT for aviation cadets until further notification.

Nevertheless, it was eventually decided to go ahead with the War Department's recommendation, presumably because flying training would give the trainee the "feel" of flying and perhaps weed out a few who did not really want to fly. On 18 February 1943 FTC headquarters wired each of the flying training centers that "CAA Training will be made available for flight training . . . in sequence in which classes will leave the colleges."<sup>77</sup> The flying training centers in turn promptly notified each of the commanding officers of college training detachments to include flight training as part of the college curriculum.

Accordingly, the flight training indoctrination course was given to all college trainees except those who were withdrawn before they had completed college. Theoretically, each trainee received 10 hours of dual instruction, which was divided into 12 lessons and recorded on CAA Flight Record Form ACA 1091; though trainees were rarely eliminated for flying deficiency, they were also rated as satisfactory or unsatisfactory in their CPT pilot rating book. The program was supervised and paid for by the CAA-WTS.\* For the most part the aircraft used in the flight program were from 50 to 65 horsepower, tandem seating, and stick control. Some of the planes were owned by the private contractors, but most were the property of the Defense Supply Corporation. The instructors were all certified commercial pilots with instructor ratings, and the ratio of instructor to trainees was maintained at 1 to 8.<sup>78</sup>

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\*Civil Aeronautics Administration--War Training Service

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Evaluation of the College Flying Training Program

Opinions vary considerably about the value of the 10 hours of flight indoctrination which the college trainees received. Each of the three flying training centers made thorough surveys several months before the college training program was abolished in an effort to determine if the flying phase was worthwhile. Supervisory personnel, instructors, and students at various primary and basic stations were queried. The questions were grouped in the following six categories:<sup>79</sup>

- 1) Does CTD\* flying training lower the elimination rate in Primary Schools?
- 2) Does CTD flying training aid the student early in Primary through better orientation, knowledge of flying maneuvers, enthusiasm and adaptation of flight?
- 3) Does CTD flying training aid in lowering the rate of elimination in Primary due to sickness and fear?
- 4) What correlation is there between progress in Basic and previous CTD flying training?
- 5) Is the flying training being given at CTD's sufficiently standardized?
- 6) Would CTD flying training be of more value if more time were allotted and students soloed under a more standardized program?

A summary of the answers to each of the above questions was made by the flying training centers and submitted to AAFFTC headquarters along with general observations and conclusions regarding flight instruction for college trainees.<sup>80</sup> Each of the three training centers agreed that CTD flying training lowered the elimination rate in primary schools, but pointed out that by the time the student was ready to enter basic, it was virtually impossible to distinguish his progress and flying ability from the non-CTD trained student.

Further, it was discovered that the program may ~~actually have worked to~~

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\*College Training Detachment.

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AHS-90

SECURITY INFORMATION<sup>49</sup>  
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lower the final graduation rate, with no increase in average proficiency of graduated pilots: when the CTD graduate reached primary he had a decided advantage over his classmates for the first 20 or 30 hours of flying, not because of any greater inherent ability to fly, but because of acquired ability. The CTD students consequently tended to raise the standards for the solo and elementary phase. Since this was the time when most of the eliminations occurred, the non-CTD student, who in reality might have had more inherent ability to fly than the CTD graduate, had a greater chance of being eliminated. Yet, when the latter got to basic, his proficiency was not greater than that of the student with no previous training.

The questionnaire revealed major defects in CPT. For example, it showed that while it did an excellent job of indoctrinating all aircrew trainees to flight training, it did perhaps too good a job. Many who were later to be classified as bombardiers and navigators felt, on the basis of CPT, that they were pilot material, and their morale was lowered by what they considered injustice in the classification system. Again, it showed that flying training at the colleges was not standardized. The WCTC headquarters reported that "interviews with students indicated in many cases that the flying time received was more in the nature of a 'joy-ride,' rather than instructional, and that the time they were allowed to handle the controls was limited."<sup>81</sup> Also, there was general agreement that discipline on the flight line was poor, and that the type of aircraft and training was not compatible to Army flying training. Finally, the cost involved was out of proportion to the value received.

According to an estimate by FTC headquarters the government paid "between \$110.00 and \$127.00 per student or between \$1,500,000 and \$1,750,000 per month" for CPT. In order that these figures may be properly understood, it

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AHS-90

50

is necessary to point out that only one-fifth of the total enrollment would be undergoing CPT during each month. The opening dates for the college training classes were staggered at one month intervals; thus only one class at a time would reach the final month of its program. Since CPT was not offered except at this stage, approximately one-fifth of the trainees would be taking it during each month.<sup>82</sup>

Partly because of the results obtained from the questionnaire, the three flying training centers recommended that flight training at the colleges be discontinued. However, no action was taken on this recommendation by AAF headquarters since it was already known that the entire college program would be eliminated on 30 June 1944.

A recent development in preflight training focuses renewed interest in CPT. On 15 February 1953 FTAF headquarters inaugurated a program of light-plane screening, which is discussed in detail in a subsequent chapter of this study. This program provided 25 hours of flight training for aviation cadets in cub planes before they graduated to the heavier T-6 used in primary flight training. In a recent interview with Lt. Col. William L. Reynolds, Director of Primary Pilot training, DSC/O, FTAF headquarters, this writer pointed out the similarity of the present light-plane screening phase with the old CPT program that was conducted for college students during World War II. The question was raised as to the importance of the experience gained from CPT in the establishment of the new program. Colonel Reynolds replied as follows:<sup>83</sup>

We inaugurated the 25 hour program of training in cub planes to correlate with the expanded preflight program principally because we could not afford the expense of the high rate of eliminations we were experiencing in primary training. We looked into the old CPT program which was started first in 1939 and later became a phase of the college training program for aircrewmembers in 1943. We were convinced that CPT was very helpful in decreasing the rate of washouts in primary and basic training during the war. We used this to support our

SECURITY INFORMATION

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AHS-90

RESTRICTED  
SECURITY INFORMATION

51

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argument for our present light-plane screening program, although . . . it was not the principal reason that light-planes screening was adopted.

Thus after dropping CPT, along with the entire college training program, in 1944, the USAF has once again gone back to flight indoctrination in light planes.

Proposal to Abolish Preflight Training

Sometimes before the decision to liquidate the college training program was reached, a proposal was made to abolish the preflight schools and incorporate the preflight curriculum in the college curriculum.<sup>84</sup> Apparently there were several reasons why AAF headquarters considered the possibility of combining the two training programs: for one thing, there was a feeling by various officials in the AAF that much of the work in preflight was a duplication of the college training program.<sup>85</sup> Also, it was pointed out at the Fort Worth conference<sup>86</sup> on 22 July 1943 that classification could be administered at the colleges and the separate classification centers could thereby be abolished--thus effecting a tremendous saving in transportation. Another argument in favor of consolidating all preflight training at the colleges was that the facilities of the three preflight schools and classification centers were needed for other training programs.

Still another factor entering into the considerations was the matter of maintaining college Air Corps enrollments. By late summer 1943 it was obvious that the backlog of recruits for college training would eventually be absorbed. The problem of finding personnel to keep the college program in operation would become acute unless some alterations in program planning were made. Most of the colleges were state institutions with powerful political influence and one AAF official observed that they would get "very restless until they are kept filled,"<sup>87</sup> since they depended heavily upon military enrollments.

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As early as 29 May 1943 the question of discontinuing the preflight schools and distributing their teaching personnel and teaching aids to the various colleges where training programs (aircrew) were in operation was put before the commanding general of the Flying Training Command.<sup>88</sup> Soon afterwards, Maj. Gen Barton K. Yount consulted with the top-ranking officers of the three training centers, and finally on 4 September 1943 wrote to the AAF commanding general outlining the following objections to the proposed plan:<sup>89</sup>

- 1) The college training program detachments were instituted better to prepare aviation cadets for preflight training, not to supplement it.
- 2) The colleges do not possess at this time a staff adequately prepared to teach the specialized courses offered in preflight schools.
- 3) Standardization of preflight instruction would be much more difficult to accomplish in 151 ~~[sic]~~ colleges than in a very few preflight schools.
- 4) Specialized equipment for instruction in preflight courses is now very inadequate in colleges and future procurement of such equipment is a very dubious matter.
- 5) The preflight schools are offering types of specialized training, such as low pressure chamber indoctrination, military training, and physical hardening which could not be duplicated in the colleges.
- 6) The future classification and reassignment to aircrew training would be entirely unsatisfactory if conducted in 151 colleges.

General Yount elaborated upon each of the above points in considerable detail, concluding that "the discontinuance of the present preflight schools would be extremely unwise and unjustified." This viewpoint prevailed and in the end it was the college training program that was abolished, as previously observed, while the preflight schools were not only kept in operation, but their curricula were expanded.<sup>90</sup>

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AHS-90

53

~~CONFIDENTIAL~~Summary of Preflight Development, 1941-1944

By the end of 1944 preflight training had completed the cycle from a single replacement training center at Maxwell Field to a highly decentralized program divided among the three training centers and then back to a consolidated school at San Antonio. This expansion and contraction of preflight and its various branches was a natural result of the changing AAF training objectives and quotas. The replacement training centers were established as the 30,000-pilots-per-year program was getting under way in 1941. Later, with the United States' entrance into World War II and the subsequent adoption of the 50,000-pilot program early in 1942, the replacement centers could not take care of the increased loads; and preflight training for pilots, bombardiers, and navigators was separated partly as one means of easing the situation and partly as a solution to a serious morale problem.

Still later in 1942 the goal set for pilots was increased to approximately 100,000 per year, with a corresponding increase in the quotas for bombardiers and navigators. Preflight training was further expanded and decentralized by the establishment of separate classification centers in order further to relieve the load pressure at the various schools. Nevertheless, by the end of 1942 the AAF had acquired a backlog of 93,000 recruits and did not have the training facilities to accommodate them immediately. The college training program was then inaugurated as a pre-preflight school, and by the end of 1943 the problem of delayed training was solved.

It is a tribute to the AAF that the preflight program was made a flexible one that was able to expand again and again to accommodate the tremendous loads. (During the period from 28 March 1942 to 23 May 1944 the number of trainees who graduated from pilot preflight schools was 255,173. In addition, 35,474 navigator trainees and 36,864 bombardier trainees graduated from

SECURITY INFORMATION

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~~RESTRICTED~~  
SECURITY INFORMATION 54

AHS-90

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preflight schools during the same period.)<sup>91</sup> On the other hand, the program was able to contract to fit the trend in the decreasing number of preflight trainees needed, just as it had previously expanded to fit the expansion trend.

The reduction in the flying training program was begun late in December 1943 when the 85,000 program was announced.<sup>92</sup> By early spring 1944 it became increasingly obvious that more than enough pilots and aircrewmen were being trained to complete the conquest of Germany and Japan, especially since the attrition rates were lower than had been anticipated. It now became advisable to adjust the preflight training program to conform more closely with the needs: first, the bombardier-navigator schools were combined with the pilot preflight schools in the spring of 1944;<sup>93</sup> a short time later the college training program was abolished and the classification centers were transferred to the basic training centers; finally, in the fall of 1944 all preflight training was concentrated at the San Antonio Aviation Cadet Center (SAACC) in the Central Flying Command, and identical courses were offered to bombardiers, navigators, and pilots.<sup>94</sup> That identical courses were now possible is a further tribute to the Air Forces' success in handling, by its classification system and its glamorization of the aircrew, what had been a serious morale problem.

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AHS-90

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Chapter III

THE EVOLUTION OF THE PREFLIGHT CURRICULUM, 1940-1945

The first formal proposal for the establishment of separate preflight schools was made on 1 October 1940 at the time the 12,000-pilots-per-year program was also being planned. On that date each of the three training centers was informed of the anticipated move by the Chief of the Air Corps and told that they would be expected to provide training facilities for the new schools. Certain of the reasons for this move have already been suggested: though it eventually became an almost indispensable aspect of the war training program, it was at first in some degree only a stop-gap measure designed to get men into training more rapidly. And in the anticipated lowering of standards for accepting men into the Army Air Forces, there was also a very substantial reason for preflight training; the trainee would still have to master the same problems, but he would be less well trained to do so when accepted, and some sort of preliminary training would be needed to bridge the gap between his civilian background and flight training.

A further impetus was given the preflight concept by the report to General Arnold on the training procedures of the Royal Canadian Air Force. Major R. N. Webster studied the program set up by the Canadian government in 1940 and on 12 August informed General Arnold that the RCAF operated a preliminary ground training program for its aviation cadets.<sup>1</sup> Under the Canadian system recruits were first sent to "manning depots" for two to four weeks and then to "initial training schools" for another four weeks. At the manning depots the trainees received their uniforms, equipment,

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AHS-90

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56

innoculation shots, and a series of lectures on sanitation and hygiene. At the initial training schools they attended classes in mathematics, armament, hygiene and sanitation, and participated in drill and physical training, and Link training before reporting to primary training schools. The emphasis that the Canadians were placing on preflight training, plus the fact that the United States had inaugurated a similar program during World War I, helped justify the decision by the Air Corps to set up pre-flight schools again. These schools went into operation in 1941-42.

Establishing the preflight schools was one thing, but developing a practical course of studies proved to be a different matter; and some two years elapsed before even a semi-stabilized program was adopted. What previous experience the Air Corps had had with such a program was of little practical use now. The number of men to be trained was much larger and the machines they had to fly were vastly more complicated. The curriculum had to depend for its formulation largely upon experiment, and error, so that a time-lag in establishing a fixed course of studies was inevitable. In addition to this, there were such administrative difficulties as rapidly changing quotas for pilots, bombardiers, and navigators, and other reflections of fluctuating military requirements. And, it may be added, as with all training, complete stabilization would have been as undesirable as it was impossible.

#### The Five-Week Plan

The day after the training centers were notified of the plan to establish preflight schools, a second communication was sent out with more specific information and instruction.<sup>2</sup> A copy of the Canadian Royal Air Forces training syllabus was included in each letter to serve as a guide in drawing up the new preflight curriculum. The preflight program was to be four weeks'

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AHS-90

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57

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duration; and in addition to processing the cadets and giving them military and physical training, it was to provide additional instruction and training to further qualify trainees for instruction as pilots, bombardiers or navigators. The commanding officers of each training center were asked to submit program plans in keeping with the above requirements and to offer advice relative to the desirability of including instruction in the Link trainer.

The GCTC and the SETC recommended a four-week program, but the WCTC was in favor of a three-week plan. All three plans, however, placed considerable emphasis upon physical education, drill, and mathematics--undoubtedly an influence of the preflight program then being used by the Royal Canadian Air Forces. This was the four-week course of study submitted by the GCTC on 15 October 1940:<sup>3</sup>

<u>Courses</u>	<u>Hours</u>
Physical training	32
Drill	40
Mathematics	18
Hygiene and sanitation	5
Armament	8
Articles of war, customs of service, etc.	5
A. C. administration and organization	5
Lecture on Air Corps and other military subjects	10
-----	
Total	123

The GCTC program was based upon a five-day week, with Saturdays reserved for inspections, parades, and other extra-curricular activities. The GCTC also recommended that no visual Link trainer be used in the preflight program because "it is somewhat questionable as to whether this device can be used as a means of positive elimination."<sup>4</sup> The SETC plan was very similar to that submitted by GCTC, the chief difference being that the former proposed 30 hours of mathematics instead of 18.

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136

AHS-90

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58

The three-week program of instruction submitted by the WOTC was as follows:<sup>5</sup>

<u>Courses</u>	<u>Hours</u>
Physical education	30
Drill	21
Review of mathematics	20
Law, discipline, administration and organization	8
Hygiene and sanitation	8
-----	
Total	87

Unlike the schedule suggested by the GCTC and SETC, this program was based upon a six-day week; the WOTC approved the use of the Link trainer in the preflight schools, provided "complete facilities . . . together with competent instructors, are available."<sup>6</sup>

On 7 December 1940 the Chief of the Air Corps approved the establishment of what it called military "replacement training centers," and, at the same time, called for suggestions relative to the course of study that would allot more time to military law, infantry drill, and interior guard--a program to be of longer duration than the three and four-week proposals which had been submitted. As the construction of the replacement training centers began in the spring of 1941, efforts were continued toward developing an expanded curriculum. As noted earlier, General Weaver wanted a ten-week program, but certain factors, described later in more detail, seemed to make a shorter period more feasible.<sup>7</sup> The program ultimately adopted was a five-week plan submitted by the GCTC on 27 June 1941.<sup>8</sup> It called for only four weeks of actual preflight instruction, but, to cover the reception and departure of classes, specified an interval of one week between them.<sup>9</sup> As placed in operation at Maxwell Field on 6 September 1941, the program emphasized military rather than academic subjects:<sup>10</sup>

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AHS-90

59

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<u>Courses</u>	<u>Hours</u>
I. Reception and Processing (including 6 hours of tests)	30
II. Academic Preparation	[12]
a. Military law	11
b. Citizenship	2
c. Mathematics	20
d. Military hygiene and first aid	5
e. Chemical warfare defense	2
f. Current events	2
III. Administrative Indoctrination	[23]
a. Customs and courtesies of the service	5
b. Squadron administration and command	10
c. Organization lectures	8
IV. Basic Military Indoctrination	[68]
a. Manual of pistol	6
b. Interior guard duty	4
c. Infantry drill	20
d. Ceremonies and inspections	6
V. Physical Training	32
Total	163

The Ten-Week (Pilot) Preflight Program

There were still, however, certain very persuasive arguments in favor of the ten-week program, and interest in it continued. Recent reports from the combat command had indicated that although there could be little criticism of Air Corps officers as pilots, there was considerable feeling that they had not received sufficient instruction in their duty and conduct as officers.<sup>11</sup> The five-week program, it was argued, did not provide enough hours for military training; a ten-week program should solve this problem.

Thus in August of 1941--even before the five-week program got under way at Maxwell Field--a conference of senior generals was called to discuss the question of increasing the course to ten weeks; among the officers present

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AHS-90

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60

were Maj. Gen. Gerald C. Brant, Maj. Gen. W. R. Weaver, and Maj. Gen. Barton K. Yount. There was some agreement at the conference that the five-week program was "a step in the right direction," but that it devoted so much time to technical subjects and to processing and equipping the cadets that it did not really meet the complete military objective of preflight.<sup>12</sup>

Specifically, it was felt that this could be remedied by a ten-week program which would allow, by staggering the classes at five-week intervals, an upper class to supervise and direct the lower classmen. This would insure the sort of military training that was needed and help indoctrinate the trainees "in the duties common to junior officers of the Air Forces."<sup>13</sup> "All three training center commanders agreed that it would be to our advantage to increase . . . [the] time from 5 to 10 weeks and stated that it could be done by putting one group in tents and after they had been there 5 weeks move them into barracks."<sup>14</sup>

As suggested above, there were a number of serious objections to a ten-week program:<sup>15</sup>

- 1) The Training Centers were already trying, within the five-week plan, to remedy the situation outlined in the critical reports from the Combat Command, and there had not yet been time to determine whether present efforts would be adequate.
- 2) It was becoming obvious that some reasonable limitation to the time devoted to training must be established.
- 3) Other branches of the Service were able to accomplish their training in a period of no more than three months; the ten-week program for preflight would put Air Corps officer candidates under the control of Training Center Commanders for 34 weeks, more than 8 months.
- 4) Proper supervision and appropriate measures should insure excellent military training in all civil schools.
- 5) The candidate himself would not look with favor on an increase of time to be spent in a Replacement Center (especially if he realized that the Navy Department placed no such barrier between him and his desire to handle the controls of a plane).

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AHS-90

~~RESTRICTED~~ ~~CONFIDENTIAL~~ SECURITY INFORMATION 61

However, General Weaver felt that the arguments in its favor were strong enough to warrant his submitting, on 17 September 1941, a curriculum based upon ten weeks of instruction.<sup>16</sup> The stated objectives of the new program were: 1) the preparation of aviation cadets, both physically and mentally for intensive training in the Air Corps, and 2) indoctrination in the duties common to junior officers of the Air Corps. A breakdown of the proposed program was as follows:

<u>Program of Instruction</u>	<u>Hours</u>
I. Reception and Military Processing, Physical Examinations and Fitting of Uniforms	8*
II. Basic Military Indoctrination	188*
a. Drills and inspection	48
b. Physical training	40
c. Athletics	40
d. Pistol firing	6
e. Interior guard	5
f. Defense against chemical attack	2
g. Customs and traditions of the services	5
h. Military law	15
i. The exercise of command	5
j. Discipline, leadership, and esprit de corps--honor in the Army	3
k. Command and administrative channels	4
l. Combat orders	5
m. Military correspondence	6
n. Citizenship	1
o. Constitution	1
p. National policy	1
q. Career planning	1
III. General Academic Preparation	144
a. Organization of the U. S. Government	1
b. Organization of the Army	1
c. Organization of the Ground Forces	6
d. Organization of the Air Corps	19
(1) Organization of AC (general)	1
(2) Intelligence in aviation procedure	4
(3) Employment of aviation of Army	8
(4) Identification of aircraft	6

\*The 8 hours of processing is included in Basic Military Indoctrination.

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AHS-90

SECURITY INFORMATION  
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62

e. Naval Forces	14
f. Current events	10
g. Mathematics	20
h. Flags of all nations	2
i. Signal communications	66
(1) Code (5 w.p.m. proficiency)	30
(2) Liaison radio set	5
(3) Signal lamps	12
(4) Shipboard signals	3
(5) Air-ground liaison code	3
(6) Pyrotechnics	3
(7) Army radio procedure	2
(8) Joint Army-Navy procedure	2
(9) Cryptography	5
j. Type of Air Force equipment and its armament	5
 IV. Basic Duties of Junior Officers	 39
a. Administration	10
b. Post regulations--purpose	1
c. Post duties--administrative	8
d. Squadron duties	13
e. Air Base group--duties and functions	2
f. Inspector--administrative	1
g. Inspector--technical	1
h. Sub-depot activities	3

Total 371

As can be seen, in keeping with the objectives of turning out cadets who would be able to accept their responsibilities as officers in the Air Corps, General Weaver's program placed considerable emphasis upon military training at the expense (proportionately) of academic subjects. The ten-week program was approved by the Chief of the Air Corps early in October 1941,<sup>17</sup> but there were insufficient funds available to put it into operation at all of the replacement training centers immediately, and it eventually went into effect only as an experimental ten-week preflight at Maxwell Field.<sup>18</sup>

Meanwhile, on 4 October 1941 copies of the new curriculum were sent to the commanding generals of the WCTC and GCTC, who were asked for their comments.<sup>19</sup> Both generals expressed approval of the content of the program of

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AHS-90

SECURITY INFORMATION

63

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instruction as drawn up. The commanding general of the WOTC added the following pertinent observation:<sup>20</sup>

The "Two Class" system will have the advantage of increasing military efficiency by having the upper class drill and discipline the lower class. Under the terrific pressure that the British have had to turn out pilots, it is noted that they have seen fit to cut their flying course to a minimum, but have retained their pre-flying instruction program. It is therefore advantageous that the ten-week Program of Instruction be given so that all Aviation Cadets receive a fundamental knowledge of military customs and regulations as well as the duties and responsibilities they will have as junior officers.

The next step in adopting the proposed plan came on 27 October 1941, when the Chief of the Air Corps wired the commanding generals of each of the three training centers and asked if they could operate the ten-week program at the replacement centers "without additional funds" over and above the funds allotted for the five-week program.<sup>21</sup> Though they cautioned that housing facilities would be taxed to absolute capacity and that some of the trainees would have to be put in tents, all three replied in effect that they could operate such a program.<sup>22</sup>

Nevertheless, the Chief of the Air Corps decided to postpone establishment of the ten-week preflight program in all of the replacement training centers. The reasons given for the decision were the necessity of having to use tents, and the lack of funds to defray an additional cost of travel, food, and clothing.<sup>23</sup> Consequently, only the ten-week experimental program, at Maxwell Field, which had been approved on 4 October 1941, went into operation (toward the end of the year). But our entrance into World War II after 7 December and the new developments incident to that event prevented the completing of even this program.<sup>24</sup>

#### The Nine-Week (Pilot) Preflight Program

The entrance of the United States into World War II brought about drastic and sudden changes in training and in pilot production goals. On 31 December

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AHS-90

64

1941 the Chief of the Air Corps sent radiograms to the commanding generals of each of the training centers announcing the necessity of increasing the production of pilots from 30,000 to 90,000 per year.<sup>25</sup> Meanwhile, the Air Corps (like other branches of the Service) was already flooded with enlistees, and Maxwell Field and San Antonio were unable to take care of their trainee personnel. Indeed, overcrowded conditions at the two replacement training centers was only one of many problems that the training command officials were faced with at this particular time.

Early in 1942 the preflight conferences began; and, as we have seen, the whole preflight program was given careful study. A decision of the preliminary conference held at Maxwell Field on 2 January 1942 was to abandon the ten-week experimental program in favor of a permanent nine-week program,<sup>26</sup> the tenth week being set aside for travel from the replacement training centers to the primary flying schools. The second conference, held at Randolph Field on 12-13 January 1942, worked principally on a revision of the flying curriculum; a third was called for 9-12 February to revise the preflight ground school program to conform to the nine-week plan. A separate curriculum for bombardiers and navigators was also drawn up at this time. "Out of these conferences came the nine-week pilot preflight program which appeared officially on 15 March 1942, and . . . [which] became the foundation for subsequent curricular developments."<sup>27</sup> The new course of study was as follows:<sup>28</sup> (A detailed breakdown for each course supplemented this general outline)

<u>Courses</u>	<u>Hours</u>
I. Academic Instruction	160
(a) Safeguarding military information and cryptography	3
(b) War Department publications	2
(c) Military customs and courtesies	3
(d) Air Forces	10

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SECURITY INFORMATION

AHS-90

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65

(e) Chemical warfare defense	2
(f) Naval Forces	10
(g) Ground Forces	6
(h) Aircraft identification	8
(i) Code	50
(j) Communications	1
(k) Maps, charts, and aerial photos	12
(l) Mathematics	20
(m) Physics	20
(n) First aid	13

II. Basic Military Indoctrination 45

(a) Manual of pistol	6
(b) Interior guard	4
(c) Infantry drill	26
(d) Ceremonies and inspections	9

III. Physical Training 45

Total 250\*

Despite the previous insistence by General Weaver that the preflight program be constituted primarily for the purpose of military indoctrination, this course sharply increased attention to academic subjects. It increased the hours devoted to academic subjects from 144 to 160 and placed more emphasis upon code and aircraft identification; it also added such courses as physics and maps and charts. Whereas General Weaver's ten-week program had called for 188 hours of basic military indoctrination (including 8 hours of processing), the new plan provided for only 45 hours.

Undoubtedly this shift of emphasis from the military to the academic reflected the announcement by the Chief of the Air Corps on 15 January 1942 that two years of college training were no longer a prerequisite for enlistment as an aviation cadet: candidates would be admitted to the Air Corps if able to pass a prescribed qualifying examination. As future events certainly proved, the bulk of the men taken into the Air Corps after 1942 were no longer college graduates--indeed, most of them were just out of high school. Once

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\*The original document erroneously cites the total instruction as 237 hours.

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AHS-90

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66

the "cream of the crop" had been taken, the academic quality of trainees steadily declined; and subsequent changes in the various preflight curricula were in keeping with this development.

The new nine-week program was timed to go into effect with the opening of the Santa Ana Preflight School. However, it actually went into effect at Maxwell Field and Kelly Field on 24 January 1942, even though the curriculum had not yet been officially completed. Under the pilot program it was intended that classes would enter at intervals of four-and-one-half weeks, while the bombardiers and navigators would enter preflight at intervals of three weeks. This arrangement was designed to facilitate the flow of trainees,<sup>29</sup> but also to maintain for both pilots and aircrew an upper and lower class system--a policy that General Weaver had consistently advocated.

The new program "did not take effect until the last classes of cadets scheduled under the old program had finished preflight."<sup>30</sup> When it did go into operation there was much confusion at first, since withdrawals to meet primary quotas prevented many cadets from receiving the full period of training. Moreover, the academic directors of the various schools were not always certain what was to be taught in particular courses and were often unable to secure textbooks, blackboards, laboratory equipment, and training aids. These conditions forced each school to exercise considerable leeway in interpreting the curriculum directive, and to adopt various expedients to make up for the shortage of training equipment. "We held a lot of meetings," reported a former instructor at SAACC, "worried a lot, and tried to follow directives from Randolph. We had quite a bit of latitude because Grubbs\* told us to use our judgment and work out the curriculum the best

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\*Major Stanley D. Grubbs, Jr., GO SAACC

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AFS-90

67

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way possible."<sup>31</sup>

The preflight schools not only varied the content of courses but in some cases modified the number of hours devoted to particular subjects. "Santa Ana, for example, departed from the official program by giving extra hours to the subject of Air Forces, bringing it up to a maximum of 24 hours instead of the allotted 10. The courses in maps and charts was also increased from 12 to 18 hours."<sup>32</sup> With the various preflight schools exercising considerable independence in the operation of the program, standardization was virtually impossible, but the situation improved as the program progressed.

Two events in the fall of 1942 called special attention to the desirability of reexamining the preflight program to determine if it was the most efficient one possible: one was a letter written by the Commanding Officer at Maxwell Field, Lt. Col. Louis A. Guenther, to SETC, and the other was the result of a visit by two Maxwell Field officers to the Eighth Air Force in England. On 26 September 1942 Colonel Guenther addressed a letter to the commanding general of the SETC in which he asked that serious consideration be given to the following suggestions:<sup>33</sup>

- 1) It might be argued that thirty (30) minutes spent on Aircraft Identification after one has become an officer and ready to go into active operations against the enemy would be of more value than eight (8) hours spent in the Preflight School.
- 2) It is understood that Code is not given in primary schools at this time. The question is raised whether or not it might not be better to give less Code in Preflight and more in Primary.
- 3) A scientific and objective investigation might disclose that the twenty (20) hours course in Physics may not be of as much practical value to pilots as has been supposed.
- 4) Likewise the practical application of the course in mathematics might be questioned.
- 5) Every other academic course might be subjected to the same careful scrutiny.

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SECURITY INFORMATION 68

AHS-90

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The points raised by Colonel Guenther were subsequently studied but no immediate action was taken. Instead, when the preflight program was reformed early in 1943 it was decided to incorporate the suggestions brought back by Lt. P. P. Dawson and Lt. D. E. Ellett, the two officers who had visited the Eighth Air Force in England. These men returned with considerable enthusiasm for more book learning in the preflight schools;<sup>34</sup> and, in direct opposition to Colonel Guenther, they advocated more emphasis upon code, physics, identification, and maps and charts. Despite doubts in the minds of some of the older officers in the AAF, the new standardized preflight program that ultimately evolved--dated 21 April 1943--was heavily weighted in favor of academic subjects. It provided for the following courses and hours:<sup>35</sup>

<u>Courses</u>	<u>Hours</u>
I. Basic Military and Officer Training	110
(a) Close Order drill	45
(b) Ceremonies	9
(c) Inspections	9
(d) Customs and courtesies of military service	4
(e) Honor indoctrination	1
(f) Interior guard	4
(g) Chemical warfare	8
(h) War Department publications	3
(i) Ground Forces	5
(j) Safeguarding military information	2
(k) Thompson sub-machine gun, .45 cal.	4
(l) Rifle, .22 cal.	4
(m) Pistol, .45	4
(n) Browning machine gun, .30 cal.	8
II. Ground Phase of Flight Training	140
(a) Identification and tactical functions of aircraft	18
(b) Identification and tactical functions of Naval vessels	12
(c) Code	48
(d) Physics	24
(e) Mathematics	20
(f) Maps, charts, and aerial photos	18

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AHS-90

III. Medical Training

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1 day plus  
10 hours

(a) Oxygen indoctrination and classification

1 day

(b) Medical aid

10 hrs.

IV. Physical Training

1 hr. per day  
6 days a week

In addition to placing more emphasis upon recognition, physics, mathematics, and code, the new nine-week program added gunnery practice, oxygen indoctrination, and first aid. The course in gunnery practice had been suggested by Colonel Guenther as early as 26 September 1942.<sup>36</sup> The oxygen indoctrination and classification course was incorporated into the preflight curriculum at this time because it was no longer being given at the basic training centers, where the cadets first entered training. After the opening of the college training program in March 1943, trainees merely took a modified physical and educational examination at the basic training centers before proceeding to college. However, there was strong opposition from various AAF officials to putting the oxygen indoctrination and classification course in the preflight program; the Technical Training Command pointed out that many trainees, approximately 10 per cent, would be disqualified at the time they received their oxygen indoctrination,<sup>37</sup> and that by this time they would already have been given several months of expensive training at the colleges. Despite TTC's recommendation that the qualification be given before the cadets entered preflight school, the oxygen indoctrination and classification course remained in the preflight curriculum until the college training program was abolished in 1944.

One other aspect of the curriculum of 21 April 1943 should be mentioned: it practically duplicated courses in physics and mathematics that were currently being offered in the college training program. Mr. R. B. Edgar, former director of supervision of teaching and modification of courses at the Maxwell Air Force Base Preflight School, felt that the duplication of work in physics and mathematics

\*Oxygen indoctrination and classification training was done by placing the trainees in pressure chambers to simulate loss of oxygen in high altitudes.

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AHS-90

SECURITY INFORMATION

70

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created a serious problem. The following quotation, taken from a summary of an interview with Mr. Edgar in October 1943 by an AFTRC historical officer, explains the reason for his point of view:<sup>38</sup>

Mr. Edgar feels very strongly that the Army would have done better if they had left the development of certain courses such as mathematics and physics to qualified teachers, following the general course outlines laid down by the Army. Mr. Edgar's belief that the Fort Worth directives on mathematics and physics for instance is *[sic]* too immature for the caliber of men being received in 1943 since many of them have had college training." It was Mr. Edgar's feeling that the preflight course in mathematics should be changed to a course in navigation, the preflight course in physics to meteorology. He gave as his reason for this the fact that the boys came to him and say, 'we have just had 4 months of this (meaning Math and Physics) and we are bored to death.'

Objection to the nine-week program was raised by other officials of the Training Command. At a conference, held on 22-23 July 1943 at Fort Worth, to discuss the amalgamation of various training programs, Maj. Gen. Thomas J. Hanley offered the opinion that many of the subjects in the preflight program were unnecessary: "I have checked over the ground school courses at Southeast," he stated, "and I found many subjects which I feel were carried over from old days of training, and I am not convinced that all of these subjects are necessary to turn out a flying cadet. I believe they might have been put in to fill up time."<sup>39</sup> Even before the July conference on 29 May 1943, AAF headquarters had suggested to the commanding generals of the various training commands that the preflight schools might be absorbed by the college training program for somewhat the same reasons later given by General Hanley.<sup>40</sup>

On 9 October 1943 the commandant of the Santa Ana Preflight School addressed a letter to the commanding general of the WFTC requesting a thorough revision of the academic courses in the preflight curriculum.<sup>41</sup> Nevertheless, no major change was made in the nine-week program until the adoption of the ten-week curriculum (discussed later in this chapter) in the spring of 1944

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\*The reference here is to the AAF college training program.

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AHS-90

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71

and the issuance of a completely new preflight course of study on 23 May 1944. By this time, more than enough pilots were being produced and "quality instead of quantity could now become the prime training consideration."<sup>42</sup>

Bombardier and Navigator Preflight Curriculum

Before 1941 the problem of training non-pilot commissioned aircrewmen had been largely left to the tactical units, which did not provide a separate and distinct program for them. As early as 26 September 1940 there had been some consideration of their particular training needs, but little was done for the time being. When it appeared that "replacement training centers" would be established, it was proposed that the centers might give instruction to bombardiers and navigators as well as to pilots. Specifically, it was recommended that non-pilot commissioned crewmen be given five weeks of instruction in combat crew duties, after which they would be given another five-week course in gunnery school before going on to specialized bombardier or navigator training.<sup>43</sup>

Bombardiers and navigators received the same preflight instruction as pilots at Maxwell Field until the separate program was approved by Maj. Gen. George E. Stratemyer, Chief of Staff.<sup>44</sup> The new bombardier-navigator program called for 80 hours of military training and 267 hours of academic training, and was instituted at both Maxwell Field and Ellington Field during the early fall of 1941. Like the pilot program it was constantly subjected to criticism and recommendations for changes until, at the preflight conference at Randolph Field on 12 February 1942, another standard bombardier-navigator curriculum was drawn up and adopted. It called for the following courses and hours of instruction:<sup>45</sup>

<u>Courses</u>	<u>Hours</u>
I. Military Training	115
(a) Infantry drill and inspection	48

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AHS-90

SECURITY INFORMATION

72

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(b) Athletics	34
(c) Chemical warfare	6
(d) Military discipline and customs and courtesies	3
(e) Safeguarding military information	2
(f) War Department publications	2

II. Academic Training 239

(a) Maps and charts	8
(b) Photography	6
(c) International Morse code (aural and visual)	48
(d) Communication procedure	10
(e) Naval Forces, and ship recognition	14
(f) Target identification	19
(g) Ground Forces	15
(h) Air Forces, aerial reconnaissance, and aircraft identification	25
(i) Cryptography	5
(j) Flags of nations, insignia	2
(k) Mathematics	34
(l) Physics	18
(m) Meteorology	34
(n) Practical exercises in synthetic training*	10

Total	354
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As in the case of the pilot training program, an overwhelming emphasis was placed on academic subjects. The two programs were, in fact, similar in many ways, except for greater stress placed in the bombardier-navigator program upon Air Forces, Ground Forces, Naval Forces, mathematics, and communications. The new courses in photography, target identification, meteorology, and synthetic training were not offered in the pilot curriculum at all.

On 30 September 1942 the Flying Training Command issued still another program, this time placing even more emphasis upon the academic:<sup>46</sup>

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\*Synthetic training was training by the use of training aids or synthetic devices under simulated conditions, for example, pressure chamber and link trainer.

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<u>Courses</u>	<u>Hours</u>
I. Athletics	60
II. Military	72
(a) Drill and inspection	70
(b) Sex morality and hygiene	1
(c) Articles of War	1
III. Academic	288
(a) Chemical warfare	20
(b) Discipline, customs and courtesies	3
(c) Safeguarding military information	1
(d) War Department publications	2
(e) Squadron administration	3
(f) First aid	13
(g) Maps, charts, and target identification	18
(h) Code	48
(i) Communication procedure	9
(j) Cryptography	5
(k) Naval Forces and naval identification	15
(l) Air Forces and aircraft identification	25
(m) Air Forces nomenclature	2
(n) Ground Forces	10
(o) Mathematics	36
(p) Physics	35
(q) Meteorology	34
(r) Synthetic training	9
Total	420

This increased the total hours of academic courses from 239 to 288, the additional hours being mainly in chemical warfare, physics, and first aid. The program, representing the high-water mark of distinction between the pilot and bombardier-navigator preflight curricula, went into effect with classes 43-6 (navigator) and 43-5 (bombardier) on 31 October 1942, and continued until the establishment of the preflight program of 21 April 1943, when all preflight instruction was again made the same.<sup>47</sup>

The College Curriculum

The setting up of the college training program and its operation from 1 March 1943 to the spring of 1944 have been discussed in the second chapter.

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AHS-90

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This program was intended to supplement the preflight school program--not to replace it. In a sense it was a pre-preflight curriculum which was designed to absorb the backlog of Air Corps recruits as well as to strengthen those students who qualified physically and psychologically, but were weak academically.<sup>48</sup>

The first program of study for college training was published by FTC headquarters on 20 January 1943.<sup>49</sup> It was hastily prepared and later severely criticized, but, considering the brief time allowed for preparing it, it was certainly as good a curriculum as one could expect. The program provided for 21 weeks of instruction which ostensibly would prepare aircrew students academically, militarily, and physically for future intensive training in the AAF schools. The academic phase of the curriculum included a total of 420 hours divided into five fields:

a. Mathematics	60 hrs.
b. Physics	180 "
c. Current history	60 "
d. Geography	60 "
e. English	60 "
<hr/>	
Total	420 "

The colleges were instructed to place minimum emphasis on theory in the mathematics and physics courses, which were introduced into the curriculum for the obvious purpose of broadening the student's background for post-preflight ground school navigation courses. In addition to the academic courses, the program contained 280 hours of basic military indoctrination, including 120 hours of physical training. Also, each student was to receive ten hours of flight instruction, which would be given during his fifth month in school.

On 11 February 1943 the proposed curriculum was altered so as to include 44 more hours of academic subjects. Mathematics was increased from 60 to 80 hours and a 24-hour course in Civil Air Regulations was added.<sup>50</sup> Doubtless one reason for increasing the hours devoted to mathematics had been provided a

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SECURITY INFORMATION

AHS-90

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75

short time before at the Nashville classification center by the test scores made by 1,130 aviation cadets on the Aviation Educational Examination. Approximately 70 per cent of the students taking the examination scored below the proficiency standards established for mathematics and physics.<sup>51</sup>

The revisions in the original curriculum were incorporated in a detailed course of study issued on 24 February 1943 by FTC headquarters and sent to the colleges a few days later.<sup>52</sup> This outline of courses included a breakdown of the various subjects and also a recommended master schedule, as shown in Chart I on the following page. The latter was merely "presented as a guide and intended only for use of those actually scheduling courses and classrooms and laboratory space;" It was based upon "maximum efficiency use of instructional personnel and college facilities."<sup>53</sup> The instructions accompanying the program of studies cleared up a major problem--assigning students to classes--by specifying that students were to be assigned to one of the following five course combinations:

- a. Mathematics, Physics, and Physics Laboratory
- b. Mathematics, Geography, History, and English
- c. Physics, English, and Physics Laboratory
- d. Physics, History, and Physics Laboratory
- e. Physics, Geography, and Physics Laboratory

The instructions also explained that students who were deficient in more than one combination of courses would be assigned a schedule according to the following order of priority: first, mathematics; second, physics; third, geography; fourth, history; and fifth, English. Where possible, students would be assigned a maximum of 60 hours of electives to apply towards a bachelor's degree. The academic phase of the curriculum was based upon a five-day week, but military training, physical education, and flight training were to operate on a six-day week. Two hours of scheduled study per day were required, with at least one hour devoted to supervised study. Instructions were explicit regarding elimination

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# COLLEGE ADMINISTRATIVE MASTER SCHEDULE

RECOMMENDED FOR ACCOMPLISHING COLLEGE TRAINING PROGRAM DIRECTIVE

NUMBERS IN CIRCLES INDICATE TOTAL HOURS

GROSS HATCHING INDICATES 6-DAY INSTRUCTIONAL WEEK

INSTRUCTIONAL WEEK

1ST 2ND 3RD 4TH 5TH 6TH 7TH 8TH 9TH 10TH 11TH 12TH 13TH 14TH 15TH 16TH 17TH 18TH 19TH 20TH 21ST

(NOT NECESSARILY CONSECUTIVE HOUR BLOCKS EXCEPT FOR PHYSICS LABORATORY COURSE)

1ST HOUR BLOCK	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH
MILITARY DRILL (84)	MILITARY CUSTOMS AND COURTESIES (10)	HYGIENE AND SANITATION (10)	PHYSICS OR GEOGRAPHY (60)	PHYSICS LAB OR HISTORY (60)	PHYSICS LAB OR ENGLISH (60)	PHYSICS LAB OR ENGLISH (60)	INSPECTIONS & CEREMONIES * (20)	CIVIL AIR REGULATIONS (24)
MEDICAL AID (20)	RESERVED FOR ASSIGNMENT AS DETACHMENT COMMANDER MAY REQUIRE (20)	INTERIOR GUARD (20)	PHYSICS LAB OR HISTORY (60)	PHYSICS LAB OR ENGLISH (60)	PHYSICS LAB OR ENGLISH (60)	COLLEGE 40 HR ELECTIVE (40)	FLIGHT TRAINING (48)	ALERT (20)
RESERVED FOR RATING TESTS PROCESSING AND ORIENTATION	SCHEDULED SUPERVISED STUDY (80)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 20 HR ELECTIVE (20)	
GEOGRAPHY OR HISTORY OR ENGLISH (60)	GEOGRAPHY OR HISTORY OR ENGLISH (60)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 20 HR ELECTIVE (20)	
PHYSICAL TRAINING (120)	PHYSICAL TRAINING (120)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 20 HR ELECTIVE (20)	
MATHEMATICS (80)	MATHMATICS (80)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 20 HR ELECTIVE (20)	
SCHEDULED STUDY (120)	SCHEDULED STUDY (120)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 40 HR ELECTIVE (40)		COLLEGE 20 HR ELECTIVE (20)	

\* 20 ADDITIONAL HOURS CEREMONIES AND INSPECTION WILL BE SCHEDULED ON SATURDAYS AND/OR SUNDAYS AS REQUIRED BY DETACHMENT COMMANDER

Chart I



SECURITY INFORMATION

AHS-90

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77

of students because of academic failure: there would be no elimination for this reason; however, grades made on various college subjects would become a part of each student's military record.

Each academic course in the college curriculum was supposed to make content as practical as possible. The 80 hours of mathematics were divided as follows: arithmetic (14), algebra (20), plane and solid geometry (18), and trigonometry and logarithms (28). The 180 hours devoted to physics were separated into 60 hours of lecture and 120 hours of laboratory work. Lectures were to include such subjects as mechanics (24), heat (10), electricity and magnetism (18), and light (8); the laboratory periods were set aside for experiments, problems, and drill, and outside problems were "highly recommended."

The 60 hours allotted to history were intended to give the trainee an understanding of the world events in which he was a participant. The following topics were suggested as guides: the emergence of the national state (9 hours), the industrial revolution and the rise of the middle class (6 hours), the struggle for democracy (15 hours), the threat to democracy (21 hours), the issues of the Second World War (6 hours), and the program of international reconstruction (3 hours). Geography included 15 hours for the study of climate and weather, physiography, industries, trade, and transportation. The English course (60 hours) was intended to develop skills in writing and speaking and in reading comprehension. These skills were to be achieved principally by "practice and drill."

In addition to the above subjects, the instructions covered two other courses which seem to have been related to both the academic and the non-academic phase of training. The first was a 20-hour course in first aid (medical aid), and the second a 24-hour course in Civil Air Regulations. The topics prescribed for first aid were correlated with The American Red Cross First Aid

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AHS-90

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78

Book, and the Civil Air Regulation course was based upon the CAA Bulletin No. 22, Digest of Civil Air Regulations.

The college program that was put into operation on 1 March 1943 also called for 290 hours of Basic Military Indoctrination. The various courses and textbooks listed in the curriculum outline were as follows:

<u>Courses</u>	<u>Hours</u>	<u>Text</u>
a. Infantry drill	84	FM 22-5
b. Ceremonies and inspections	40	FM 22-5
c. Physical Training	120	FM 21-20
d. Hygiene and sanitation	10	FM 21-10
e. Customs and courtesies of the service	10	FM 21-50
f. Interior guard	6	FM 26-5
g. Medical aid	20	
Total		
290*		

A breakdown of the individual basic military courses was furnished in the curriculum outline, along with one for the ten-hour course in dual flight training. A course in navigational aids was also recommended as "highly desirable" as an elective where facilities permitted. The objective listed for the navigation course was "to give a thorough familiarity with those parts of astronomy useful in navigation." In view of the importance of navigation to future training, it would seem that the latter course should have been "required" of all students. However, AAF headquarters probably took into consideration that at that time there were in the colleges very few instructors qualified to teach this subject matter.

The colleges were to provide the teaching staff for all subjects in the curriculum except (1) military customs and courtesies, (2) hygiene and sanitation, and (3) interior guard; these would be given by the military detachment personnel. College R. O. T. C. detachments were charged with the responsibility for infantry drill, ceremonies, and inspections. The college authorities were

\*Flight Table "E" (revised 11 Feb. 1943) erroneously states the total hours as 280.

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AHS-90

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79

urged to bring in qualified specialists for certain other courses, for example, first aid and Civil Air Regulations, and to use training films, whenever applicable.

It was pointed out in Chapter II that there was considerable confusion in the college training program at first because college officials did not know exactly what was expected of them. In order to eliminate as much confusion as possible, FTC headquarters on 20 April decided to allow the institutions virtually a free hand in working out the solutions to their teaching problems (a practice especially encouraged by the SETC).<sup>54</sup> Standardization of the program among the various 153 colleges therefore proved practically impossible, but within a few months the SETC and the GCTC did manage to achieve a fair degree of uniformity among the schools in their respective regions.<sup>55</sup>

Although FTC headquarters realized from the very beginning that the college curriculum would need a more careful revision as the program progressed,<sup>56</sup> no specific steps were taken until 25 November 1943. The reasons for the long delay have already been enumerated: (1) during the first few months many students were withdrawn and sent to the classification centers before their training period had expired, which made the results of the program hard to evaluate; (2) the colleges were permitted, even encouraged, to work out their own adjustments; and (3) the academic subjects were considered secondary to military and physical training.

Perhaps the college program would never have been revised at all had it not been for the testing program conducted in the WCTC in August 1943.<sup>59</sup> This experiment showed conclusively that students were not retaining the content of the college mathematics and physics courses for a very long period. The WCTC headquarters took the problem seriously, and insisted upon certain fundamental changes that would strengthen the mathematics and physics courses. Consequently,

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AHS-90

80

on 25 November 1943 FTC headquarters sent a revised master schedule (Chart II), along with a new training directive, to all college training detachments.<sup>58</sup> The directive stated that the college program would be extended to 22 weeks and that the 180 hours devoted to physics would be divided as follows: lecture (60), laboratory (60), demonstrations (20), and problem drill (40). Another important change was that the 80 hours previously set aside for scheduled supervised study would now be utilized for "remedial instruction" as a further opportunity to emphasize drill work in courses where students were most deficient.

Still another important change in the new curriculum was the removal of the previous regulation allowing students to take elective courses outside the regular, prescribed academic fields. The matter of scheduling electives had caused the college officials no end of trouble and confusion, and they doubtless welcomed the following orders: "All aviation students will be required to take all academic courses. Wherever practicable, however, aviation students will be taught advanced physics and mathematics in accordance with the judgment of the department heads in the various colleges."<sup>59</sup>

Finally, the policy of not eliminating students because of academic failure was abolished. Previously there had been practically no eliminations except for physical and psychological reasons. As the following table indicates, the average attrition rate for all colleges prior to 24 September 1943 was less than 1 per cent.<sup>60</sup>

	EFTC	CFTC	WFTC
Received in college	55,757	54,259	42,573
Total elimination	382	412	447
Percentage eliminated	.69	.76	1.05

The new directive made it clear that trainees whose records indicated inability to complete the course of study as outlined would be eliminated from the aircrew program. This measure more than any other factor should have impressed upon the student the importance of the academic courses to future AAF training.

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# COLLEGE ADMINISTRATIVE MASTER SCHEDULE

## RECOMMENDED FOR ACCOMPLISHING COLLEGE TRAINING PROGRAM DIRECTIVE

INSTRUCTIONAL WEEKS → 1ST 2ND 3RD 4TH 5TH 6TH 7TH 8TH 9TH 10TH 11TH 12TH 13TH 14TH 15TH 16TH 17TH 18TH 19TH 20TH 21ST 22ND 23RD

Numbers in circle indicate total hours  
2 1/2 WEEK PROGRAM

1ST HOUR BLOCK	2ND	3RD	4TH	5TH	6TH	7TH	8TH
PHYSICS	LECTURE (60)	LABORATORY DEMONSTRATIONS (20)	PROBLEM DRILL (40)	MEDICAL AID (20)			
MATHEMATICS	(80)	REMEDIAL INSTRUCTION (CONTACT HOURS) (80)		FLIGHT ALERT (48)			
HISTORY AND AMERICANISM	(60)	ENGLISH (60)		CIVIL AIR REGULATIONS (15)			
GEOGRAPHY	(60)	MILITARY TRAINING (126)					
PHYSICAL TRAINING	(126)						
PROCESSING AND ORIENTATION							

THIS SCHEDULE IS INTENDED TO GOVERN THE ALLOCATION OF HOURS TO SUBJECTS AND COURSES RATHER THAN TO PRESCRIBE THE EXACT ORDER AND SEQUENCE WITHIN THE DAY OR TRAINING PERIOD

SATURDAYS AND UNSCHEDULED PORTIONS OF HOUR BLOCKS MAY BE USED AS THE DETACHMENT COMMANDER MAY DIRECT AND/OR FOR AMPLITUDE IN SCHEDULING

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AHS-90

82

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However, the process of liquidating the college program began approximately one month later, and the new curriculum and regulations never had a fair trial.

The New Ten-Week Preflight Program

The nine-week preflight revised curriculum that was established on 21 April 1943\* lasted for more than a year without major official changes by the FTC headquarters. There was a good deal of criticism of the program, but most of the complaints centered upon the relationship between the preflight course and the college training program that ran concurrently with it. There was some duplication of effort in the two programs, particularly in physics and mathematics; but since many trainees did not go through college training, FTC officials were reluctant to alter the existing preflight curriculum.

In the spring of 1944 the Air Forces began to liquidate the college training program. At the same time, as the need for producing pilots, bombardiers, and navigators declined rapidly, it became increasingly obvious that preflight training would be reorganized. One of the first steps in the reorganization movement, that eventually resulted in the consolidation of all preflight training at San Antonio late in 1944, was the drawing up of a new curriculum. The new official course of study appeared on 23 May 1944.<sup>61</sup>

<u>Courses</u>	<u>Hours</u>
I. Academic Training	174
(a) Aural and visual code	48
(b) Aircraft recognition	30
(c) Applied aero mathematics	28
(d) Maps, charts, and aerial photos	24
(e) Applied aero physics	20
(f) Naval vessel recognition	12
(g) Aircraft and principles of flight	12
II. Military Training	78
III. Physical Training	60
IV. Medical Training	6

\*FTC Memo 50-1-1.

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AHS-90

83

V. Altitude Training	L	9
VI. Army Orientation		10
VII. Medical Processing and Assignment		1 $\frac{1}{2}$ days

The new program was of ten weeks' duration and was designed for all students at preflight schools, whether pilots, navigators, or bombardiers. Two reasons may be offered for adding an additional week to the old preflight curriculum: 1) trainees would no longer attend college prior to entrance into preflight; 2) the course in aircraft and principles of flight now had to be taught in preflight--it had formerly been taught at primary--in order "to ease the ground school burden at the flying schools."<sup>62</sup>

As compensation for the abolished college training program the addition of only one week to the new preflight program seems a feeble effort indeed. However, on 27 December 1943 the stanine scores for bombardier, navigator, and pilot training were raised from 5-7-5 respectively to 6-7-6 respectively.<sup>63</sup> This meant that a higher quality of trainees would be selected for aircrew training in the future and that they should be better able to survive the preflight phase without prior college training.

A comparison of the ten-week program of 23 May 1944 with the nine-week program of 21 April 1943 reveals some changes in the distribution of hours allotted to certain academic subjects; for example: maps, charts, and aerial photos was increased from 18 to 24 hours; and aircraft identification increased from 18 to 30 hours. These changes were designed to make the preflight program applicable to future training programs and operational experience. With minor alterations, the ten-week preflight program remained standard until the end of the war.<sup>64</sup>

Preflight Academic Subjects

The emphasis upon various academic courses in preflight schools changed

\*The flying schools at this time were receiving large numbers of foreign students, as well as a tremendous output of preflight students from the large 1943 classes.

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AHS-90

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84

from time to time during the early months of the war. The changes were inspired by various factors: the lack of experience on the part of the Training Command in training large numbers of cadets; the lack of clear-cut concepts of preflight; the everchanging global war picture; new developments in aircraft and equipment; new developments in teaching techniques and training aids; the establishment of separate classification centers; the inauguration of the college training program; and the abolition of the college training program.

Considerable autonomy was given individual departments in various preflight schools in organizing their courses. Field manuals or teaching manuals were provided, but for the most part the various course outlines of instruction were developed under the guidance of the individual department heads. The lecture or problem method was the typical technique of teaching; demonstrations were used extensively when practicable; classes were eventually standardized to 50 minutes duration, followed by an intermission of 10 minutes; and training films and slides were used to supplement the lectures and demonstrations whenever they were available and applicable.

A brief description of and comment on each preflight subject taught at the various preflight schools from 23 May 1944 until near the end of the war follows:<sup>65</sup>

Aural and Visual Code. Code instruction consumed more time than any other academic subject, a total of 48 hours being devoted to it. It was also generally considered to be the most difficult and monotonous course offered, and the easiest to forget. Code classes were generally large, equipment was scarce, and the rate of failures very high. The general principle of teaching was thorough, constant repetition.

At first a minimum proficiency of eight words per minute aural sending and receiving and six words per minute for visual sending and receiving was established.<sup>66</sup>

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AHS-90

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The revised preflight curriculum of 23 May 1944 lowered the minimum proficiency in aural code to 6 w. p. m. sending and receiving, while the minimum proficiency in visual code was lowered to 5 w.p.m. This naturally resulted in fewer failures. As time went on, better methods of teaching evolved, better equipment and more competent instructors were acquired, and code ceased to be the academic hazard that it was at first.<sup>67</sup> Even so, it is today generally agreed by various officials in the Training Analysis and Development section at FTAF headquarters that code was highly overemphasized during World War II. Indeed, Lt. Col. L. D. DuMontier, Director of TASD, goes so far as to predict that "the time will come when there will be no code except visual code taught in the USAF . . . all a pilot needs to know now is to recognize a dot from a dash."<sup>68</sup> A more detailed discussion on this point is found in Chapter VIII, which relates to the present twelve-week preflight curriculum.

Aircraft Recognition. Recognition was not offered in the early preflight curriculum, but by 1942 it began to assume some importance. The early courses were very ambitious in scope: generally instructors tried to acquaint the students with approximately 80 planes for identification purposes. However, only eight hours were devoted to recognition methods and study of foreign planes, with another 10 hours to the organization, employment, and tactics of the AAF, which were thought to have some relationship to recognition.

As the war progressed, reports from combat theaters continued to emphasize the need for better instruction in identification, and late in 1942 this point was dramatically demonstrated when the first flight of B-25's went over France. They were escorted by British and American planes, and when enemy planes came in, the crews became confused and shot down some of their own escort. Moreover, their hesitation in distinguishing between friend and foe allowed enemy planes to take a heavy toll.<sup>69</sup> The preflight curriculum program of 21 April 1943 gave

SECURITY INFORMATION

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SECURITY INFORMATION

AHS-90

~~RESTRICTED~~ ~~CONFIDENTIAL~~

86

the subject of aircraft recognition more prominence, and in July 1943 the Training Command ordered it increased to 30 hours.<sup>70</sup> The latter hours were retained in the new curriculum of 23 May 1944.

The method of teaching recognition changed many times during the early years of the war. At first instructors usually followed the lecture method, supplemented by motion pictures, charts, handmade models, pictures, and silhouettes. This method was modelled after the English WEFT\*\* system and was generally unsatisfactory. In 1943, the Renshaw system was substituted for it. The Renshaw system was devised by a professor of psychology at Ohio State University,<sup>71</sup> and is commonly called the "flash system," since it was taught by means of a projector that flashed slides on a screen. "Late in 1942 selected instructors were sent to . . . study the Renshaw system,"<sup>72</sup> and early in 1943 it was put into actual practice in the WCTC; later that year it was adopted in all other preflight schools.<sup>73</sup>

The Renshaw system first exposed the student for a full second to an image of a plane on the screen, and then progressed until he was able to recognize the image after an exposure of 1/50 of a second<sup>74</sup> (though the proficiency rate demanded by the new curriculum was only 1/10 of a second). The new preflight curriculum called for the presentation of 40 aircraft on "'List A' (T. C. Memorandum No. 50-26-3) through the use of basic TAD\*\*\*slide sets," and the cadets were required to master a knowledge of enemy wing span within a tolerance of plus or minus one foot. They were especially impressed with the importance of learning British and American planes in order to know thoroughly what not to shoot down.

The Renshaw system by no means rendered obsolete all other systems of teaching

\*\*Officially, these letters represented the words, 'wings, engine, fuselage, tail,' but the cadets had other interpretations for them." (Harold B. Hinton, Air Victory, p. 240).

\*\*\*Training Aids Department.

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AHS-90

~~RESTRICTED~~

SECURITY INFORMATION

~~CONFIDENTIAL~~

87

recognition. Indeed, Lt. Col. DuMontier recently observed that in his personal opinion it "was not all it was cracked up to be."<sup>75</sup> The FTC headquarters doubtless did not think so either, for it stipulated in the training directive of 23 May 1944 that in teaching recognition instructors should use "every approved method and device which will tend to make training interesting and successful." Besides the Renshaw system, these approved methods included the employment of shadowgraphs, models, posters, and training films.

Applied Aero Mathematics. The course in mathematics was one of the most stable of all academic subjects. The first preflight curriculum provided for 20 hours of mathematics, and not until the final program was issued (23 May 1944) were the hours increased to 28. There were two principal reasons for the increase: one was that many students completing college training in similar subjects over an even longer period had been "obviously deficient in fundamentals;"<sup>76</sup> the other was that after 1 June 1944 the college program would no longer be in existence, and some compensation for this was essential in view of the importance given to the subject and the difficulty of teaching it effectively.

The addition of eight hours, however, merely complicated the problem of those few students who did reach the preflight schools with a thorough background in the fundamentals of mathematics. To remedy this situation, the new preflight program provided that entering students could take a comprehensive substantiating examination in the subject of applied aero mathematics. Those who attained a satisfactory grade on the examination were excused from further instruction, except for the hours devoted to the E-6B computer.\*

The words "Applied Aero" were prefixed to the name of the 1944 course in

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\*The E-6B computer is a navigational aid which works on the principle of the slide rule.

SECURITY INFORMATION  
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AHS-90

SECURITY INFORMATION

~~RESTRICTED~~~~CONFIDENTIAL~~

88

order to demonstrate an emphasis on more practical subject matter. (Early curricula had prescribed chiefly a review of arithmetic, ratio, and proportion, simple algebra, use of gaffs, angular measurement, vector problems, and the use of scales.) Six hours were also set aside for explanation of and drill with the E-6B computer. Instructors were urged to emphasize practical aviation problems and to drill the students until they mastered the fundamentals. A reason for the constant insistence upon drill is aptly illustrated by a statement made recently by Major General Disosway, Commanding General at FTAF headquarters: "The most common mistakes made in navigation are those whereby a man adds 2 and 2 and gets five instead of 4--this may be an oversimplification, but you see what I mean."<sup>77</sup>

Maps, Charts, and Aerial Photos. Maps, charts, and aerial photos was first introduced into the preflight curriculum of 15 March 1942 as a 12 hour course devoted to the study of types of projections, map reading, and aerial photo reading. When the same preflight curriculum was extended to all navigators, bombardiers, and pilots on 21 April 1943, the course in maps, charts, and aerial photos assumed more importance and was increased to 18 hours. Later, this was increased to 24 hours in the 1944 curriculum, and the scope of the course was enlarged to include the following:

Fundamentals, interpretation and use of maps, charts and aerial photos; relief; symbols, measurements of distances and direction; consideration and application of map projections. Aerial photos: types, arrangements, orientation, scales, interpretation and identification of topographic and military features; objectives, types, and detection of camouflage.

The subject of maps and charts was especially difficult to teach at first because of a shortage of training aids and experienced instructors. But as time went on the course became more functional; training films and practical exercises eventually made it one of the most interesting in the whole curriculum.<sup>78</sup> Although it has been dropped completely from the preflight program

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currently in operation, it continues to be a very important aspect of flying training. The course on maps, charts, and aerial photos is now taught in the primary schools. The reasons for dropping it from the preflight program are discussed in Chapter VII.

Applied Aero Physics. The evolution of the course in physics is similar to that in mathematics, although the former was instituted somewhat later (15 March 1942). Like mathematics, it covered a period of 20 hours and emphasized fundamentals. Topics suggested for study in the first physics course outline were fundamental laws of fluids and gases, heat and temperature, laws of motion, vector forces, units of measure, and work and energy.

The program of 21 April 1943 added 4 hours of physics. As has been indicated, however, many preflight officials felt that too much attention was being given to this subject, the commanding officer of the Maxwell Preflight School observing as early as 26 September 1942 that it "may not be of as much practical value to pilots as first supposed."<sup>79</sup> When the new program was drawn up on 23 May 1944, the course in physics was changed to "Applied Aero Physics" and reduced to 20 hours. Provisions were also made for entering preflight students to take a proficiency examination; and those attaining a satisfactory grade were excused from further instruction, except for five hours devoted to the study of vectors, stressing the wing triangle. However, this practice was discontinued upon the recommendation of the Committee on Academic Instruction at the Fort Worth Preflight conference held on 10-11 July 1944.

The trend in teaching physics was consistently toward greater emphasis upon those aspects of it which related to flying experience. Some of the fundamental topics treated in the regular physics course after 23 May 1944 were, along with the five hours devoted to the study of vectors, units of measurements, hydrostatics, accelerated motion, magnetism, magnetic compass, and gyroscopes as applied to aircrew training. Colonel DuMontier, however, feels that this trend did

SECURITY INFORMATION

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AHS-90

~~RESTRICTED~~

SECURITY INFORMATION

90

~~CONFIDENTIAL~~not go far enough:<sup>80</sup>

I think that there was a tendency to overemphasize it even at the end of the wartime training program. Today [1953] we are integrating physics with other subjects--just as with mathematics--as much as possible. For example, in the study of weather, you have to know some mathematics and a little physics, so that's when and where we are placing the necessary emphasis.

Naval Vessel Recognition. The course in naval recognition and the methods of teaching it went through the same trial and error process that aircraft recognition did. The subject first appeared in the preflight program of 15 March 1942 as "Naval Forces" and consisted of 10 hours devoted to organization and functions of the Navy and the fleet; types, characteristics and recognition of Naval vessels; and fleet disposition and tactics. "Naval officers were originally brought in to give instruction in naval identification, and significant contributions were made by these men."<sup>81</sup> Instructors attempted to define each ship in terms of its unique and salient pattern, including merchant ships and landing craft, as well as ships-of-the-line. On 21 April 1943 the course name was changed to "Identification and tactical functions of naval vessels" and increased to 12 hours. It remained practically the same under the new preflight curriculum of 23 May 1944, except for another change in course title--"Naval Vessel Recognition."

Aircraft and Principles of Flight. This course was not added to the preflight curriculum until the new program was formulated on 23 May 1944. Previously it had been taught in primary training, except for a two-hour course in AAF nomenclature, which was added to the bombardier-navigator curriculum on 30 September 1943. With the inauguration of the new preflight curriculum of 23 May 1944, aircraft and principles of flight was increased to 12 hours. The scope of the subject matter as taught after that date was as follows: "familiarization with the simple scientific facts associated with flight of aircraft, with emphasis on correct nomenclature."<sup>82</sup>

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Though relatively overshadowed for a time by emphasis upon academic subjects, military training was stressed at the beginning of preflight and received consistent attention. The five-week (163 hours) preflight program that began operating at Maxwell Field on 6 September 1941 provided for only 36 hours in subjects defined as "Basic Military," but it should be noted that another 18 hours classified as "Academic" were also "Military" and that other "non-academic" courses occupied 55 hours.<sup>83</sup> The gradual tendency was to group all military courses under the tactical department of instruction; and by the time the standard program of 21 April 1943 had been set up, the number of hours devoted to military subjects totaled 110.<sup>84</sup>

The ten-week preflight curriculum reduced the number of hours devoted to military subjects to 78. Chemical warfare and gunnery practice were shifted to primary and basic training schools in order to allow more time for the preflight academic subjects. This change was a further step toward fulfillment of the philosophy that "quality instead of quantity could now become the prime training consideration" in the preflight schools.<sup>85</sup>

Prior to 23 May 1944, the military training phase of preflight had been standardized in a memorandum, published 12 May 1944, covering all phases of aircrew training. The curriculum for military subjects drawn up on 12 May 1944 was incorporated into the general preflight program of 23 May 1944. The objective of the military training phase was "to develop high standards of leadership, discipline, and character among graduates of aircrew schools (bombardiers, pilots, and navigators)."<sup>86</sup> A breakdown of the military subjects in the new consolidated preflight program that operated from 23 May 1944 until the closing of the preflight school near the end of the war is as follows:<sup>87</sup>

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AHS-90

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92

<u>Military Subjects</u>	<u>Hours</u>
1) Drills and Ceremonies. Scope: School of the soldier; squad Flight and squadron drill; parades and reviews.	45
2) Inspections. Scope: Inspection in rank or formal barracks inspection.	9
3) Customs and Courtesies of Military Service. Scope: Saluting, rules of military courtesy and customs of the service, identification of uniforms and insignia.	4
4) Cadet Indoctrination Lectures. Scope: Honor--outline of the aviation cadet honor system and election of the honor committee. Discipline--Concept of and necessity for military discipline. Leadership--Characteristics of military leadership with historical illustration.	4
5) Ground Forces. Scope: Organization of Army Ground Forces; principles of modern strategy and tactics.	5
6) War Department Publications. Scope: Purpose, use, location, and indexing of Army Regulations, AAF Regulations, AAF Memoranda, Technical Orders, Technical Manuals, Field Manuals, Manual of Courts-Martial.	2
7) Duties and Responsibilities of Chaplains. Scope: Religious and moral responsibilities of command; military, religious, and miscellaneous duties of chaplains; officer-chaplain relationships.	1
8) War Orientation Scope: Factual information presented in historical and chronological sequence of U. S. participation in this present war, emphasizing causes, conditions, operations and objectives. To inform	1 (per week for 8 weeks)

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SECURITY INFORMATION

AHS-90

93

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all military personnel of the principles for which we are fighting, and to inculcate in the aircrew trainees a sense of the importance of his personal role and responsibility in the current struggle.

TOTAL

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These military subjects were taught by tactical officers at all the pre-flight schools, and from the beginning efforts were made to maintain a strong military atmosphere. A former tactical officer at Santa Ana stated recently that "by 1943 the boys were graduating from Santa Ana and other preflight schools as real soldiers."<sup>88</sup>

#### Physical Training

As the length of time devoted to preflight increased, there was a corresponding increase in the number of hours devoted to physical training. The five-week preflight program that operated for a few months at Maxwell Field and Kelly Field provided a total of 32 hours physical training. This was extended to 45 hours on 15 March 1942 and to 60 hours on 23 May 1944. The first increase correlated with the adoption of the nine-week curriculum and the second increase correlated with the elimination of the college training program.<sup>89</sup>

A former instructor at SAACC summed up the physical training during the initial months at that preflight school in this way: "We did not have any facilities. There was no field. Our first organized game was baseball. It wasn't hard to give them a cross-country run, as that's about all we could do in an organized fashion."<sup>90</sup> Until the program was better formalized, this seems to have been the general practice in the other preflight schools as well; at best, instruction consisted of mass calisthenics, supervised athletic games, swimming, and cross-country running.

Various physical training experiments at the different preflight schools ultimately resulted in standardizing all preflight physical training and incorporating the better features of each school's program.<sup>91</sup> Mr. E. B. Smith

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AHS-90

SECURITY INFORMATION

94

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at Maxwell Field set up a program giving special attention to the development of muscles used by pilots in flying; Santa Ana pioneered in aquatic training which emphasized the need for pilots to have experience in swimming under water, inflating their clothing, and swimming through burning oil. At San Antonio special games were developed to allow large numbers of individuals to participate at one time, and at Maxwell Field the "Burma Road" and the obstacle course helped develop the cadet's stamina for running, climbing, twisting, and crawling.<sup>92</sup>

By the end of 1943 aquatic training, parachute landing training, and the obstacle course became a part of all preflight physical programs; and during the last two weeks of their course all cadets were required to take periodic tests designed to measure physical fitness improvement.<sup>93</sup> On 9 November 1944, FTG headquarters issued a physical training memorandum directing that every effort be made to attain the following physical training proficiency by the time preflight was completed:<sup>94</sup>

- 1) Ability to run 880 yards in 2 minutes and 45 seconds or less and to sprint 300 yards in 45 seconds or less.
- 2) Ability to accomplish the prescribed performance standard of as many of the survival aquatic skills listed in AAF Letter 5057 as practicable within the limits of the twelve periods allotted to this phase of training.
- 3) Completion of the parachute landing training program as prescribed in T. C. Memorandum 50-21-7, "with adequate skills and knowledge essential for landing following emergency parachute escape."

A detailed athletic training schedule which was included in the above memorandum remained unchanged until the end of the war.

#### Other Preflight Training Subjects

In addition to the above academic, military, and physical training courses, the revised preflight curriculum of 23 May 1944 provided for three other subjects: medical training (6 hours), altitude training (9 hours) and army orientation

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AHS-90

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95

(10 hours). The medical training course included academic instruction designed to prepare the cadet to live in lands infected with various disease-carrying insects and food. Also, it provided training in first aid, which would be of benefit to the trainee in emergencies.<sup>95</sup> The altitude training course was the same as the oxygen indoctrination and classification course, whereby the trainee was screened in pressure chambers for high altitude flying.<sup>96</sup> The time set aside for Army orientation was intended to give the cadet an opportunity to get acquainted with his military surroundings.<sup>97</sup>

The new curriculum of 23 May 1944 likewise provided that "one full day between the 5th and 30th days of the course will be devoted to medical and psychological processing," and "one half day between the 8th and 33rd day of the course will be devoted to assignment processing."

Thus, by the time the peak of pilot training had passed, a comprehensive, standardized, and adequate preflight curriculum program had been developed. The experience gained through much trial and error and many changes was of great value in formulating the present 12-week preflight program that went into operation at Lackland AFB in the fall of 1952.

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AHS-90

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Chapter IV  
PREFLIGHT INSTRUCTION

It will be recalled that when the proposal was first made in 1940 to establish preflight training, the original plan was to conduct it at civil contract schools. However, General Weaver insisted that preflight be carried out at regular military bases in order that trainees could receive a more thorough military indoctrination than he believed would be possible at the civil schools. Weaver's idea ultimately prevailed, and in the end it was decided to set up the preflight schools at military schools--as previously noted. One of the first problems faced in relation to the new program was that of obtaining a sufficient number of qualified instructors to teach the academic courses. Obviously there were not enough experienced officers available to take care of the instructional needs, and the only solution ultimately would have to be the hiring of civilians--despite misgivings by various Air Corps officials.

Although the preflight schools placed heavy emphasis upon military training and indoctrination, civilian instructors (at least during the first year or more) were used in greater proportion to military personnel than in any other phase of pilot and aircrew training. In the first place, the Air Corps had no alternative but to hire civilian instructors in large numbers for the preflight schools during the initial rapid expansion period. In the second place, it was relatively easier to utilize civilians in preflight, since one could teach the preflight academic subjects without having had actual flight experience; such was not altogether the case in the more advanced stages of training.

A history of preflight training during World War II would be incomplete without a brief account of the role of the instructors in making the program a success. This chapter therefore is an attempt to treat the above subject as one

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AHS-90

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97

facet of the over-all problem.

The Civilian Instructors

One of the first steps which the commander of the SETC, General Weaver, took in preparation for the opening of the preflight school at Maxwell Field was to request permission to hire civilian instructors.<sup>1</sup> Approval was duly granted on 1 July 1941, and the General promptly turned the task of recruiting a faculty over to R. Bliss Edgar, a retired Air Corps colonel with considerable teaching experience. Since the Maxwell Field preflight school was scheduled to open in September 1941, Edgar had little time to hire a faculty and draw up courses of study for the various subjects to be taught, but he set to work at once. He first announced that instructors were needed for the new schools, and several dozen candidates promptly made application for positions; a staff of 29 men was employed before the end of July 1941.<sup>2</sup>

Practically all of the first instructors hired at Maxwell Field came to the post for personal interviews: about one-half were chosen to teach English and the rest to teach mathematics, although the former subject never became a part of the preflight curriculum. According to Edgar about one-fourth of his initial staff were former college instructors, three had been lawyers in civilian life, and one was a former marine officer; the others had been high school teachers. Throughout the fall of 1941 the 29 instructors taught approximately 2,500 cadets every five weeks, but when the 30,000-pilots-per-year program was inaugurated and the curriculum extended to nine weeks, the original instructional staff was increased to approximately 100. Eventually, when the peak of preflight training was reached in 1943, the Maxwell Field preflight school faculty numbered 180 men. Edgar stated on 30 October 1943 that of the last 100 men who were elected to the faculty as civilians, about 50 per cent were not trained teachers, and that consequently the quality of teaching declined appreciably because of this

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AHS-90

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98

factor.<sup>3</sup> Most of the civilians were hired in all the preflight schools as junior instructors at \$2,000 per annum, except those with civil service ratings who were classified as assistant instructors and given \$2,600 per annum.

At Kelly Field the first group of academic preflight instructors were reserve officers, and only one or two had ever had any teaching experience. Indeed, they came from all walks of life, and as one officer later remarked:<sup>4</sup>

There was no correlation whatever between their backgrounds and the fact that they were assigned as ground school instructors. I never saw a more unhappy lot of men in my life when they were assigned to Kelly Field as teachers. Almost all of them dreaded the job. They knew nothing about the subject they were expected to teach. One of the first jobs we had to do was to try to make teachers out of these men.

The effort to make teachers out of the officers was not very successful; and within a few days after the first preflight classes started at Kelly Field, Roy W. Arrowood, head of the mathematics department at Technical High School in San Antonio, was employed and granted authority to recruit a staff of civilians to teach all of the mathematics courses. Civilian instructors were later hired to teach subjects other than mathematics and the quality of instruction gradually improved. When the 12,000-pilots-per-year program was expanded early in 1942, it was necessary to increase the teaching staff many fold. Most of these latter men were employed by the Snyder Board, which is discussed later, and were experienced high school or college instructors. As the new men began to arrive from civilian life, the officer instructors at Kelly Field managed to get assigned to administrative positions, and by 4 March 1944 not one of the original group was left in the classroom.<sup>5</sup>

The Santa Ana Preflight School did not open until the spring of 1942, and like Maxwell Field, it started out with a staff of civilian instructors to teach most of the academic subjects; the rule was laid down before any instructors were employed that the men procured must have a college degree and a minimum of three years' experience. Consequently, practically all of those

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AHS-90

SECURITY INFORMATION

99

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brought in were hired from high schools and ~~and to obtain~~ ~~with~~ mathematics or physics training were especially sought, and instructors qualifying in these fields were invariably assigned to the corresponding departments in the preflight schools. Those trained in geography and history were generally assigned to maps and charts; biological science went to mental hygiene; history, English, or general academic majors were eligible for Air or Naval Forces. Instructors with previous military experience or training in social science were considered for assignment to Ground Forces.<sup>6</sup>

At Maxwell Field the first civilian instructors were given a two-week course in infantry drill and in customs and courtesies of the service.<sup>7</sup> All instructors, academic and military, also had a full-scale physical training program which included daily calisthenics and group games, with occasional trips over the "Burma Road." Furthermore, they had to attain a certain physical training proficiency. Military and physical training was also given to the instructors at the other preflight schools. Generally, the civilian instructors were assigned no extra duties other than teaching their classes, drawing up materials, and grading papers, but the officer instructors were always given extra duties at all schools.

In the early months of the preflight schools the civilian instructors taught five or six classes daily for three weeks and then were free for a week-and-a-half. This was especially true at Maxwell Field. The heavy load gradually diminished with the arrival of additional instructors until it averaged approximately two classes per day. At the preflight conference held at Fort Worth on 10-11 July 1944 an attempt was made to standardize the teacher load at a slightly higher figure when the "Committee on Utilization of Instructors" made the following recommendation:<sup>8</sup>

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AHS-90

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100

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It is considered desirable for the average number of instructional hours per day per instructor to be approximately 3-5. For academic subjects, exclusive of code classes, no instructor should regularly be assigned more than four classes per day. The most desirable size for academic subjects, exclusive of code, is approximately 40. Total facilities will ordinarily govern the size of code classes.

With the continued decrease in the number of preflight trainees throughout the latter part of 1944 and early 1945, there was more personnel than needed to maintain the above ratio, and in actual practice academic instructors continued to average approximately two classes per day.<sup>9</sup>

Morale among the civilian instructors at first was generally high, but discontent inevitably arose, particularly among the late arrivals who frequently found themselves under the supervision of men whom they considered academically inferior. At first the salary was conducive to high morale, for it generally exceeded the scale currently in existence at most high schools and small colleges. However, promotions were slow and as the war continued and income taxes increased, some of the men became disgruntled because of their failure to receive salary raises. One writer pointed out that undoubtedly many discontented ones were "marginal men who had failed as teachers."<sup>10</sup> Others were said to be lazy and never met the challenge of the time or the work required. When the teaching personnel was finally militarized, most of the unsatisfactory ones were released and the situation improved.

#### The Militarization of the Preflight Schools

"The Army started out with the thesis that any officer can teach, but within a year it had decided that any teacher can be an officer."<sup>11</sup> This statement by an official associated with SAACC during World War II is a concise description of one of the major instructional developments in the preflight schools soon after they were opened. Since these schools were established at military bases, it was inevitable that their personnel would be militarized as completely as possible. Nearly all of the civilian instructors ultimately

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AHS-90

~~SECURITY INFORMATION~~

101

~~CONFIDENTIAL~~  
~~RESTRICTED~~

secured commissions or returned to positions in civil life, and practically all of the new instructors brought in after the expansion of the preflight schools early in 1942 were given commissions upon being hired.

Not only were officers more desirable as academic instructors than enlisted men or civilians, but commissioning was a tremendous advantage in recruiting the personnel needed to man the preflight schools, particularly since the Navy was following this practice. A strong military atmosphere could thus be maintained by the Air Forces officials and close supervision of the personnel was possible. Indeed, the attitude toward civilians seemed to be that they were very independent and were inclined to teach their courses according to their own ideas relative to content and method.<sup>12</sup> On the other hand, the uniform was a powerful morale factor to the individual instructor: not only did it enhance his prestige with the cadets, but it removed any stigma of "draft dodging"—a common charge against civilians of draft age during World War II.

On 15 January 1942 permission was granted to Army Air Forces headquarters to recruit 1,000 instructors for the preflight schools.<sup>13</sup> These men were to be given direct commissions from civilian life and did not necessarily include the civilian instructors already teaching at the preflight schools. The following principles governing the appointment of officers were enumerated in a directive sent to AAF headquarters a few days later:<sup>14</sup>

- 1) No appointment will be considered unless it is under an approved procurement objective.
- 2) No civilian will be appointed if his induction has already been ordered under the Selective Service Act.
- 3) No appointment will be given to men who are not graduates of a school or course of instruction qualifying them for a commission unless evidence is furnished that the individual has special qualification for duty as an officer in the particular assignment for which recommended.

~~SECURITY INFORMATION~~~~CONFIDENTIAL~~~~RESTRICTED~~~~RESTRICTED~~



AHS-90

SECURITY INFORMATION

102

~~RESTRICTED CONFIDENTIAL~~

- 4) No man will be appointed who is under thirty years of age unless he has extraordinary professional or technical qualifications for the particular assignment for which recommended.
- 5) Commissions should not be granted in any case in which the proposed duty is being or can be adequately performed in a civilian capacity.
- 6) Men who formerly held commissions who are subject to immediate induction under the Selective Service Act, or who have had their commissions terminated because of inefficiency or for reasons related to honor are declared ineligible.

From the viewpoint of the preflight schools two of the above principles were not practical: 1) making appointments according to an approved procurement objective, and 2) appointing no men who were under thirty years of age. The first restriction necessitated the listing of detailed information as to the duties to be performed by the instructor appointed and the particular courses of instruction which he would teach. Under the emergency conditions then existing there was constant need of shifting and reassigning instructors and it was difficult to stipulate in advance what a particular instructor would be required to teach. Furthermore, it was believed that younger men of military bearing generally were preferable to older men; the Navy was already granting commissions to instructors under thirty years of age and the Army schools were losing many of their personnel for that reason.<sup>15</sup>

The preflight schools eventually carried both points: appointments were soon being made without reference to definite assignments,<sup>16</sup> and a short-cut was found by which men under thirty could receive commissions. On 10 June 1942 the War Department issued a circular to the effect that men under thirty might be enlisted, assigned to a command, and then sent immediately to officer's candidate school to be commissioned.<sup>17</sup> According to one authority, the "stay at OCS amounted to a mere formality."<sup>18</sup> Nevertheless, until the short-cut policy was cancelled in August 1942,<sup>19</sup> many young instructors were able to receive commissions, particularly at Maxwell Field, where all but three men meanwhile

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AHS-90

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103

had become officers.<sup>20</sup> In the case of men over thirty years of age direct commissions were granted, theoretically followed by a six-weeks course at OCS at Miami Beach. However, many who were recruited early in 1942 did not go to OCS because the school was unable to accommodate the load. At Maxwell Field one six-weeks course comparable to OCS was set up and taken by all civilians. This was completed toward the end of May 1942, shortly before the direct commissions began to come in. The course was given early in the morning and at night so as not to stop the regular academic work. After 18 December 1942 facilities at Miami Beach were sufficient to take care of 400 men per class, and FTC headquarters put great stress on OCS training in a full three-month course.<sup>21</sup>

Recruiting the 1,000 additional instructors authorized for the preflight schools on 15 January 1942 proved to be a major task. The policy adopted by the Procurement Division at first was to allow the training centers to contact candidates and present their own recommendations concerning appointments. Each training center accordingly sent out field units to locate and interview candidates, but this proved to be unsatisfactory because of overlapping of functions with various other procurement groups then operating for the AAF.

The problem of recruiting was soon solved by the creation of special procurement boards in each training center. The SETC established two procurement boards which operated chiefly in the northeastern region of the United States and the WCTC set up a similar number for the Pacific Coast area. Unlike the other training centers, the WCTC utilized outstanding citizens drawn from specialized fields for membership on its procurement boards. However, the most outstanding of the various procurement boards was the one created on 25 April 1942 in the GCTC which operated in the midwestern area comprising the states of Wisconsin, Minnesota, North Dakota, Nebraska, Arkansas, Kansas, Missouri,

SECURITY INFORMATION

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AHS-90

SECURITY INFORMATION  
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104

Oklahoma, Texas, Illinois, Indiana, Michigan, West Virginia, New Jersey, and Pennsylvania. This board was headed by Lt. Col. Alva W. Snyder and was by far the most active of five boards.<sup>22</sup> Indeed, it became a general recruiting board for the three training centers and procured a total of 220 of the men allowed under the 1,000 instructors quota.

The Snyder Board was active during the spring and summer of 1942 for 90 days and again early in 1943 for 60 days. Its three officer members visited institutions throughout the midwest, and despite keen competition from the Navy and various college training programs, it succeeded in procuring the needed manpower. Nevertheless, considerable criticism was later levied against the Snyder Board for its promises to prospective candidates concerning rank, promotion and assignments, promises which it was unable to make good. Too, it was charged that the Snyder Board selected a disproportionate number of men from Texas, and that its criterion for commissioning men at various ranks was inconsistent.<sup>23</sup>

On the other hand, it can be said for the Snyder Board that it recruited men of higher educational qualifications than any other board, principally because it had more colleges and universities to draw from than did the other four boards. In the terse words of an AAF official at the preflight conference on 6 November 1945 the work of the Snyder Board was summed up as follows:<sup>24</sup>

I think the board set up in the old Gulf Coast selected damn good men. I don't know how they arrived at their selection--if they wanted so many math and physics teachers they would interview instructors in the various schools who had math and physics and an educational degree. Other than that the bulk of the civilians procured were history or geography teachers. Or something like that.

Regarding selection of instructors, the various procurement boards were generally concerned with obtaining experienced high school or college teachers; however, the SETC gave first preference to men who held GAA instructor's ratings. Most of the men recruited were given commissions as 1st or 2nd lieutenants, with

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AHS-90

SECURITY INFORMATION  
~~RESTRICTED~~ ~~CONFIDENTIAL~~

105

the exception of those selected as physical training instructors. Previous to the outbreak of war, civilians had been used exclusively in the physical training program, and partly because of this the procurement boards preferred to enlist new physical instructor personnel as staff sergeants or master sergeants. Most of these men later obtained commissions.<sup>25</sup>

With the addition of the commissioned instructors recruited by the various procurement boards in 1942-43 the preflight schools became more completely militarized. Even so, the procurement objectives established 15 January 1942 precluded the commissioning of all of the ground school instructors, for example, commissions were not to be granted in any case in which the proposed duty could be or was being adequately performed in a civilian capacity. Consequently, by the end of October 1942, at least 30 per cent of the preflight personnel were civilians. Commanding officers at the various schools requested FTC headquarters for permission to commission as many of these civilians as possible. The arguments in favor of further commissioning were as follows:<sup>26</sup>

- 1) Experience has shown that commissioned personnel are far more satisfactory in dealing with cadets than civilian personnel.
- 2) The military character of the schools would be greatly enhanced by thoroughly militarizing the instructional staff.
- 3) Civilian instructors in most of the schools have already been given military training and indoctrination, thus improving their qualifications for commissions.
- 4) New instructors can in many cases be secured only by granting commissions.
- 5) The Army Specialized Corps can not furnish the men needed.
- 6) The Navy is still attracting civilian instructors away from the preflight schools.
- 7) Selective service will take still others.

On 4 November 1942 the Secretary of War approved the appointment of 1,000

SECURITY INFORMATION  
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AHS-90

SECURITY INFORMATION 106

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extra ground instructors, a portion of whom would be assigned to the preflight schools. By 16 June 1943, when the above recruiting program was discontinued, some 890 appointments had been approved. Many former civilian instructors in the preflight schools obtained commissions meanwhile under the new quota, and the military personnel needed to conduct the preflight training program was now complete.

Some preflight schools continued to use civilians for several months, however. Particularly was this true at SAAC where civilians were used almost exclusively in code. The Ellington Field bombardier-navigator school had replaced all of its civilian instructors with military personnel before May 1943,<sup>27</sup> and by October 1943, only one civilian remained on the academic staff at Maxwell Field.<sup>28</sup> At the preflight conference held in Fort Worth on 10-11 July 1944, the "Committee on Utilization of Instructors" made this recommendation:<sup>29</sup>

Officers are more desirable as academic instructors than enlisted men or civilians. Civilians now giving satisfactory service should not be released, but replacements for them should be officers. Enlisted instructors are being utilized satisfactorily in code classes, but it is desirable to have an officer in charge of such classes. In the case of physical training the Eastern Flying Training Command differs markedly from the Central and Western Flying Training Commands, both in practice and conviction regarding the relative desirability of enlisted and commissioned instructor personnel. At Maxwell Field only a few officers are assigned to physical training, most of the instructors being enlisted men. At Santa Ana and at San Antonio large numbers of officers are assigned to physical training. This difference in practice is due largely to the limited number of physical training areas available at Maxwell Field.

This action subsequently completed the militarization of the preflight schools, and with few exceptions all of the instructors in the preflight schools at the end of the war were either officers or enlisted men.

It is interesting to note in this connection that approximately 25 per cent of all the instructors in the consolidated preflight school at Lackland AFB today are civilians.<sup>30</sup> This percentage was even higher in the four-week preflight programs previously conducted at the civil contract schools (1949-

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AHS-90

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107

1952).<sup>31</sup> One of the basic reasons for utilizing civilian instructors since World War II is that they are more permanent than military personnel. "The civilians are teaching in the USAF today by virtue of their own choice. If they don't like the job, they are free to leave," remarked Colonel DuMontier, "but officer instructors naturally do not have as much freedom."<sup>32</sup> Furthermore, the pressure to be in uniform is not as great today as it was during 1941-1945 and many of the instructors prefer not to have commissions.

Instructor Qualification

Whatever criticisms were made against the preflight schools during World War II, the educational background of the instructors certainly was not one of them. Indeed, one authority has aptly asserted that "from the standpoint of formal educational attainment the academic instructors were outstanding in the history of American military training programs."<sup>33</sup> The following table is the result of a study made at the peak of preflight training in July 1943 of the degrees held by the various preflight instructors in the three training centers:<sup>34</sup>

<u>Area</u>	Instructors with Doctoral Degrees	Instructors with Master's Degrees	Instructors with Baccalaureate Degrees
GCTC	96	140	123*
WCTC	41	129	122**
SETC	15	103	154***
Totals	152	372	399

\*Includes a few men without degrees.  
\*\*WCTC reported only 16 instructors without college degrees.  
\*\*\*Does not include men without degrees.

An examination of the above figures reveals that approximately 16 per cent of all preflight instructors had doctoral degrees and approximately 44 per cent had master's degrees. This compares favorably with the degree qualifications of the instructors employed in the college program--considering the fact that the staffs in the latter program were drawn almost completely from college and

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AHS-90

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108

university faculties: as of 13 July 1943 there were 5,926 instructors employed in the college program; approximately 37 per cent of these had doctoral degrees and slightly more than 50 per cent had master's degrees.<sup>35</sup>

A further examination of the above table shows that of the total number of instructors in the preflight schools holding Ph.D. degrees, more than 63 per cent were in the GCTC, while less than 10 per cent were in the SETC and approximately 26 per cent were in the WCTC. Several reasons have been given for this discrepancy: 1) the procurement boards operating in the SETC in 1942-43 were more concerned with recruiting instructors with CAA ratings than with college degrees, 2) the Snyder Board set up for the GCTC made optimistic promises in regard to future promotions and thereby were able to attract a large number of college instructors, 3) salaries for high school and college teachers in the GCTC generally were lower than in the northeast and west coast areas of the United States; consequently, it was easier to attract superior trained personnel in the GCTC into the higher paying preflight schools, and 4) there were more institutions of higher learning in the midwest than in the other two areas. However, teachers with the highest academic degrees did not necessarily prove to be the most successful instructors in preflight training.

From the fragmentary evidence available it is evident that the vast majority of the wartime preflight instructors were experienced teachers of the high school and college level. For example, one writer stated that at the Maxwell school in July 1943 all except ten of a total of 119 instructors were professional teachers,<sup>36</sup> but another source approximated the number without previous teaching experience at 50.<sup>37</sup>

Of the 220 men procured by the Snyder Board, only 15 had been elementary teachers, while 153 had been high school teachers, and 28 had been college or university teachers. Most of these men went into the preflight schools in the

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GCTG. From the very beginning of the Santa Ana preflight schools a necessary prerequisite for instructor candidates was that they must have had at least three years' teaching experience. Thus, it can be seen that from the standpoints of prior experience and educational attainment, the preflight instructors generally were well qualified.

A study by this writer in June 1952 regarding the preflight instructional staffs at Hondo AFB and at Goodfellow AFB furnishes some basis for comparing the academic qualifications of the instructors in the latter schools with the wartime preflight staffs:<sup>38</sup>

<u>Preflight School</u>	<u>Instructors</u>	<u>Master's Degree</u>	<u>Baccalaureate Degree</u>	<u>CAA Ratings</u>	<u>Previous Teaching Experience</u>
Goodfellow	17	2	14	16	9
Hondo	<u>13</u>	<u>0</u>	<u>9</u>	<u>12</u>	<u>6</u>
Totals	30*	2	23	28	15

Obviously, the number of instructors at the above schools was very small in relation to the tremendous instructional staffs employed at the preflight schools during World War II, but one conclusion can be made: the average academic qualifications and previous teaching experience of these preflight instructors were considerably below those of World War II.

Instructor Training and Supervision

The fact that the wartime instructors possessed superior teaching qualifications did not necessarily mean that they were trained in the various subjects they were called upon to teach in the preflight schools. Indeed, the content of the preflight courses, with minor exceptions, was foreign to their previous experience and knowledge. It was not too difficult for those with a background in science or mathematics to master the content of their subjects, particularly since these men, for the most part, were assigned to courses directly relating

\*This does not include military personnel teaching military subjects in the ground school.

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AHS-90

SECURITY INFORMATION  
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110

to their previous training. Instructors in code and physical education likewise had little difficulty, since they were already specialists in their respective fields.

The most serious deficiency that the majority of the academic instructors had to overcome at first, in addition to mastering the content of the particular courses they were assigned to teach, was the lack of knowledge of military customs, courtesies, and traditions, as well as the Army's method of instruction. But attempts were made by the preflight schools to remedy the above deficiencies as quickly as possible. Before the first class of cadets arrived at Kelly Field the instructors attended a series of lectures on the organization of the Army.<sup>39</sup> A similar policy was followed at Maxwell Field and at Santa Ana. The instructors also studied the course outlines furnished by Training Command headquarters and worked out their lesson plans in detail. Frequent meetings of the staffs were held, at which times various problems, course aims and objectives, and teaching methods were discussed. Later, when classes started, instructors regularly monitored each others' lectures in order to pick up points of instruction and also to obtain "cross-training." Because of the initial shortage of teachers, it was necessary that they be able to teach a variety of subjects. This practice continued, when the new instructors arrived, as part of the "in-service" training policy.

In August 1942 the WOTC directed that all teachers were to begin a ten-hour job instructor training program. This program was originated by the War Production Board primarily for the benefit of industrial foremen and supervisors, but permission was soon granted to modify it to meet the particular needs of classroom instructors. The modified course consisted of one general session, followed by four hours of small group meetings in which various instructors demonstrated basic teaching techniques. All instructors were then required to apply these

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AHS-90

SECURITY INFORMATION

111

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techniques in a sample-lesson presentation. Criticism and discussion followed each performance. Five additional hours were then spent in developing specialized teaching methods within a particular department.<sup>40</sup>

Later, the director of academic training at Santa Ana developed a check sheet for self-analysis by the individual teachers which included items related to preparation, classroom procedures, cadet attitude, presentation of material, and personality. In addition, an instructor's rating sheet was prepared by the supervisor of instruction for use in evaluating the performance of teachers.\* Each instructor was judged by the supervisor on the same items suggested on the self-check sheets.<sup>41</sup>

In order to emphasize sound teaching practices the director issued an outline of standard pilot-school practices. It provided that each hour's lesson be organized into clear-cut teaching units of not more than fifteen minutes each. In presenting material, instructors were to vary their procedures at least every five minutes. This was to be accomplished by using a different teaching method, or by securing class participation. Summary by cadets of each lesson learned was specified.<sup>42</sup> (A similar instructor training and supervisory program was also conducted in the 3370 and GCTC throughout 1942.)

During the summer of 1943 the Central Instructors' School for pilot instructors was activated at Randolph Field, with provisions for training academic instructors in several fields.<sup>43</sup> This school grew out of a need for standardization of training, a problem that had been carefully studied at a conference

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\*Cadets completing preflight training at Hondo AFB in 1952 were asked to fill out a rating sheet on each of their instructors. A cumulative rating of each instructor was posted on the bulletin board every month in an effort to raise the quality of instruction. One instructor who was rated last for two successive months became discouraged and resigned as a result of this policy. Whatever might be said against the psychology of such a practice of rating instructors, it certainly had the effect of "keeping them on their toes" (Interviews by the author with W. P. Parker, Director of Academic Training, Hondo AFB, 11 June 1952).

SECURITY INFORMATION

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AHS-90

SECURITY INFORMATION

112

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of training command officials held at Fort Worth.

The categories of men to be selected for central instructor training were listed in the following order of preference: 1) commissioned officers and warrant officers with teaching experience, 2) commissioned officers or warrant officers already teaching in the preflight and other ground schools, 3) selected civilians teaching in such schools, and 4) selected enlisted men awaiting commissions and subsequent assignments as instructors.<sup>43</sup>

Ground school instructors were to be given eight weeks of training at the Central Instructors' School, and the tactical officers were to receive four weeks; not all of the instructors completed the full course. To those who had had little military training and whose educational background was largely non-scientific or non-technical, the instructor training proved very valuable; but many who did attend felt that their time was largely wasted. For one thing, the school was handicapped throughout its existence by the inability to promote permanent-party instructor personnel.<sup>44</sup> And many of the trainees were sorely disappointed because of their failure to receive flight instruction as had been the school's original intention. Nevertheless, the basic idea of the training school was sound and has been continued: at present a preflight instructor training program is being conducted at Goodfellow AFB.<sup>45</sup>

As a further means of training their own instructor personnel and improving methods of teaching, the wartime preflight schools soon made considerable use of supervisors in the classrooms. Some of the early classes in preflight, especially at Kelly Field and Maxwell Field, were conducted without any supervision or inspection of classroom procedure. In January 1942, a directive was sent from training command headquarters to the directors of each of the preflight schools ordering weekly inspections of all instructors.<sup>46</sup> Even so, inspection of instructors did not begin at Kelly Field until approximately one month later, and then

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SECURITY INFORMATION

AHS-90

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with considerable reluctance on the part of some of the officials. The following description of the early efforts at supervision at Kelly Field was given by Major Louis E. Dreyer, Commanding Officer, 882d Preflight Training Squadron, in March 1944:<sup>47</sup>

When I was going to inspect a man I always gave him two or three days of advance warning and told him to be on his toes, and to have the cadets on their toes. It was pretty funny the way we sometimes inspected them. Many instructors had knot holes in the walls of their classrooms. They knocked a knot loose, and I knew where it was. When I was supposed to inspect them, I would remove the knot and look into the classroom and listen. Finally, Captain Lawson became very insistent and designated four full time inspectors.

With the appointment of full time inspectors at Kelly Field, periodic and thorough inspections became more regular, but the policy was far from popular with the instructors. The latter referred to the supervisors as "the Gestapo." Later, an improved development was brought about with the reorganization of the supervision department into a "Ground School" charged with the duties of preparing lectures and examinations and study-outlines, and procuring teaching aids and texts.<sup>48</sup> The Ground School staff also visited class lectures and "offered suggestions" regarding instruction. Towards the end of 1942 rating of instructors was started, a practice which is being followed in the preflight program today.

At the Santa Ana pilot school, wing supervisors of instruction were appointed in December 1942 and a wing supervisor for the bombardier-navigator preflight school was appointed in May 1943. These various supervisors, along with the department heads, gave continuous and immediate guidance to the teachers in an effort to maintain uniformity of classroom procedures among the various departments. Later, a school supervisor of instruction was appointed to work in all wings to help coordinate subject matter, tests, and techniques of teaching. The approach of the supervisors, theoretically now became one of assistance and not one of inspection. Frequent conferences were held with instructors, particularly

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AHS-90

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114

after each classroom visitation. Towards the end of 1943 the offices of wing supervisor and school supervisor of instruction were abolished and the job of supervision was done altogether by department heads.<sup>49</sup>

At the Maxwell Field pilot preflight school a department of academic inspection was created in 1942. The inspector, with two assistants, visited classes and rated instructors as to "voice, appearance, apportionment of time, speed, force, clarity and knowledge, discipline and interest."<sup>50</sup> The military rating system was not introduced until after the large-scale commissioning of instructors began some months later. Protests from the instructors relative to the picayunish methods of supervisors were strong, and in July 1943 the Maxwell Field pilot school abolished the office and returned to a system of supervision within the departments. This new policy at Maxwell Field, as at the other schools, resulted in better harmony and closer cooperation between the school officials and the instructors.<sup>51</sup>

The matter of instructor training and supervision was given careful consideration by the Committee on Utilization of Instructors at the previously mentioned preflight conference in July 1944. The committee stressed the importance of continuing formal instructional and orientation programs for new instructors. Also, it emphasized the importance of a regularly scheduled program of in-service training for all instructors in order to maintain morale and insure "complete and continuing standardization of teaching procedures and to provide for the interchange of ideas."<sup>52</sup> Regarding supervision of instruction, it laid down the following general principles which had already been developed and which were to be adhered to in the future:

The main objective of supervision should be the improvement of instruction. To accomplish this objective supervisors need to be distinguished clearly from "snoopervisors" of the inspectorial type. Visits to classes for the purpose of observing instruction should be made regularly, at frequent intervals, and the visits should ordinarily cover an entire class

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SHS-90

SECURITY INFORMATION  
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115

period. Formal reports should be prepared and discussed with the instructor at the earliest practicable time following conclusion of the class.

There is no question but that the morale of the instructors improved considerably after the unpleasant aspects of supervision were modified in all the preflight schools. The writer observed the new supervisory policy in operation in the preflight programs at Hondo AFB and Goodfellow AFB during June 1952 and at the Lackland Preflight School in January 1953. He sat through several lectures with the respective directors of academic training; after each class was over, friendly discussions between the instructors and the directors regarding the courses and procedures always followed. In every class visited, two or three instructors were invariably present--sitting through the entire course along with the cadets. The newer instructors seemed particularly anxious to improve the quality of their teaching, and the impression received was that some college and university professors could well profit from the practices of the preflight schools relative to improving their classroom techniques.

#### Grading and Testing

The grading system in use in the preflight schools at first was left to the individual instructors, but cadets had to obtain a mark of 70 per cent in order to pass. The policy of allowing the instructors complete freedom in constructing and administering their tests resulted in exceptionally high grades, since the instructors more or less felt themselves in competition with their colleagues. The fact that there were no eliminations in the first six classes at Maxwell Field would indicate that the tests must have been fairly simple and easy. But it also must be borne in mind that the quality of trainees during 1941-42 was very high.

When Major Henry Reis--El Bara was placed in charge of preflight academic training at Maxwell Field early in 1942, he directed that grades should conform to a prescribed curve. The result was that examinations were made more diffi-

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cult, and consequently the grade averages soon declined.<sup>53</sup> Eliminations for academic failure were rare (even after the first six classes at Maxwell Field), since cadets were given a chance to be re-examined in courses where their final test grades were below 70. The policies relative to grading and testing at Kelly Field and Santa Ana developed similarly to those at Maxwell, except that Santa Ana officials were insistent that no true-false tests be given.<sup>54</sup>

Early in 1943 the SETC began the use of standardized examinations for all its training schools, including preflight. These tests were drawn up by headquarters personnel, sent to the various directors of academic instruction, administered by the instructors, and finally returned to headquarters to be scored by machines. The system was recommended for use in the other training centers, but meanwhile FTC headquarters was engaged in plans of its own for standardization of tests.<sup>55</sup> In May FTC headquarters ordered the use of course outlines, instructor handbooks, and student workbooks that had been prepared by the ground training unit at Randolph Field. Standardized tests based upon the course outlines were to be used.<sup>56</sup>

The plan of a rigid adherence to the new guides and workbooks and standardized tests was received very unfavorably: the former were criticized because they presented too much material and required too much memory work, while the examinations were said to be too easy, particularly in reference to mathematics and physics. Santa Ana was given permission in July 1943 to modify the standardized tests, and later it dropped them altogether.<sup>57</sup> A similar development occurred in the other preflight schools in regard to the tests, but the use of guides and workbooks continued in all the schools. In July 1944 the Committee on Academic Instruction recommended at the Fort Worth preflight conference that standard examinations again be used in the preflight program.<sup>58</sup> Since all preflight training by now had been consolidated at SAACC, the recommendation was

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AHS-90

117

easily enforced, and was continued throughout the wartime program. Today, a central agency at Lackland AFB is charged with the responsibility of preparing the various preflight examinations, and these tests are modified from time to time to conform to the shifting emphasis placed upon particular course content.

#### Instructional Aids

There is probably no type of instruction in the preflight schools today in which more progress has been made since the early months of World War II than in the use of training aids. Indeed, textbooks, workbooks, mock-ups, training films, and similar materials were almost nonexistent in 1941. For several months after the Kelly Field preflight school opened, the instructors had to use pieces of butcher paper and lumber crayon as substitutes for blackboards and chalk. Orders for teaching materials were placed, but rarely filled. On one occasion in the fall of 1941 an official ordered 1,900 copies of A History of Aviation to use as a text for a course then being offered in the preflight schools. The books arrived one year later, at which time the particular course had already been dropped; furthermore, the book was a 1928 edition.<sup>59</sup>

The situation in respect to teaching materials, as with other aspects of the preflight program, gradually improved. Many instructors took the initiative in writing textbooks and in fabricating and procuring training aids. Later, projection machines were acquired and films illustrating particular subjects were obtained. Instructors took pride in fabricating their own airplane models, drawing up logarithmic tables and charts, constructing their code receiving and sending equipment and mock-ups of airplane engines. "The men learned a lot about their particular subjects in the process of building their own equipment, and the situation proved to be a great stimulant to their initiative, as well as their morale."<sup>60</sup> By 1943 adequate materials were coming in from other sources;

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AHS-90

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although this, plus the standardization of courses of instruction, limited the ingenuity of instructors, classroom interest was much improved through the use of better teaching aids.<sup>61</sup>

The Committee on Training Aids at the Fort Worth conference in July 1944 recommended that future changes in the program of instruction should make use of training aids "tailored to fit exactly the particular courses rather than materials already in existence which may be only partially applicable."<sup>62</sup> The committee further suggested that a preflight central development agency be established to construct and evaluate items proposed by individual schools or the Training Aids Division.

The preflight program was curtailed and eventually discontinued temporarily before the above central development agency was established. However, such an agency was established at Goodfellow AFB in 1952 to construct training aids equipment for the various contract schools where the four-week preflight program was then in operation. Much of this equipment has since been shipped to the preflight school at Lackland AFB, and as new items are needed, they are being adequately supplied by Goodfellow.<sup>63</sup> From 25 to 30 per cent of classroom instruction in the preflight phase is now being conducted with training aids, particularly films and mock-ups.

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AHS-90

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Chapter V

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## PREFLIGHT STUDENTS, 1941-1945

According to one set of official records some 373,362 white trainees had been graduated from the preflight schools by the end of the calendar year 1944.<sup>1</sup> This number included 255,173 pilot trainees, 36,864 bombardiers, 35,474 navigators, and 45,851 aircrewmembers.<sup>2</sup> In addition, there were 2,040 Negro graduates of all categories and 1,214 foreign graduates. The grand total was 376,616. By the time preflight training was discontinued in October 1945, the number of students completing preflight approximated 400,000, while several thousand others had been eliminated. The various topics relating to such a gigantic training program--some of which have already been discussed--are many. Only brief mention, however, has heretofore been made of the students themselves, and this chapter is concerned specifically with them.

Student Load and Flow

It will be recalled that the first classes officially entered the preflight school at Maxwell Field early in September 1941; these were classes 42-D and 42-E. Kelly Field opened with class 42-F on 21 November, and Santa Ana received its first class, 42-K, on 29 April 1942. These three preflight schools were an important adjunct to the 30,000-pilots-per-year program which had been formulated prior to the United States' entrance into the war. In this connection it had been estimated that the rate of flow per class into each of the three centers would be as follows: SETC, 1,900; GCTC, 1,792; WCTC, 1,408.<sup>3</sup> This estimated flow of trainees was based upon the assumption that Santa Ana would receive its first class by 24 January 1943,<sup>4</sup> but the delay in the school's formal opening subsequently threw the flow temporarily behind schedule.

119

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SECURITY INFORMATION

AHS-90

120

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Meanwhile, aviation cadet enlistees poured into the preflight schools at Maxwell Field and Kelly Field in such numbers that they could not be absorbed. Maxwell Field was forced to grant three-months' furloughs to 3,300 cadets to relieve its overcrowded facilities,<sup>5</sup> and Kelly Field constructed tent cities where the surplus trainees were housed pending their absorption into preflight training. The latter trainees were put to construction work, rather than be allowed to remain idle.<sup>6</sup>

Further to complicate matters relative to student flow, other factors entered into the picture: soon after 7 December 1941 the quota of pilot-production was increased to 50,000, then 55,000, and a little later to 75,000 per year; in addition, the preflight training program was expanded from five to nine weeks on 24 January 1942.<sup>7</sup> In order to meet the increased production figure, the monthly flow of trainees into the preflight schools had to be expanded tremendously. In fact, it was estimated that the three centers would have to produce from 10,526 to 11,869 preflight graduates per class.<sup>8</sup> But this goal ultimately was met, and even surpassed. Indeed, in September 1942, FTC headquarters announced plans for the ultimate production of 102,000 pilots per year.<sup>9</sup>

Several developments in 1942 combined to make the gigantic pilot training program possible. We have seen earlier that bombardier-navigator training was divorced from pilot preflight partly to relieve the pressure on the schools at Kelly Field and Maxwell Field. By 24 January 1942 new housing facilities at these two bases were completed, which allowed both schools to accommodate more adequately two classes simultaneously. Both schools entered one class for nine weeks and another for four and one-half weeks so that the class system could be maintained. Thereafter, one new class was entered approximately every four and one-half weeks. Later, the opening of the Santa Ana preflight school on 29 April

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AHS-90

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121

1942 was another important step in the direction of increased pilot production. To achieve the new goal, however, it was necessary to enlarge the size of each entering class. An examination of the available statistics gives an idea of the extent of this enlargement:<sup>10</sup> Maxwell Field received 1,602 students in class 42-D on 24 January 1942, while class 42-H, which entered 28 December 1942, numbered 3,802 trainees; during the same period the size of the classes at Kelly Field increased from 2,440 to 3,968 trainees. Meanwhile, the first class (42-K) to be received at Santa Ana on 29 April 1942 numbered 1,622 trainees, and the last class to enter that same year (43-H, on 30 November 1942) contained 3,180 entrants. By the end of 1942, some 30,649 trainees had been graduated from the three preflight (pilot) schools. In addition, 3,678 bombardiers and 3,795 preflight navigators had completed training.<sup>11</sup>

The year 1943 saw the peak in pilot preflight training. By early spring the war was going badly for the allied cause and Russia seemed dangerously near to being conquered by Germany. The order was given to accelerate pilot production still further, and the preflight schools once again made tremendous increases in their class loads. On 5 April 1943 Maxwell Field entered 4,483 trainees in class 43-K; this figure jumped to 5,411 with the entrance of class 44-F on 3 October 1943--the high water mark of preflight training at the school. The corresponding classes for Kelly Field, now SAACC, numbered 4,583 and 4,482 respectively, while the Santa Ana Pilot Preflight School showed a gain from 3,631 to 4,473.<sup>12</sup> Class 44-G entered Maxwell Field four and one-half weeks later with 3,923 students. The trend downward continued with the entrance of subsequent classes in the various schools. These figures represent over 35,000 students in preflight training at various times, or a total monthly flow of approximately 15,000 men.

Preflight classes entering after 3 October 1943, with few exceptions, showed

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AHS-90

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 SECURITY INFORMATION

122

a steady decrease.<sup>13</sup> Nevertheless, the year closed with Maxwell Field graduating 56,453 preflight trainees, while San Antonio and Santa Ana graduated 46,442 and 40,935 respectively. This made a grand total of 144,910 graduates for the calendar year.<sup>14</sup> But the reduction in student flow rates into the preflight schools during 1944 reached drastic proportions, and experience would show that a period of retrenchment could be as difficult as a period of expansion. In addition to the successive drastic reductions in quotas, other factors that brought complicated problems for the preflight schools included the tightening of academic standards and the absorption of large numbers of holdovers. Beginning 29 December 1943 the pilot production quota thereafter was steadily decreased to 85,000, 75,000, and 60,000 per year. The total number of pilot preflight students in training on 5 January 1944 was 33,019. This figure fell to 28,642 on 20 January 1944, and one month later (28 February 1944) to 25,758.<sup>15</sup> On 1 March 1944 the three flying training commands were advised that the pilot program would be reduced to a 45,000 yearly output, effective 14 March 1944, and by the end of that same month only 14,373 students were under instruction in the preflight schools.<sup>16</sup>

Under circumstances of the times it was to be expected that the flow of students into the pilot preflight schools would be subject to much fluctuation. The class of 44-I (entering 15 January 1944) contained only 1,210 new students at Maxwell Field and only 649 at Santa Ana--these figures representing drops of 1,540 and 2,568 entrants. At the same time only 2,527 trainees entered San Antonio, or 1,170 less than the previous class. Class 44-J (entering 10 February 1944) numbered 2,819 for Maxwell Field, 2,698 for San Antonio, and 2,412 for Santa Ana--all these figures being slightly higher than the fixed quotas.<sup>17</sup>

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AHS-90

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123

Whereas the number of pilots was drastically reduced in 1944, the situation was different with the bombardier-navigator training program. At the beginning of 1944 navigators were being turned out at the rate of 23,000 per year and bombardiers at the rate of 18,000 per year. These figures remained fairly constant throughout 1944.

At the close of 1944 the flow of students from the various pilot preflight schools continued to be irregular. Here graduation had little to do with advancement to the next phase of training, and many students had to be held over for two classes while their former classmates went on to primary schools. (Regulation of student flow under the greatly reduced training program would not be achieved until 1945.) As early as October 1944, it was learned that no more aircrew trainees would be entered in the preflight schools at Santa Ana and Maxwell Field and that all preflight training would in the future be provided at the AAF Preflight School at San Antonio (SAACG). Selected personnel from the training department of the inactive schools was to be transferred to San Antonio.<sup>18</sup> At Maxwell Field and Santa Ana, all personnel graduating from preflight prior to 16 October, as well as members of class 45-D (graduating that day) not required for further aircrew training prior to 25 November, were to be transferred to on-the-line training. Personnel of these groups who had not yet been formally assigned as pilots, navigators, or bombardiers were not to be assigned prior to on-the-line training.<sup>19</sup> As a result of this order, the preflight schools at Maxwell Field and Santa Ana were officially discontinued in December 1944.<sup>20</sup> As expected, the forcing of preflight graduates into on-the-line training created a terrific loss in proficiency and morale and prompted a request to reduce or eliminate the preflight program in the Training Command. The reduction was made a short time later, but the program itself was not suspended until the end of the war.

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AHS-90

SECURITY INFORMATION  
~~RESTRICTED~~ ~~CONFIDENTIAL~~

124

The flow of trainees during the early months of 1945 abruptly dropped to its nadir for all personnel other than those enrolled in a newly activated flight-engineer program for very heavy bombardment aircraft. Quotas for pilots, navigators, and bombardiers had been met and the heavy backlog of 3,000 preflight graduates was more than sufficient to fulfill all anticipated future requirements.<sup>21</sup> In January, 1945, 950 returnee officers and 200 returnee enlisted men entered preflight training at SAAGC. After this initial entrance, the flow of trainees was controlled at 400 officers and 200 enlisted men per month. Effective 22 March 1945, the preflight training program for officers was reorganized and integrated with processing and classification so that the whole program could be completed within three to five weeks.

Overseas returnee officers, more often than enlisted men, experienced difficulty in adapting themselves to the discipline at the preflight school, and during January and February, 1945, approximately ten per cent resigned. At the end of April the Training Command suspended preflight for returnees. The preflight training school subsequently was restricted to B-29 flight engineers and to a small group of special priority men.<sup>22</sup> On 31 June 1945 it was transferred to Maxwell Field;<sup>23</sup> at that time there were only 367 men in training.<sup>24</sup> In October 1945 formal preflight training was discontinued; it was not resumed again until July 1949.<sup>25</sup> Meanwhile, during the first nine months of 1945, only 10,999 students graduated from the preflight school (pilot, bombardier, navigator), while another 1,520 graduated from preflight-flight engineer (B-29) training.<sup>26</sup>

Holdovers and Eliminations

The term "holdover" as herein used includes not only academic failures but also students who were held over because of failure to complete the course, or for other valid reasons, such as, hospitalization or emergency furlough. Also

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AHS-90

included are graduates who were retained because of inability of the primary schools to absorb them.<sup>27</sup>

In the first six classes at Maxwell Field (classes 42-D through 43-I, 1 September 1941 to 24 January 1942) there were no holdovers. At Kelly Field the first holdovers appeared in class 42-I, which entered 24 January 1942, from which 123 were held over to the next class. (The initial class at Santa Ana, 42-K, which entered 29 April 1942, had 359 holdovers for the succeeding class.) The absence of holdovers during the early months of preflight at Maxwell Field and Kelly Field is explained by the fact that the primary schools were then taking all graduates in order to meet their quotas. At the same time the academic standards at the preflight schools were comparatively low, while the quality of trainees was very high. The year 1942 would bring increasingly higher academic standards, along with a lower quality of individual trainees.

The policies relative to elimination at first were extremely lenient. Out-side instructional help was available, and reexamination was permitted until a student was able to pass a particular course. But on 6 April 1942 the Flying Training Command recommended, among other things, the following:<sup>28</sup>

Any cadet who, at the time of graduation of his class from any phase of ground school training, is deficient in any ground school subject, will be held over to the next class. If still deficient at the end of 4½ additional weeks of instruction, he will be eliminated. A cadet who, having once been held over, subsequently becomes deficient at some other school in any subject, will not again be held over to the next class, but will, if deficient at the time of advancement or graduation of his class, be eliminated.

The above standards remained in effect for two years. The rate of elimination rose from .8% for class 42-D at Maxwell Field to a maximum of 7.6 per cent for class 42-I. At Kelly Field the elimination rate increased from .7 per cent for class 42-F to a maximum of 14.5 per cent in class 42-J. These fluctuations in the elimination rate were due chiefly to the tightening of academic standards,

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AHS-90

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126

but doubtless the inability of the primary schools to absorb all of the preflight graduates also had some effect. Beginning with class 42-K (entering 30 March 1942) the percentage of eliminations returned to normal, but the number of holdovers continued to increase for some time in all of the preflight schools.<sup>29</sup> The peak of holdovers, 3,175, was reached with class 44-F (entering 3 October 1943) and continued through class 44-I (entering 7 December 1943), which experienced 931 holdovers. With the reduction of the number of entrants beginning late in 1943, the problem of absorbing holdovers gradually became less acute.

Meanwhile, the schools were obliged to take care of their holdovers in one way or another. At first the Santa Ana pilot school gave remedial training to academic failures, but later the holdover program was considered as "a second trial of proficiency for cadets who had failed."<sup>30</sup> Also, there were some holdovers at Santa Ana who had already graduated and had failed in advanced training, but were returned to the classification center for reclassification as aircrew members; special organizations were set up for these men.<sup>31</sup> In July 1943 San Antonio was allowed to dump its pool of holdovers, which had grown especially large because of the recent abandonment of elementary glider training there, upon the Ellington Field bombardier preflight school.<sup>32</sup> At the same time Maxwell Field attempted to take care of its holdovers by creating an "advanced training wing" and offering special courses to the trainees.<sup>33</sup>

The situation relative to holdovers in the bombardier-navigator preflight school was similar to that in the pilot schools. By the middle of July 1942 flow into the bombardier-navigator preflight schools had reached "maximum capacity," while the graduation quotas had remained fixed. For example, 456 trainees entered the Santa Ana navigation preflight school on 18 July 1942 in class 43-I, as compared to 194 in the previous class, entering 10 June; at the same time Santa Ana's quota of navigation graduates had been fixed at only 120.<sup>34</sup>

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AHS-90

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127

The acute problem of holdovers there was solved near the end of 1942, however, when several hundred trainees were either given furloughs or reclassified and put into pilot training.<sup>35</sup> By the spring of 1943 the holdover problem was generally improved in all of the non-pilot preflight schools except for the case of bombardiers at Santa Ana.

Drastic efforts were made beginning in 1944 to reduce the holdovers in all of the preflight schools, and by the time class 44-K was graduated on 23 May 1944, marked improvement had been achieved. This was accomplished for the most part by reducing the flow of students into the preflight schools, as previously noted. Also, a stricter policy of eliminating weaker trainees was adopted. Many instructors had long felt that it was best to eliminate cadets who were not able or not disposed on their own initiative and by their own efforts to meet the requirements of preflight instruction. The arrangement by which failing students could be held over from one class to another was considered by many persons to be especially questionable.

It therefore was proposed that any cadet who failed a subject and who did not pass a comprehensive reexamination in that subject within five days should be eliminated. This proposal was made a matter of policy by the Training Command in April 1944 when stronger disciplinary measures and a higher proficiency standard for physical training were also established.<sup>36</sup> Students who failed the reexamination because of extenuating or mitigating circumstances, such as illness or emergency furloughs, or had a valid excuse for not taking the examination within the five day limit, were to be allowed more time--at the discretion of the academic or faculty boards. Meanwhile the standard proficiency in aural code was lowered to six words per minute receiving and sending and five words per minute receiving and sending visual code--thus making it easier for trainees to prevent being eliminated because of the previous difficult standards in code.

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AHS-90

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SECURITY INFORMATION

128

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The above policy was upheld at the Fort Worth preflight conference in July by the Committee on Elimination Policies, which recommended: "That training standards remain as they are or be revised upward."<sup>37</sup> The conference committee made no estimate as to probable elimination from preflight under the new policy, but an overall elimination rate of 15 per cent was established "for planning purposes only." The previous average elimination rate in all the preflight schools amounted to approximately four per cent.

Foreign Preflight Students and Programs

Brief mention should be made of the various preflight programs established for foreign students in this country. Programs were developed which were to provide training, both flying and technical, for a total of 15,237 graduates, representing 27 nations, during the period from 1 January 1942 through 30 September 1945.<sup>38</sup> It is remarkable that the United States was able to assume the responsibility for these foreign students at a time when our own facilities were being strained to the utmost, but the job was done, nevertheless.

The largest number of foreign trainees at first came from Great Britain. In June 1941 the AAF undertook to train 4,000 British students annually, the program to be under the Southeast Air Corps Training Center. This training was eventually conducted in twelve civilian contract and Army schools, and was identical with that given American students. In the beginning the general program included instruction for ten weeks in each of the three phases of flying training--primary, basic, and advanced. In the fall of 1941, five weeks of preflight training was added, this work being given first at Maxwell Field, but later the program was moved to Turner Field, Albany, Georgia. The training of British students in the United States lasted until March 1943, during which time (21 months) a total of 7,860 men graduated from preflight; of this number, 4,370 eventually became pilots.<sup>39</sup>

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Changes that were effected in the preflight curriculum from time to time applied equally to American students and to British students; the only difference between the two programs was the limited use of British instructors in the latter. This factor advanced the training program by increasing the morale of the British students: they felt that their own officers "understood their individual problems better than the American did, and they had someone to take their gripes to."<sup>40</sup> Indeed, in the beginning the elimination rate was high, and there were signs that morale among the British students was rather low. This undoubtedly was due to a more severe disciplinary system than was in effect in the British and Canadian schools and to the fact that the men were homesick and found it difficult to adjust themselves to American life and customs.

In addition to the large number of British students who received training in the United States, the French government also sent a sizeable group of their trainees here. The first French training program as announced in February 1943 contemplated the training of 500 pilots, but additional commitments were made so that by May 1944 this country had agreed to receive French trainees at the rate of 150 per month for an indefinite period. As of 30 September 1945 the total number of French graduates from American flying schools was 4,709.<sup>41</sup> At first the French training program was the responsibility of the Southeast Flying Command, but the Central Flying Training Command later shared in it.

The original plan for French pilot training called for a 27-week course, not including preflight training. The general policy was to conduct all French training in the French language, but almost immediately the offering of English proved advisable because of the shortage of competent bilingual instructors or interpreters. Eventually a 44-hour course in English was given at the reception pool established at Craig Field. Hence, a logical development towards the establishment of a full preflight course of instruction resulted. A 4½-week orientation preflight course for pilot trainees and a regular 9-week preflight course for

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AHS-90 ~~RESTRICTED~~ SECURITY INFORMATION  
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130

other crewmen trainees was established. The French officer trainees objected to the preflight work, and French pilot trainees were eventually excused from it; but preflight, including a 40-hour course in English was continued for other aircrew trainees. Besides English, courses in mathematics, physical training, code, and aircraft recognition were stressed.<sup>42</sup>

Individual Latin American countries were also given special training programs. They were: Brazil, Argentina, Bolivia, Chile, Cuba, Ecuador, Haiti, Honduras, Panama, Peru, and Uruguay. Each of these countries, with the exception of Brazil, sent only small detachments of trainees. The Latin American students were given the same standard preflight curriculum at San Antonio, in the Central Training Command, that Anglo-American students received, except for the addition of a five-week course in "orientation and English." As a consequence the Latin American program lasted for fifteen weeks; but even so, language tended to remain a major handicap for the students. Competent interpreters who could speak Spanish or Portuguese were difficult to obtain, and it was necessary to rely chiefly upon practical demonstrations and less upon assigned readings and verbal explanations. Too often the American instructors lacked sympathy and understanding of the Latin Americans and their problems, but in general the goal was accomplished. Most of the students had to be given extra training, but they were not eliminated for deficiency in ground school subjects, provided they demonstrated suitable proficiency in flying training. When eliminated from one phase of training, they were reassigned to some other for which they appeared qualified.<sup>43</sup>

Responsibility for training 1,500 Chinese pilots was delegated to the Western Flying Training Command. The first two groups of Chinese pilot trainees sent to this country were military academy graduates and the third group were young officers, some of whom had had combat experience in the war against Japan. For these early groups, preflight training was minimized and the total time devoted

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AHS-90

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131

to the other three stages was shortened to 20 weeks. Later groups, however, were not so well trained; and it was found necessary to provide the full course, including preflight. The curriculum was similar to that in the standard AAF preflight schools with the exception of 45 hours in English and 15 hours in "American customs."

Additional changes were made in the Chinese preflight program in 1943, 1944, and again in 1945; but in general these changes were in keeping with similar alterations being made in the program for American cadets. The 1943 preflight program for Chinese students included a 48-hour course in technical English, while the 1944 course provided for nine weeks of the same. The 15-week preflight program inaugurated in 1945 was designed to give the Chinese students more time in order that their background and orientation for flying training might be improved. It included 54 hours of instruction in English.<sup>44</sup>

The language barrier remained the chief instructional problem for the Chinese--just as in the case of the Latin Americans--the majority of cadets knowing little or no English at the start. Chinese interpreters who were suitable for classroom work likewise were difficult to obtain. Also, the students appeared to be sensitive and shy and would commonly say that they "understood" to avoid embarrassment.<sup>45</sup> Many of them arrived in poor health and had to be treated for some time before they could start training.

With few exceptions, the Orientals received their preflight training at Santa Ana, although at first some were trained at Williams Air Force Base, Arizona. By October 1945 a total of 3,553 Chinese had completed flying or technical training, but of this group only 866 graduated as pilots, 75 as navigators, and 234 as bombardiers.

Besides the above mentioned foreign nationals that received flying training in this country, there were small numbers from the Netherlands, Turkey, and

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AHS-90

SECURITY INFORMATION  
~~RESTRICTED~~  
~~CONFIDENTIAL~~

132

Yugoslavia. In general the training problems in regard to the Netherlanders were few, since these students were usually well prepared in English. But the trainees from Turkey and Yugoslavia found the same difficulty regarding language that the Chinese and Latin Americans experienced. Because of their deficiency in English, these men were given five weeks of "pre-preflight" training at San Antonio before entering the regular preflight program. Later, it was found that additional English instruction was advisable. Nevertheless, the language barrier remained the chief cause for an elimination rate of about 50 per cent.<sup>46</sup>

#### Negro Preflight Training

Pilot preflight training for the United States Negroes began at Tuskegee, Alabama with the entrance of 20 students in class 42-I on 24 January 1942. The program lasted until 30 September 1945, during which time approximately 2,000 men were graduated.<sup>47</sup> Negro instructors were not used in considerable number until 1943; otherwise, the program was conducted in the same manner as for white students. Bombardier-navigator preflight training began on 14 March 1944, while navigator training was started 12 January 1944. Accurate statistics on the number of Negro graduates up to 30 September 1945 are not available, but figures are complete for the period from 24 January 1942 to 23 May 1944. They are as follows: pilots, 1,227, bombardiers, 30; bombardier-navigators, 142. On 18 April 1944 a preflight aircrew training program for Negroes was inaugurated, from which 283 had been graduated by 4 August 1944.<sup>48</sup>

#### The Class System

General Weaver was a strong believer in the class system in the preflight schools, and it was for this reason that he advocated the longer ten-week course instead of the original five-week program. He believed that it was necessary to have an upper class and a lower class in order that the one could supervise the

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SECURITY INFORMATION

AHS-90

~~CONFIDENTIAL~~  
~~RESTRICTED~~

133

other. "Without an upper class it is almost impossible to transmit traditions and customs of the Service, and to inculcate that sense of obedience which is so essential to air discipline," he wrote on 17 September 1941.<sup>49</sup>

Accordingly, the class system was established at Maxwell Field, San Antonio, and Santa Ana with the inauguration of the nine-week preflight program early in 1942. Although it eventually came under considerable criticism from a small minority and steps were taken to "tone down" various aspects of it, there was unanimous agreement among eight former preflight graduates and seven USAF officers queried by this writer during 1952 in favor of the class system. Furthermore, the class system is still in effect at the Lackland Preflight School today and "doubtless it will be retained permanently."<sup>50</sup>

The system worked somewhat as follows: At the end of the first four and one-half weeks, or five weeks, depending upon whether the program was nine or ten weeks in length, the first phase of preflight training was completed. Graduates of this phase then became upper classmen, and the newly arrived cadets entered as lower classmen. The former were charged with the duty of "supervising" the latter throughout the first phase of their preflight training. At Santa Ana the upper classmen were housed in the same barracks and on the same floor with the lower classmen, but in alternate rooms. At San Antonio the upper classmen occupied the top floor and the lower classmen occupied the bottom floor of the barracks.

The class system had several advantages that probably far outweighed the disadvantages: it enabled the lower classmen to obtain information from those who had already been through the first phase of preflight training. Most of the newly arrived cadets were coming into contact with military training for the first time. Practically all were nervous, and some were frightened. The upper classmen were able to answer their many questions and offer suggestions. Despite

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AHS-90

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134

the brief time that the upper classmen had been in training, the newly arrived preflight students looked up to them as veterans, and with some justification. "You would be surprised at the amount of information a man could pick up in four or five weeks," remarked a preflight graduate.<sup>51</sup>

Upper classmen were not allowed to put their hands on a lower classman without the latter's permission, and even then it was usually to straighten his tie or correct some fault in his dress. Nevertheless, there were forms of hazing which quickly developed, such as "rat racing" or "sound off." Occasionally excessive "horse-play" resulted in injuries. "A few bad tempered, sadistic kids took advantage of the situation and went too far."<sup>52</sup> Some of the new men were veterans from combat areas and felt that it was absurd for them to accept discipline from seventeen- and eighteen-year-old boys who had been in the Army only two or three months.<sup>53</sup>

On 21 December 1942 Liberty Magazine published a letter written by a cadet at San Antonio which exposed hazing as then practiced at that school. This in turn brought about an investigation by the Acting Inspector General of the Gulf Coast Training Center, Lt. Col. Purlin S. Bennett.<sup>54</sup> The ultimate result of the investigation was an official abolition of hazing in all the preflight schools by the Flying Training Command on 15 May 1943.<sup>55</sup> However, the practice did not completely disappear, and "it exists in a mild form in the preflight schools today."<sup>56</sup>

The class system, including hazing, actually seems to have been popular with a vast majority of the cadets. A poll taken of class 43-K just before graduation showed that 3,831 were in favor of the class system as against 127 who were opposed. Only ten men said that they had suffered from it.<sup>57</sup> A typical comment made by a preflight graduate interviewed by this writer was as follows: "It forced you to be on the ball and instituted an alertness to the situation that was very necessary for future survival."<sup>58</sup>

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135

AHS-90

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Student Organization and Student Officers

The large pilot preflight schools at Santa Ana, Maxwell Field, and San Antonio found it advisable to inaugurate a decentralized system of student organization. At Maxwell Field the early organization was based upon two wings with nine groups of four squadrons each. Similar organizations soon grew up at the other two pilot training schools, but the small navigator-bombardier schools such as Ellington Field and Santa Ana had no need for such decentralization. Cadet officers were appointed from the rank of wing commander down through group commander, lieutenant, sergeant, and corporal. This system relieved the commissioned tactical officers of much responsibility, and at the same time afforded valuable training for the cadet officers.<sup>59</sup>

At Ellington Field bombardiers and navigators were put into separate wings, but the group was not used. At San Antonio the cadet pilots were organized into two wings, the group being the important tactical unit. Under the ten-week program of 1944 men were assigned to Wing II for the first five weeks and then to Wing I for the remainder of preflight training. Cadets were given their own insignia, though distinctive uniforms as such were not used. The trainees generally wore tags to indicate their status in training; for example, at San Antonio those men in Wing II wore red tags and those in Wing I wore blue tags.<sup>60</sup>

At all the preflight schools cadets were marched to and from classes in formation, and a military formality was maintained in the classroom. Each class was placed under the charge of a flight leader, who usually was selected on the basis of previous ROTC or military experience. Flight leaders, or section marchers, were rotated frequently to give individual cadets practice in command; occasionally, the same cadet remained in charge of a given class throughout the course. Military discipline was also inculcated by retreat, formal guard mount, Saturday inspections, and formal parades each Sunday. Demerits were meted out

SECURITY INFORMATION

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SECURITY INFORMATION

136

AHS-90

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to keep the cadets in line. A copy of Aviation Cadet Regulations was placed in each room at the Maxwell Field school after 1 December 1943 so that the cadets could keep informed of all existing regulations. Punishments under demerits consisted of admonition, reprimand, restriction to limits, deprivation of privileges, tours,\* or loss of leaves.

One of the difficulties that the instructors in the preflight schools experienced was cheating on examinations, and efforts to indoctrinate the cadets on the importance of proper conduct in this regard were not always successful. During 1942 honor councils composed of cadets were organized in all the schools. In the large pilot schools there were two organizations: a wing honor council composed of cadet commandants and a group honor council; the latter organization consisted of cadet representatives from the various squadrons, plus the representatives of the wing council who were ex-officio members.<sup>61</sup> (The smaller bombardier-navigator schools had only the group council.) The group council undertook to supervise the indoctrination of the lower classmen. It also tried students for violating the honor code, reported legitimate complaints made by fellow cadets, and sometimes made suggestions to higher authority. The wing council was largely a policy-making body, but it could act as a court of appeal in special cases.

Theoretically, the West Point honor code regarding a cadet's personal conduct both on and off the base was adopted; and violations of the code, particularly in respect to cheating on examinations, were reported to the honor council. This organization was subjected to much criticism by both instructors and cadets: when a cadet was "drummed" out of school his fellows frequently expressed the opinion that he had been given a "raw deal"; on the other hand, many instructors

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\*An hour's march with a rifle constituted one tour.

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SECURITY INFORMATION 137

AHS-90

~~RESTRICTED~~

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complained that the honor council often failed to convict a cadet whose guilt was evident. One writer even suggested that student officers were the worst offenders in regard to breaking the code, and concluded that the inconsistency with which the honor council operated made it a detriment to student morale.<sup>62</sup>

In the early part of 1943 a number of FTC officers were sent to West Point to attend a special course in honor indoctrination. As a result of their subsequent recommendations, FTC headquarters issued a directive to the various preflight school commanders emphasizing the necessity of placing more stress upon honor indoctrination of the students. The commanders also were told to "tighten up on eliminations for those who failed to meet the honor code."<sup>63</sup> It is doubtful that the new policy worked any better than the previous one-- "too often men who preached honor were not themselves honorable."<sup>64</sup> The cadets had reason to question the adage that "honesty always pays" when so much depended upon their making a passing score on their examinations.

Steps were taken in the various schools after 1943 to modify the honor code by supervising the examinations more closely and sometimes even distributing separate sets of questions to alternate students in the classroom. Nevertheless, the honor councils were maintained, but with little real authority. This essentially is the same practice followed in the pilot preflight school at Lackland today. "In theory we still have an honor council and we employ the honor system on examinations, but at the same time we keep a sharp eye on the students. At the end of the examination they sign a pledge that they have neither given or received help," an official recently explained.<sup>65</sup>

Student Morale

The subject of student morale has already been discussed briefly, but perhaps it deserves additional attention here. It was pointed out in Chapter II that when the classification centers were established in 1942, the trainees were classified as pilots, bombardiers, or navigators before being sent to preflight.

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SECURITY INFORMATION

AHS-90

~~CONFIDENTIAL~~

138

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Students classified as pilots were usually "eager" and presented no general morale problem, but morale among those classified as navigators or bombardiers, especially during the early part of the war, tended to be lower than among pilots. Those students originally classified as pilot trainees but who were eliminated later and assigned to bombardier or navigator training--often repeating certain phases of their preflight training--created an even worse morale problem. "The Air Corps had built a pretty big sales point on being a pilot, and it was quite a let down to be classified otherwise."<sup>66</sup>

The situation in the preflight schools brought about by the low morale of particular students caused AAF officials to become very much concerned during the early months of the war. The complete separation of bombardier-navigator trainees from pilot trainees and the efforts to glamorize the role of the former went a long way to alleviate part of the general morale problem. Pilot eliminees assigned to non-pilot preflight schools continued to constitute a special problem, however. The suggestion was made that these men should be segregated into a special program to reestablish their morale, but the idea was never carried out.<sup>67</sup> Finally, the matter was solved when the uniform curriculum was established for all preflight schools in 1943. It was then decided that an eliminee from one phase of aircrew training, who had completed preflight, would not be required to repeat that phase.<sup>68</sup> Thereafter, the preflight schools were no longer troubled with pilot eliminees in training as bombardiers and navigators. In fact, students remained unclassified and unsegregated during the first five weeks of the ten-week curriculum established in the spring of 1944.

Student morale at the Nashville Classification Center was especially troublesome. This center served all of the preflight schools, although it was established principally for the SETC. Here preflight students came to be classified as bombardiers, navigators, or pilots before being assigned to a particular school. Frequently there were long delays after the tests were completed, during which

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AHS-90

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139

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time there was nothing for the trainees to do. "Furthermore," a Nashville official later observed, "they didn't like the 'long-haired boys' that gave the tests."<sup>69</sup> It is quite normal that this situation lowered morale.

The city of Nashville itself had many undesirable features that undoubtedly had a profound effect upon student morale: "It was down in a hollow, damp, muddy, plenty of head colds and flu and lots of times we had as many as 30 per cent in the hospital during January, February, and March . . . and transportation facilities were not adequate when the station was running at its height."<sup>70</sup> A former Santa Ana preflight instructor recently remarked to the writer that sometimes when cadets arrived from Nashville during the war "the entire bunch would be quarantined and it would be two or three weeks before they all recovered from colds and flu."<sup>71</sup> As a result of the high rate of illness experienced by the preflight students from Nashville, many failed to complete their preflight training on time and had to be held over for the next class.

Morale at the three pilot schools seems to have been especially good. One former preflight student recently remarked to the writer that during the nine weeks he was stationed at SAACC in 1942, he never once heard a single cadet mention resigning.<sup>72</sup> The location of particular preflight schools doubtless helped the morale situation. The campus of the University of Texas, for example, was only eighty miles north of San Antonio, while Santa Ana was only a short distance from Los Angeles. Consequently, the cadets could find "plenty to do" on week-ends. The Santa Ana school was also near the seashore and the physical plant seems to have been very attractive. Transportation was easy, the weather good, and quite a few flying stations were near by (as at San Antonio) to provide a lot of planes for the students to observe.

Morale at Maxwell Field likewise seems to have been satisfactory among the pilot trainees after the school was well established. During the early days at

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AHS-90

140

Maxwell Field and Kelly Field, student morale was naturally very low because of inadequate housing and poor food, but this situation was eventually corrected. The general opinion held by some who were stationed at Maxwell Field was that it was too congested to be ideal for preflight--as one officer said, "Too much had been built in too small a space."<sup>73</sup> During the summer months the heat was frequently oppressive, and on week-ends when personnel at the base went into town, accommodations were strained beyond limits. Cadets particularly complained of their inability to obtain beef at the restaurants, and also that there were not enough recreation and entertainment facilities.

Actually, the morale among all preflight cadets during the war was as high as, if not higher than, that of other members of the armed service. Everyone knew the seriousness of the world crisis that confronted the American people, and to have consistently maintained a low morale during the dark days of 1941-45 would have been disastrous. The ultimate outcome of the war speaks for itself in this regard.

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Chapter VI

EVALUATION OF THE WARTIME PREFLIGHT PROGRAM, 1941-1945

Although at first the world War II preflight program was set up partly as a stop-gap measure designed to get men into active training more quickly, it soon took on a more permanent status. By 1943 the idea of preflight had been accepted as indispensable to the future of flying training, and some form of preflight has been in existence in the AAF ever since. But before proceeding with a discussion of the various programs since World War II, a summary evaluation of the wartime program will be in order.

Achievements of Preflight Training

It has already been pointed out that approximately 400,000 trainees were graduated from the preflight program between September 1941 and October 1945. These figures are even more impressive when one considers the shortage of experienced instructors and facilities at the beginning. Indeed, the planning and execution of the training program was unprecedented in our military history.

Unquestionably the preflight program generally was effective despite the many frustrations experienced during the first two years of its existence. Trainees were turned out who had acquired certain fundamentals of physical and military discipline and certain basic academic knowledge. In many instances these trainees received their first opportunity to become familiar with military life and to participate in vigorous physical training when they entered preflight. They were alerted to the seriousness of their future training and were also prepared psychologically for the strenuous road which still lay ahead.

Once the preflight phase was behind them, the cadets felt that a large barrier had been crossed; and they approached primary training with considerably

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142

more confidence and assurance than they otherwise would have done. This was no small factor, for even the dullest trainee realized that competition with the trained airmen of the Allied Nations, not to mention those of enemy nations, was severe. His preflight training could not have failed to impress upon him that flying a plane through the "wild blue yonder" was more than mere glamour, romance, and adventure; it was a serious business that required skill, judgment, intelligence, and hard work.

It is difficult to make a thorough, scientific evaluation of preflight training that would be distinctive from other phases of training in the AAF during World War II. The preflight program, however, offers a good illustration of how civilian skills may be drawn upon to contribute to a specialized military program. This is especially more striking in view of the absence of a well-defined military tradition in our nation's history. Modern warfare becomes increasingly a matter of education as well as a matter of training. "The modern airman is as much a teacher and a scientist as he is a pilot, bombardier, or navigator."<sup>1</sup> And the wartime preflight program constituted a major step in equipping the cadets with the basic tools for their future military careers.

The preflight program made a distinct contribution toward the development of accelerated programs of education during World War II. Although there has been criticism that too much was attempted in too brief a period, nevertheless it was demonstrated that more subject matter could be covered in a specific period than previously thought practicable. Some observers predicted near the end of the war that future educational trends in this direction, especially on the college or university level, could be expected. To some extent there is evidence that the above prophecy has been fulfilled, particularly in the engineering and technical colleges, although it would take more than a war to bring about a sudden revolution in modern college instruction. The fact remains,

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AHS-90

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143

however, that postwar college students generally have been "loaded" with more course hours for degree requirements. The accelerated educational programs conducted by the armed services during World War II did serve as an excellent example that much knowledge can be learned in a relatively brief period. However, it should be pointed out that the wartime training programs covered only basic materials relative to a particular course. Theory, background, and related subject matter were sacrificed in the rush for time.

According to one official, "the preflight schools developed methods of visual education on a scale never before realized in public or private educational institutions."<sup>2</sup> The Renshaw method of teaching was revolutionary in the field of visual education. Not only did it stimulate the student to react quickly, but it enabled him to learn the characteristics of more airplanes in a briefer period. The Disney Studios produced several films for preflight training that were of particular practical benefit, such as proper parachute landing and survival aquatic training. Indeed, some of the films used in the preflight schools enabled the students to obtain quickly an elementary understanding of certain difficult technical subjects. For example, the University of Chicago produced a film demonstrating a series of transformer operations which resulted in the actual showing of electrons.

The wide use of visual aids during World War II is reflected in the present preflight training program in operation at Lackland AFB: approximately one-third of the time given to academic subjects is devoted to films and film strips.<sup>3</sup>

The contributions of the professors to the success of the preflight program were considerable and no doubt set a precedent for future use of the personnel and equipment of our educational institutions in specific national needs. Furthermore, in many instances instructors were trained, or re-trained, in the in-service program established by the preflight schools. Instructors with only

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AHS-90

144

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a liberal arts background mastered technical subjects in which they had had little or no previous experience. Even though many of them later returned to civilian life, hundreds of trained preflight instructors now constitute a reserve pool that can be drawn upon readily in the future.

Not only did the preflight program result in the training of specialized instructors, but thousands of young men received certain academic experiences that they ordinarily would not have obtained. Indeed, the preflight program served as a substitute for college training for many young men. Some were awakened to aptitudes of which they were previously unaware and many were aroused to the need for obtaining a college education after the war. The writer is personally acquainted with four university geography teachers who first became interested in their present field of work after having been stimulated by their wartime experiences with maps and charts during their navigator preflight training.

The general educational level of the nation doubtless has been improved as a result of the preflight program, although the college training program and advanced flying training schools perhaps were equally significant in this respect. In addition, the preflight training program also gave to men who were entering service for the first time a chance to adjust themselves to the life of an aviation cadet. It helped make soldiers out of them and alerted them to the importance for future survival of military discipline and morale. In the words of a former preflight graduate: "Everything in the preflight program had a meaning and definite purpose; even the hazing we were subjected to at first later proved beneficial."<sup>4</sup>

A former graduate of the navigator preflight school at Santa Ana summed up his opinion of the program as follows:<sup>5</sup>

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AHS-90

1145

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Even though my navigation stanine was high 97, I would have had a much rougher time completing primary without having gone through the preflight school at Santa Ana. Of course, I could have gotten through, but I know that several of the boys in my class would not have survived had they not had previous training. For one thing, we received certain things in preflight that were to prove essential later, yet we never again came in contact with these subjects--particularly aircraft and ship identification.

Perhaps the above statement touches upon the most important defense of the whole preflight concept; namely, the program made it possible for many thousands of cadets to survive primary training who otherwise would have been eliminated. In other words, preflight not only aided students to complete their flying training, but it screened out some of the misfits before they even reached flying training, thus saving valuable time, money, and lives.

Criticisms of Preflight

It is possible to list several dozen complaints and criticisms that have been raised against the preflight program and thus give the impression that it possessed more demerits than merits. Although the criticisms are legion, as they are of any training program, they are also relatively minor and can be attributed largely to the growing pains from which a new organization inevitably suffers. Many of them, too, apply chiefly to preflight during its first two years, before improvement and adjustments were made in the program. It must be remembered that preflight was established in the face of strong opposition; and regardless of how well the program was conducted and what the results were, there would still be complaints.

The early phases of preflight training were conducted somewhat on a trial and error basis, and the press of time was such that waste and errors were inevitable. For one thing, too much was outlined in the daily program for the time available.<sup>6</sup> One official voiced the following opinion at the preflight conference on 6 November 1945: "More efficiency could have been realized had the hours of instruction been reduced from eight to seven per day. With

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AHS-90

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146

seven hours a cadet is given an hour for his own or to take care of some squadron duties. I feel like seven hours is as much as they ought to have."<sup>7</sup>

Another valid criticism of preflight training during the war was that the frequent changes in the curriculum resulted in an overwhelming amount of confusion. Certain courses were added, dropped, shortened, or lengthened from time to time before the ten-week program was adopted in the spring of 1944. And production quotas and flow of students were changed frequently. Many of these alterations in the program were in the main unavoidable and for the most part were made with a view to improvement. In any rapidly changing military situation it is necessary to have flexibility in training; however, there is a danger of being too flexible, and at times this danger point seemed very close. For example, in January 1942, just as the 30,000-pilots-per-year program was getting under way, action was also being taken to activate the 50,000-pilots-per-year and the 75,000-pilots-per-year programs. At the same time the curriculum was being expanded from five weeks to nine weeks, bombardier-navigator training was being separated from pilot training, the two-class system was established, and a complete new course of study was in the process of being formulated. Simultaneously, there was a severe shortage of trained instructors, facilities, and equipment. That the confusion which naturally resulted was not more complete is a tribute to the ingenuity of training command officials.

Failure to make the preflight courses more practical was another cause of complaint. One officer asserted that "the whole idea, the whole preflight program was of a theoretical aspect of training rather than practicable";<sup>8</sup> another stated that many of the courses were placed in the preflight curriculum "to fill up the time."<sup>9</sup> Both of these evaluations appear greatly exaggerated. There was general agreement, however, by both students and instructors, that some of the problems in physics and mathematics were not only impractical but that a few were

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AHS-90

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147

"impossible." And mention has previously been made of the deluge of criticism of the course guides prepared at Training Command headquarters by people who were not themselves teaching the particular courses.<sup>10</sup>

At first some instructors were inadequately prepared and the instructor training school at Randolph proved disappointing to many who attended. Morale among the instructors at the preflight schools sometimes was a serious drag on the general well-being of the school and the quality of instruction. Promotions were extremely slow and the academic instructors did not enjoy the prestige and respect that the military and flight instructors commanded. The same was true of the academic officers and the tactical officers of the ground schools, and sometimes the relationship between the two groups was bitter.<sup>11</sup> Several instructors also developed a venomous attitude toward the supervisors and questioned their competency as judges of the proper method of teaching. In many instances the supervisors were proponents of progressive education and their philosophies of teaching differed widely from those instructors who were traditionalists.<sup>12</sup> This difference of the philosophy of education between the progressives and the traditionalists was a carry-over from civilian life. The two schools of thought, one stressing method and the other course content, is not easily reconcilable in the public schools and colleges.

Cadet morale was also a factor that detracted from the preflight program, especially at first among those who were "washed out" of the pilot training program and sent to bombardier-navigator schools. Still later, when all preflight was consolidated at SAAGC, some officers reflected that it had been a mistake to throw all potential bombardiers, navigators, and pilots back together, and that a better esprit de corps could have been maintained had the aircrew trainees remained segregated from the very beginning of their training.

The cadets also had legitimate "gripes" against petty rules and resolutions,

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148

abuses of the class system, the honor code, unsympathetic treatment, overcrowded living accommodations and conditions, and unappetizing food. However, the latter conditions were not so prevalent after 1943.

A minor criticism concerning the preflight schools arose in relation to the proximity of the Maxwell Field school to EFTC headquarters. The general consensus of a number of officials connected with this school was that it was not a good thing for any preflight school to be located on the same station with the headquarters of the command. "It is difficult to state what the disadvantages were there [sic]," a former military instructor remarked, "largely the fact that you do not have the relationship between higher headquarters and lower headquarters desired, and the people at Maxwell Field felt a sort of sensitivity to any directives put out by this headquarters because of the close proximity."<sup>13</sup>

The above critics also felt that the preflight school should have been near the classification center, as was the case at San Antonio and Santa Ana. In 1943 the EFTC classification center was moved from Maxwell Field to Nashville, Tennessee, and a serious transportation problem, not to mention numerous other inconveniences, arose as a result.

Another critic made the observation that the preflight training centers should have been smaller and more numerous. He pointed out that such an arrangement would have simplified the problem of food, recreation, and transportation. This argument can be countered easily by the fact that more centers would have complicated the administration, organization, and training, that not only would standardization have been more difficult to maintain, but that the cost of training would have been much greater. For example, San Antonio asserted that it could train 12,000 men in preflight with the same instructor personnel required to train two or three thousand.<sup>14</sup>

On the whole the extensive use of visual aids in preflight was successful;

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AHS-90

SECURITY INFORMATION

149

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nevertheless, some criticism was voiced against them. Too often the films and film strips were not integrated with the particular subject matter being studied. The films frequently were out of date by as much as a year by the time they reached the preflight schools. The same could be said of printed materials put out by GTTAD. Some instructors also felt that the instructor handbook did not include enough drill work.

The most frequent critical remark regarding specific subjects offered in the preflight school that the writer has heard from former instructors and trainees during the past year relates to code. It seems to be a unanimous opinion that "too much time was devoted to code." Indeed, only one pilot out of the group that has been queried remarked that he ever had occasion during World War II to use his knowledge of code, and on that particular occasion he had the use of his code book.

Approximately 50 hours was devoted to code in preflight and many trainees complained that after the first few hours they became "dot happy." Code not only was an extremely boring subject, but it was the cause of much elimination in the preflight schools. When the aircrewmembers later found no use for it, they naturally felt that much of their previous code training had been wasted effort. Practically all communication during the war among airships or between ships and ground bases was done by voice. Apparently the AAFTC eventually realized the impracticability of teaching approximately 50 hours of code, for it has since lowered the minimum number of hours considerably. Today only 20 hours of code are offered in the preflight curriculum, and the trainees are reaching a proficiency almost as good as previously obtained in twice that time.<sup>15</sup> Emphasis today is placed upon recognition of sound and the sending and receiving of messages under simulated flying conditions.

Colonel DuMontier explained to the writer in a recent interview that the

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AHS-90

~~RESTRICTED~~

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150

success now being obtained in the teaching of code is due chiefly to a different instructional approach. The cadets first learn to distinguish a dot from a dash, then they spend more than half of the 20 hours course in actually sending and receiving. "We have excellent training aids for code, we allow the students to use their code books, and we do not require them to send or receive at a faster rate than three or four words per minute—which is enough for practical purposes," he explained.<sup>16</sup>

A final criticism of preflight had to do with the qualities of the trainees themselves. The abolition of the college training program and the previous lowering of educational prerequisites for entrance into cadet training naturally reacted unfavorably upon the records of the cadets in preflight and advanced schools. Colonel Henry M. Minton declared in July 1944 that cadets leaving the preflight schools in July 1944 were not as well trained as those of the previous year and recommended that preflight training be extended to twelve weeks.<sup>17</sup> Nothing was done with this suggestion at the time, since the entire preflight program was curtailed shortly thereafter and most of the entrants after January 1945 were officers and experienced combat returnees. But fortunately this problem has eventually been recognized by the recent establishment of the 12-week preflight program for pilot and air observer trainees.

Despite the many criticisms relative to preflight training during World War II, the writer has been unable to find anyone who went through it and later completed advanced training who will affirm that the training was wasted effort. However, the general consensus of college graduates who completed preflight was that nine or ten weeks was too long. But this observation was qualified with the further remark that for men with less than two years' college experience, preflight was not only advisable but practically necessary.

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## Chapter VII

## PREFLIGHT TRAINING SINCE WORLD WAR II, 1945-1952

Since the spring of 1944 preflight training has undergone many changes. In May 1944 a uniform curriculum was adopted for pilot, bombardier, and navigator trainees, a development which proved to be the first step in the ultimate consolidation of all preflight training at one school. A short time later the bombardier-navigator school at Ellington Field was transferred to San Antonio; next, the classification centers were transferred to the basic training centers; in June 1944 the college training program was discontinued; in October 1944 the flow of trainees into the preflight schools at Maxwell Field and Santa Ana was stopped; and in December 1944 all preflight training was concentrated at SAACC in the Central Flying Training Command. The consolidation of all preflight training was now complete except for foreign students, but by the end of January 1945 even the latter were being trained at San Antonio. Meanwhile, the flow of students into preflight during the early part of 1945 diminished rapidly.

On 30 June 1945 the preflight training school at SAACC was transferred to Maxwell Field in the EFTC to make room for a newly established processing center. Transfer activities occupied most of the attention of the school officials for the next three or four weeks, since the students currently in training totaled fewer than 1,000.<sup>1</sup> Meanwhile, the operation of preflight training followed no regular pattern. On 12 October 1945 the War Department issued a directive to the effect that all American cadets in the preflight phase of training who had voluntarily entered the Air Corps Enlisted Reserve were given the option of separation from the service in cadet status, or reversion to enlisted status. Temporarily there was to be no further preflight training for American cadets. After 12 October only foreign students were

151

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AHS-90

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~~CONFIDENTIAL~~

152

left in training, and these followed special courses of instruction.<sup>2</sup>

The Informal Preflight Program, 1946-1948

During the first three months of 1946, little actual training was carried on by the Flying Training Command, chiefly because of the shortage of trained personnel resulting from the demobilization program. A seven and one-half-weeks training moratorium was granted to the AAF Military Training Center, San Antonio, Texas on 1 February to ease the situation.<sup>3</sup> Meanwhile, in January 1946 FTC headquarters developed "Plan X-Ray" under which all except eight stations were placed on a reduced activity status in order to utilize better the enlisted personnel of the command. It was thought that eventually, when the shortage of personnel had become less critical, the reduced stations would be reopened under "Plan Sunrise."

Plan X-Ray provided for preflight training to be fused with the fifteen-week primary training program to be conducted at two primary schools, Goodfellow AFB and Randolph Field. A production quota of 2,000 pilots per year was established; Goodfellow was to receive 330 primary pilot students per class--with two classes under instruction at the same time--<sup>4</sup> and Randolph Field was to have 150 primary students per class.<sup>5</sup> Plan X-Ray never went into operation because the training personnel simply was not available, and repeated contractions and retrenchments characterized the story of pilot training during 1946.

At a conference at AAFFTC headquarters on 11 June 1946, the fifty-two-week peacetime pilot training program was adopted. This program provided for the entrance of classes into primary training on 1 July, 15 October, and 1 March,<sup>6</sup> with training divided into the following phases: primary, 15 weeks; basic, 17 weeks; and advanced, 17 weeks. No training was to be conducted for one week during Christmas and for two weeks between classes.

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The new fifty-two-week pilot training program made no provision for a formal preflight phase. However, it is important to note that the term "preflight" did not completely disappear; for the curriculum specified that 40 hours of primary would be designated as preflight training. This amounted to an informal preflight phase rather than a separate preflight training program conducted at special schools similar to those that operated during World War II. Under the new arrangement preflight training was to be phased in with the first four weeks of primary and to consist of the following courses:<sup>7</sup>

<u>Courses</u>	<u>Hours</u>
Military training	20
Physical training	5
Orientation	5
Military lecture	5
Indoctrination	3
Medical lecture	2
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Total	40

The first large peacetime pilot training class, consisting of 474 United States officers, entered primary training at Randolph Field on 15 October 1946 --after more than a year of planning and replanning in the face of confusion caused by demobilization. Future plans looked towards the production of 2,000 pilots in the fiscal year 1948, 4,000 in 1949, and 5,000 in 1950;<sup>8</sup> but even these modest figures proved too optimistic, as the following table shows:<sup>9</sup>

<u>Year</u>	<u>Entered</u>	<u>Graduated</u>
V-J Day to 31 Dec. 1945	1,296	1,421
1946	629	344
1947	1,670	322
1948	3,410	799
1949	3,811	1,765
Jan.-June 1950	2,026	837
July 1950-June 1951	5,606	2,110
July 1951-June 1952	9,547	3,062

In view of the entrance of the first large peacetime class of pilot (officer) trainees on 15 October 1946, it was anticipated by USAF headquarters

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154

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that the training of aviation cadets would be resumed with either the March or July class. Beginning shortly before the end of World War II, the only entries into primary training had been aircrew graduates, combat returnees, former bombardiers, navigators, and other rated officers. But the pool of officer manpower desiring pilot training did not diminish as rapidly as had been anticipated; hence the first postwar class of cadets did not enter primary training at Randolph Field until 1 July 1947. On that date two classes of aviation trainees entered simultaneously: class 48B-X had an initial entry roll of 246 cadets and class 48B consisted of 248 officers.<sup>10</sup> The primary school at Randolph Field was geared to produce only 825 pilots per annum, the figure established by USAF headquarters.<sup>11</sup> Meanwhile, Goodfellow AFB remained on inactive status throughout 1946 and 1947 and did not receive its first class of cadets until March 1948.

The major development in training during 1947 was the combining of the primary and basic phases into one program, "Basic Pilot Training," to be effective with the class entering 15 October 1947. To accomplish this change and to define the curriculum, WDTEC Regulation 50-9-1 was issued on 25 September 1947.<sup>12</sup> The combining of the two training programs was the direct result of an experiment in which 20 students, entering 1 March 1947, had been trained in the AT-6 airplane during primary. Fourteen of the 20 experimental students eventually were graduated and entered the basic phase on 1 July 1947; the information gained from their progress served as the basis for the new curriculum directive referred to above.<sup>13</sup>

The curriculum outline (50-9-1) issued on 25 September 1947 for primary-basic training was based on an eight-hour day, five days per week schedule. Of each eight-hour day, flying was to occupy three hours, military training three hours, and academic training two hours. In addition, students would be

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allowed thirty minutes per day in going to and from the flying line or other places of training. It was believed that this schedule would afford enough time on the line for necessary preflight briefing or post-flight critique.<sup>14</sup>

The training objectives listed by the 1947 course outline were as follows: the preparation of students for advanced pilot training by indoctrination in the basic principles of contact and instrument flying, and by academic training of sufficient scope to complement and facilitate the flying training presented; also, to inculcate in the student the basic concepts of customs, courtesies, administrative practices, and the moral responsibilities of an officer of the Air Force. As an innovation for obtaining these objectives the following two-week informal preflight training curriculum was outlined:

<u>Courses</u>	<u>Hours</u>
I. Processing	35
A. Drawing of clothing and equipment	
B. Fitting and alteration of clothing	
C. Physical check	
D. Sizing and assignment to squadron and quarters	
E. Administrative record check to include allotments, insurance, and service records	
II. Intensive Basic Military Training	41
A. Close-order drill	20
B. Physical training	10
C. Chaplain's talk	1
D. Sex and personal hygiene	2
E. Articles of war	2
F. Military honor code	2
G. Military discipline	2
H. Customs and courtesies	2
III. Flying Line Indoctrination (two hours per day for last two days of preflight period)	4
A. Orientation	
B. Air familiarization	
C. Flying line objectives and SOP	
Total	80

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156

In addition to preflight training, the new curriculum called for 170 hours of flying training and 324 hours of academic training. Since the combining of the primary and basic phases was a completely new development, special instructions were provided in the course outline for flexibility; and emphasis was placed upon the recognition of individual differences in each student.<sup>15</sup> The new curriculum likewise made all current training publications obsolete, and as a consequence the training production unit of the training development section of EDJEC headquarters began immediately after 25 September 1947 the revision of all training publications formerly used in the primary and basic phases. These had to be combined under the new heading of basic pilot training, Phase I and Phase II, adapted to the AT-6 throughout the program, and scheduled to meet the above-mentioned training requirements. Although they constituted a tremendous task, these revisions were completed by the end of 1947.<sup>16</sup>

In connection with combining primary and basic training, plans were initiated in August 1947 to increase the annual output of pilots from 825 to 3,000. The first step in this expansion program was the reactivation of Goodfellow AFB at San Angelo, Texas on 1 December 1947, with the first class of basic trainees scheduled to arrive on 1 March 1948.<sup>17</sup> Expansion to an annual output of 3,000 pilots per year necessarily would be gradual, entailing the activation of additional basic schools, plus sufficient additional advanced schools to complete the training. The ultimate quota objective was to be reached within a year and a half after 1 March 1948, with Randolph Field entering 500 and Goodfellow 268 students every four months.<sup>18</sup>

The Proposed Formal Preflight Training Programs, 1947-1948

Lt. Col. Emmett B. Cassady of the aviation cadet examining board at

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AHS-90

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~~CONFIDENTIAL~~

157

Randolph Field suggested in October 1947 that cadets should be given from one to five month's preflight training at Randolph prior to entry into formal training. This preliminary training at Randolph was to consist of military and physical indoctrination for one-half of each day, with the other half-day to be spent as a mechanic's helper in the maintenance of the AT-6 aircraft. FDTRC headquarters approved Cassady's suggested plan,<sup>19</sup> but it was never put into effect because of lack of necessary funds. It will be recalled that this was the era of the unification of the armed services into the Department of Defense. The subsequent "Battle of the Pentagon" resulted in the resumption by Congress of "its old habit of starving the services."<sup>20</sup>

Meanwhile, from 6 to 10 October 1947, representatives of FDTRC headquarters visited the headquarters and operating bases of the Central Air Command of the Royal Canadian Air Force; during their trip they examined, along with other features of Canadian training, the preflight program. The Canadian preflight program in 1947 consisted of eight weeks of training at a separate school at Toronto, devoted primarily to complete military indoctrination. The FDTRC representatives made a careful study of the Toronto school. The information thus obtained ultimately was given to the A-3 division and to other officials in the USAF Training Command for study, comment, and recommendations. The following observation by the commanding officer at Randolph Field was a typical reaction:<sup>21</sup>

It is sincerely believed that the instigation of a Preflight phase along the lines of the RCAF system . . . would provide Preflight graduates greater preparation of formal flying training, eliminate the obviously inept, allow more time for more advanced flying training in the formal flying training period, and lower the formal flying training elimination rate.

As a consequence of the favorable reception of the Canadian preflight plan, FDTRC headquarters directed Randolph Field on 18 December 1947 to evaluate a new "Proposed Pilot Training Program" with the following objectives:

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AHS-90

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158

1) the establishment of a better screening and training program to produce higher caliber Air Force officers, 2) the establishment of a flying training program to produce the best possible pilots as well as officers, 3) the scheduling and establishing of such a program based on sound principles of economics to produce the best possible officer and pilot at the lowest possible cost without sacrificing the caliber of either.<sup>22</sup>

One of the principal features of the new plan which was included as a partial means of achieving the above objectives was the proposal to establish a preflight program consisting of eighteen working days. Preflight was to precede basic training as a separate program, and not merely be a phase of the latter, as was the then current policy. Ostensibly, the extended preflight program was to be used as a seasoning and orientation period to eliminate as nearly as possible all students who would be washed out for physical reasons during basic training, and to eliminate students who would later resign. It would also meet a need long recognized by FDTRC headquarters: it would give students some concentrated military training, as well as orientation and academic training, prior to actual flight instruction. With preflight reestablished on a more formal basis, it seemed reasonable that most undesirables could be screened out before they were due to enter basic training; also, a better foundation could be laid, upon which more military and academic training could be added in the basic and advanced stages. The graduation of better officers and gentlemen would thus be made possible.

It was further pointed out by FDTRC headquarters that the establishment of a separate preflight school would save approximately 15 calendar days per year. Another feature of the proposed preflight plan was that it would better prepare the trainees psychologically and physically for survival in future training programs. Also, under the new arrangement, there would be more classes

SECURITY INFORMATION

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AHS-90

~~RESTRICTED~~~~SECURITY INFORMATION~~~~CONFIDENTIAL~~

159

of various lengths of training at each installation which would give greater speed to military training. Too, the enthusiasm of entering cadets perhaps would be much higher because of the brief time (a maximum of twenty-eight days) between application and actual flight training. The opportunity to enter flight training in any month of the year, as well as the maximum waiting period of approximately twenty-eight days, should boost cadet recruiting, a consideration which was most important at that time.

Another advantage of the proposed preflight plan was that the total cost of graduating a pilot could be reduced by from 25 to 30 per cent, since the ultimate number of basic schools required for the 3,000-pilot program could be reduced from five to four. Furthermore, it was believed that expansion would be easier in the event of an emergency, since students could be entered into any one of thirteen different classes each year instead of only three classes under the existing system.

On 29 January 1948 the Commandant of the Pilot School at Randolph Field wrote to the Commanding General of the Flying Division, Air Training Command, relative to the new "proposed training program." In substance he approved the general plan and made the following observation in particular reference to the preflight provision:<sup>23</sup>

The idea of Pre-Flight as outlined is believed to be sound. It will allow sufficient time for thorough indoctrination of students who are making, for the most part, a great change in their lives by electing to join the military service from civilian status. It is visualized that concentrated military training, academic training and other subjects can be given at this time to include stringent physical examinations, stanine for record, actual orientation with the aircraft to be flown by use of a trainer, if and when funds are available, and other allied subjects. A Pre-Flight school to accommodate 150 students would necessarily require several additional personnel to the Military Department, if this organization is selected to conduct the School.

In addition to the eighteen working days allocated to preflight training, the revised pilot training program called for 68 flying days for both

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AHS-90

SECURITY INFORMATION  
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160

Phase I and Phase II of basic. Schedules were to be made variable in order to allow for losses caused by holidays and bad weather during the winter months. For example, preflight would vary from 24 to 42 calendar days, and Phase I and Phase II each of basic would vary from 105 to 136 days. Accordingly, in the tentative schedule that was drawn up in December 1947, preflight training was arranged sufficiently ahead of each Phase I date to permit the required eighteen days.<sup>24</sup>

After discussing the new training proposal verbally with ATRC headquarters in January 1948, FDTRC headquarters decided to hold it in abeyance until sufficient funds were available; hence no formal request was made of the Defense Department to institute it in the immediate future. Meanwhile, preflight remained on an informal basis when the expansion of military training facilities got under way according to original plans. Additional personnel was assigned to FDTRC headquarters in February 1948 in anticipation of the opening of Goodfellow AFB on 1 March 1948.<sup>25</sup> Following the reactivation of the latter base, Perrin AFB was reactivated on 1 April 1948, followed by Jaco AFB on 1 August 1948. Consequently, by the end of 1948 basic training was being conducted at four separate Texas schools. The additional bases were opened in order that the pilot-production rate of 3,000 per annum could be achieved by 30 June 1949. This production quota was to be increased to 6,160<sup>26</sup> by June 1952; however, the Korean war in June 1950 brought an alteration in training quotas when the latter goal was increased to 7,200 pilots per year--the approximate present output. Throughout 1948 trainees continued under the fifty-two-week program to enter thrice yearly, on 1 March, 1 July, and 15 October.

In addition to the four USAF basic schools, plans were started in 1948 to reactivate Columbus AFB as a fifth basic pilot training station, with the first class of trainees to arrive on 1 March 1949.<sup>27</sup> But these tentative plans

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were changed; and Columbus was eventually opened on a civilian contract basis, along with seven other schools.

Expansion of Informal Preflight Training, 1948

The proposal made in December 1947 for the reestablishment of a formalized preflight program--designed to reduce eliminations and to raise the quality of officers--was still under consideration as late as June 1948. Meanwhile, preflight remained a phase of basic pilot training as provided for in FDTRC regulation 50-9-1, issued in September 1947. Plans initiated during the first quarter of 1948 called for the complete integration of Phase I and Phase II into one basic pilot program. Goodfellow AFB submitted recommendations on 7 April that provided for various alterations in the basic curriculum, and on 21 April Randolph Field also submitted recommendations for curriculum changes in the proposed integrated program.

On 7 July 1948 ATRC headquarters issued a new course outline which embodied various recommendations previously made by both Goodfellow and Randolph.<sup>28</sup> The new curriculum was based principally upon 170 hours of flying time spread over a period of eight months, correlated with 470 hours of academic instruction. Among the various alterations in the course outline was the addition of six hours to the informal preflight training phase. Specifically, this included an increase from 20 hours to 22 hours of close order drill and the addition of 2 hours for inspection and 2 hours for troop information. Preflight continued to be given during the first two weeks of the integrated basic course; and although the six-hour increase still did not give preflight the status that some officials desired, it was a step in the right direction.

No further changes were made in preflight or basic pilot training for several months. Meanwhile, considerable thought was being given to the improving of the whole pilot training program. The advisability of providing a

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AHS-90

**RESTRICTED**~~SECURITY INFORMATION~~~~CONFIDENTIAL~~

162

more formalized preflight phase, its nature, extent, and timing continued to receive attention.

The Four-Week Preflight Training Program, 1949-1952

The input schedule to meet the 3,000-pilots-per-year quota reached its climax in April 1949 when the system of entering classes into training every six weeks was started.<sup>29</sup> Under the new arrangement, which went into operation on 4 April 1949, eight classes of approximately 595 students each were to be entered by the end of 1950. As a result of the new development, some changes were made in the curriculum; and in July 1949 pilot training was increased from 52 to 56 weeks' duration to include a four-week informal preflight phase.

The expanded preflight program, which took effect with the entrance of class 50-D on 11 July 1949, incorporated the processing and orientation of incoming students. Consequently, the cadets were relieved of much of the pressure previously encountered in the initial stage by completing necessary briefing, clothing issues, and other routine matters prior to entrance into actual flight training. Also, aptitude tests were given in preflight to permit the spotting before they got into the flight program itself of students who were not likely to succeed in pilot training. In addition, through the brief period of military training, the cadets were given ample time to adjust themselves psychologically to Air Force life before it began to make serious demands upon them. Also, they could be briefed thoroughly on the regulations governing aviation cadet life.

Another feature of the expanded training program was that the cadets were now required to undergo preflight training before being assigned to quarters in the regular cadet barracks and before receiving a full issue of clothing and flying equipment.<sup>30</sup> Heretofore, the trainees had been assigned to the cadet section immediately upon arrival for cadet training.

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The basic curriculum issued in connection with the new 56-week pilot training program provided for the following preflight courses:<sup>31</sup>

<u>Courses</u>	<u>Hours</u>
I. Reception and Processing	30
A. Arrival reception, commander's address of welcome, and sizing formation	4
B. PIO photographs, information sheet, fingerprinting, and haircutting	2
C. Initial supply, QM supply and uniform fitting, flying equipment supply, and academic supply	6
D. Insurance coverage, loyalty clearance, class F Allotments, and personal interview	4
E. Briefing on cadet regulations, customs, and policies	10
F. Physical (64) examination	4
II. Aircrew Classification Battery Tests (Stanine)	21
III. Flying Line Indoctrination	14
A. Flying line objectives, SOP, and personal equipment	2
B. Aircraft familiarization	5
C. Normal and emergency operating procedures (including T-6 Captivair trainer)	4
D. Analysis of maneuvers	3
IV. Preflight Academic Training	20
A. Applied aero physics	8
B. Aircraft engineering	7
C. Radio communications	5
V. Preflight Military Training	75
A. Drill and ceremonies	30
B. Inspections	2
C. Physical training	30
D. Leadership, discipline, and customs	12
E. Medical training (sex morality)	1
Total	160

It will be noted the new preflight program placed major emphasis upon military training at the expense of academic training. This was in keeping with the

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AHS-90

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164

Canadian preflight program, as well as with the belief at USAF headquarters that the cadets should get as much military indoctrination and training as possible out of the way before beginning their flight training.<sup>32</sup> It is also interesting to note that mathematics, code, and recognition were conspicuously absent from the program, whereas these subjects had constituted the core of the preflight curricula in operation during World War II. USAF headquarters had advised that mathematics had been overemphasized in the past.<sup>33</sup> Also, the trend in communications made it desirable to emphasize voice rather than dot and dash radio code for communication with ground stations.<sup>34</sup> As for dropping aircraft recognition, it was felt that by the time trainees were ready to graduate, much of their knowledge of foreign aircraft would be obsolete and that therefore it would be better to teach recognition in advanced training.<sup>35</sup>

In addition to the four-week preflight phase, the new basic curriculum provided for 280 hours of flying training, 222 hours of academic training, and 244 hours of military training. The preflight subjects were taught during the first four weeks of the six months' period allotted to basic. On 15 January 1951 a new basic course outline (50-21-2) was issued by ATRC headquarters, but no changes were made in the preflight phase. However, the new syllabus (51-105401-1) which came out one year later contained some changes. Preflight continued to be phased into each of the general training divisions and consisted of the following courses and hours:<sup>36</sup>

<u>Subjects</u>	<u>Hours</u>
I. Flying Training (Flying Line Indoctrination)	14
II. Academic Training	25
A. MDAP (Mutual Defense Assistance Pact)	5
B. Techniques of Learning	2
C. Radio communication	5
D. Aircraft engineering	8
E. Principles of flight	5

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AHS-90

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165

III. Officer Training	131
A. Reception and processing	46
B. Orientation and indoctrination	25
C. Drill, ceremonies, and inspections	30
D. Physical training	30
	<hr/>
Total	170

The principal difference between the new course of study and the one which had been put into operation on 11 July 1949, syllabus 51-21A, was in the addition of a 5-hour course devoted to an examination of the Mutual Defense Assistance Pact and a 2-hour course in techniques of learning. The former came as a result of a manuscript prepared at Perrin AFB and submitted to Washington. So much favorable comment was aroused that USAF headquarters requested that the material be rewritten in the form of a training project outline to be used in the new MDAP orientation subject already planned.<sup>37</sup> The 2-hour course in the techniques of learning was added to the latest syllabus in an effort to reduce eliminations because of poor academic background.<sup>38</sup>

The latest course of study for preflight trainees remained unchanged until November 1952, at which time the 4-week program was dropped in favor of the present twelve-week preflight curriculum. The ultimate adoption of a separate, extended preflight program culminated a long struggle for the establishment of a preflight plan similar to the wartime program.

Aircraft Observer (Bombardment) Training, 1945-1952

During the latter part of World War II, bombardier, navigator, and pilot trainees received the same training in preflight schools and were not classified as bombardiers, navigators, or pilots until they had completed the first stage of preflight. Even then, they continued through the second phase of the program without being segregated--taking the same courses and conforming to

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LHS-90

SECURITY INFORMATION  
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166

the same regulations. Soon after the close of World War II, action was taken to integrate completely the training of bombardiers, navigators, and radar observers into a program entirely separate from pilot training.<sup>39</sup> This program was called bombardment training, and effective 20 December 1945, the AAF bombardment school was established at Mather Field.<sup>40</sup> Personnel and equipment from the various navigator, bombardier, and radar training schools were eventually transferred to the new school.

To prepare a curriculum for the new bombardment program was a tremendous task, but by 4 February 1946 such a curriculum was published as AAF Training Standard 90-1037. No provisions were made in the new program for preflight, since only officers were to be admitted for training as bombardment observers. Indeed, from the end of the war until 1949 the new course was strictly a cross-training program for officers who had previously graduated from preflight, and the number of students at first was very small. In June 1946, 88 combat returnees, mostly bombardiers, began advanced training at Mather AFB. The first formal postwar program for the training of observers took effect in March 1947, when the yearly output of 180 aircraft observers, bombardment, was established.<sup>41</sup>

Considerable confusion exists relative to the title assigned to the above program. In February 1946 the training of bombardier-navigators was designated "bombardier observer" training. Soon afterwards, however, the term "aircraft observer" appeared in the literature of official AF histories and AF regulations. As late as 1949 the two terms were still being used interchangeably, but at the present time the title "aircraft observer" seems to be firmly established as the broad terminology for navigator-bombardier training.<sup>42</sup>

Although the curriculum for aircraft observer training was modified several times between 1946 and 1949, provision for preflight training was necessarily omitted because cadets were still not being taken into the program. On 31 March

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SECURITY INFORMATION

AHS-90

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167

1949 the Air Training Command regained jurisdiction over Ellington AFB at Houston, Texas, and the USAF Navigation School was activated there on 15 April 1949. Training activities began on 8 August 1949. The training quotas were fixed at an annual production rate of 1,000 navigators and 564 aircraft observers. Significantly, cadets were to be entered into navigator training for the first time since the end of the war. Two separate programs therefore were necessary, one for officers possessing bombardier ratings and another for aviation cadets and officers without previous aircrew training.

The navigation course of instruction for non-rated students was divided into three phases: preflight training, 156 hours; academic training, 943 hours; and military training, 387 hours.<sup>43</sup> In brief outline the subjects allotted to the preflight phase were as follows:

<u>Courses</u>	<u>Hours</u>
I. Reception and processing	30
II. Aircrew classification battery tests (stanine)	21
III. Preflight academic training	30
A. Applied aero mathematics	15
B. Applied aero physics	15
IV. Preflight military training	75
	<hr/>
Total	156

The above courses were offered during the first four weeks of basic aircraft observer training, and practically no changes in the distribution of hours were made until late in 1952. Regarding the new preflight program outlined above, Lt. Col. M. T. Reid, Director of Observer Training, RTAF headquarters, recently observed:<sup>44</sup>

When cadets were taken into navigator training in 1949 they were given preflight because they had never had it before. It really was not a separate preflight program at all--merely phased into primary

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SECURITY INFORMATION

AHS-90

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168

[basic] training, and it is difficult to distinguish those preflight subjects from primary subjects. You might say we have not had any preflight at all since the end of the war, but will start it for all observer trainees at Lackland on March 2 /1953/. The reasons we did not give a more formalized preflight program beginning in 1949 is that we had a different concept and motivation purpose than did the pilot trainees.

The attrition rate among aircraft observer trainees has been higher in post-World War II years than even among pilots. This fact, combined with the smallness of the quota for trainees, has resulted in severe shortages. Consequently, in recent months the USAF has been trying to catch up with the urgent demand for aircraft observers. Several months of planning led to the announcement, in November 1951, of tremendous expansion in the production of observers. This program called for the annual production of 7,400 basic observers from aviation cadets and non-rated officers and 2,100 from previously rated officers. Production of 10,000 advanced observers also was directed at the same time.<sup>45</sup>

The program of training announced in connection with the expanded production quotas contained the first reference to "basic" and "advanced" observers, an obvious attempt to simplify the nomenclature in this complicated field. Basic observers are those, of course, who are trained in the primary aspects of navigation, bombardment, and radar operation.\* Advanced observers are specialists with regard to a particular aircraft, for example, B-29, B-26, and B-47.<sup>46</sup> In addition to basic and advanced observer training now being conducted at six different air bases--Parks, Chanute, Lowry, Sampson, Moody, and Lackland --a twelve-week preflight program has recently been added. (See Chapter VIII). This training is given at Lackland AFB, and is the same as the program offered to pilot trainees.

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\*The curricula for the various aerial observer cross-training programs are explained in detail in the recently published preliminary draft of Chapter V, History of the Air Training Command, 1 July 1950-30 June 1951, in FTAF headquarters, HD.

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AHS-90

169

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Thus, preflight training for pilots, navigators, and bombardiers has completed a full cycle since the end of World War II. Indeed, its present position is even more important than during the war years.

The Civilian Contract Schools

A very important aspect of preflight training, especially since the Korean crisis, relates to a subject that has been mentioned only briefly in this study--the civil contract schools. Before discussing preflight training as conducted at those schools from 1950 to 1952, the background of civil contract training in the AAF should be reviewed.

In 1938, with the world on the brink of total war, the United States Air Corps was in pitiful condition. Congressional appropriations for the operation of both the Army and Navy were meager, and the only school devoted to the training of Army Pilots was at Randolph AFB. The American people were complacent about the military situation, and few in 1938 could see the need for spending money for more pilots and aircraft. Fortunately, there were some men in important places who possessed greater foresight, one of whom was Brig. Gen. H. H. Arnold.

German troops occupied the Sudetenland in October 1938 after the withdrawal of Czechoslovak troops. On the other side of the world, in the same eventful month, Japanese troops marched into Canton, China. General Arnold realized that it was time for the United States to build up its air forces; hence he called to Washington three men, Oliver P. Parks, C. C. Mossley, and Theopolis Lee, to ask for their help. These men responded to the idea of investing their money in pilot training, to be repaid by the government when the American people were aroused enough to permit Congress to appropriate money for such purposes. With the assistance of Lt. Col. Howard Davidson, who had recently returned from a trip to England where he had studied the English civilian pilot

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SECURITY INFORMATION

AHS-90

170

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training methods, the three civilians began to formulate more detailed plans for implementing the program.

Mr. Parks and his two friends returned to their homes to transfer their aims into immediate action—namely to build air corps flying schools as quickly as possible. On 1 July 1939 nine contract schools were opened to provide the four months' primary phase of pilot training, the basic and advanced phases being given by the Air Corps at military installations. The curriculum for the civilian pilot training program followed the pattern of training at Randolph AFB. The cadets were selected by the Air Corps; and the course of study, textbooks, training aircraft, and equipment were also planned and furnished by it. Ground and flight instruction were given by civilians, however.

The civilian contract schools remained in operation until August 1945, by which time they had increased in number to 56. The peak production of primary graduates was reached in November 1943; in that month 11,411 pilots were graduated. Following the close of the war, pilot training was drastically reduced because the Air Force had a surplus of trained pilots above the number required to meet its peacetime needs.<sup>47</sup>

In 1949 the growing tension of world affairs caused the Air Force to accelerate its pilot training once again by reopening three additional basic military flying schools. At the same time Secretary of Defense Louis Johnson was stressing economy in the armed forces. Obviously the Air Force faced a severe economic barrier to further expansion of pilot training, yet the need for more pilots was becoming increasingly obvious. How could the problem be solved? One possibility was the return to contract training in hopes that the job could be done more cheaply by civilians than by military personnel.

Accordingly, the Air Force requested the Stanford Research Institute of California to survey the situation and determine the advisability of reopening

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AHS-90

171

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civilian contract training. On the basis of the Stanford study, it was estimated that a saving of \$2,317,040 per year could be made by training pilots in schools operated by civilians under contract with the government.<sup>48</sup> Planning was begun in January 1950 to initiate the above project. The plans crystallized on 25 July 1950 when ATRC headquarters was asked to survey airdrome sites in sufficient number to accommodate 1,350 basic flying students. Bases used during World War II, then inactive or on a stand-by status, as well as former contract training bases, were given primary consideration.

When the initial research was completed, 105 bases had been surveyed. The result was the selection of two sites: Greenville AFB and Columbus AFB, both of which are situated in Mississippi. Though these bases were not being used actively, each had a small detachment of caretaker personnel and could easily be reopened. The maximum load each base could accommodate was 450 students. Classes of 134 students were to be entered eight times a year.

Contracts were let to civilian operators of the two bases early in 1951, and before the end of that year to seven additional contractors. (The chart on the following page contains the names and dates of activation of the various bases.) In addition, basic military flying training was continued at Goodfellow AFB. This latter base played to some extent the role of a "parent" base for civilian contract schools. It, like the contract schools, conducted four classes of basic (primary) pilot training simultaneously. Each class included approximately 132 students, divided into four flights of approximately 34 cadets each. New classes were entered every six weeks and the same basic training and procedure were followed here as in the other schools. The first four weeks of training were devoted to preflight, the curricula being identical to the ones outlined in the syllabuses discussed earlier in this chapter.

Goodfellow AFB more or less set the pattern and acted as the coordinating

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AHS-90

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172

CONTRACT SCHOOLS

Base	Activated	Command Assumed by FTAF	Contractor	Designated &	
				Assigned	Renamed
Greenville	1 Dec 50 GO #49, ATRC 6 Dec 50	1 May 51 GO #29, ATRC 22 Apr 51	Graham Aviation Co. Butler, Pa.		
Columbus	20 Dec 50 GO #14, ATRC 1 Mar 51	1 May 51 GO #29, ATRC 22 Apr 51	California Eastern Airways, Inc.		
Spence	16 Apr 51 GO #23, ATRC 6 Apr 51	1 May 51 GO #29, ATRC 22 Apr 51	Hawthorne School of Aeronautics, Charleston, S. C.	16 Apr 51 GO #23, ATRC 6 Apr 51	
Bartow	1 May 51 GO #30, ATRC 24 Apr 51	1 May 51 GO #4, FTAF 17 May 51	Garner Aviation Services Inc., Richmond, Va.	1 May 51 GO #30 ATRAC 24 Apr 51	
Hondo	5 Jun 51 GO #7, FTAF 4 Jun 51	5 Jun 51 GO #7, FTAF 4 Jun 51	Texas Aviation Industries	5 Jun 51 GO #7 FTAF 4 Jun 51	
Malden	11 Jul 51 GO #9, FTAF 11 Jul 51	11 Jul 51 GO #9, FTAF, 11 Jul 51	Anderson Air Activities	11 Jul 51 GO #9 FTAF 11 Jul 51	
Bainbridge	11 Jul 51 GO #10, FTAF 11 Jul 51	11 Jul 51 GO #10, FTAF 11 Jul 51	Southern Airways Schools	11 Jul 51 GO #10 FTAF 11 Jul 51	
Marana	1 Sep 51 GO #13, FTAF 15 Aug 51	1 Sep 51 GO #13, FTAF 15 Aug 51	Darr Aero Tech, Ind.	1 Sep 51 GO #13 FTAF 15 Aug 51	
Kinston	17 Oct 51 GO #20, FTAF 17 Oct 51	17 Oct 51 GO #20, FTAF 17 Oct 51	Serv-Air Inc. N. C.	17 Oct 51 GO #20 FTAF 17 Oct 51	Renamed Stallings Staff Bulletin 89 FTAF 5 May 52

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AHS-90

RESTRICTED  
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173

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agency for the various contract schools. Incidentally, this function is still being performed by Goodfellow AFB in relation to the present consolidated pre-flight school at Lackland. In addition to conducting experiments in the curriculum and the methods of instruction, Goodfellow also operated a four-week ground instructor's school. The civilian academic instructors were required to attend this school at the contractor's expense--reimbursed by the government--while the civilian flight instructors were required to attend the six-week flight instructors' course at Craig Field, Selma, Alabama. All instructors at the various contract schools were civilians, except instructors in military subjects; and to a large extent this is true today at both Lackland and Goodfellow.

There was at first much criticism of the proposal to return to civilian contract training. It was argued that the contractors had nothing to start with but the know-how and a contract, that they would be forced to hire eliminated substandard reserve officers, or ex-officers who had been out of service for a long period of time. In addition, the contractors would be forced to hire and train their own mechanics, which would be a tremendous task. On the other hand, an opponent of the contract schools pointed out that the military could do the job better:<sup>49</sup>

With all the know-how of civilian contractors and probably more actual experience and the tools to work with, he can, with no change in the quality of the end product--1) utilize present instructors who are far superior to those available to the contractor, 2) utilize all organization maintenance personnel who are better trained than those available to civilian contractors.

The author of the above statement further remarked that the saving to the government in personnel alone would be \$1,382,216, although he did not explain how he arrived at this figure. Furthermore, he observed that an additional saving of \$2,317,000 could be made by reducing transportation cost, subsistence, base maintenance cost--because fewer buildings would be utilized--hospital operation

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LHS-90

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174

cost, and clothing. Nevertheless, the civil contract flying schools were eventually established in preference to military schools.

Despite some early apprehensions that the quality of instruction by civilians in the contract schools would be inferior to what could be given by military personnel, evidence and opinion seem to indicate that it was actually better. During the summer of 1952 the writer spent several days at Hondo AFB where a civil contract school is in operation. The civilian instructors there, as well as at Goodfellow, where the writer also visited, appeared to have an excellent esprit de corps. Some of them did not have college degrees and a few had had no previous teaching experience. Nevertheless, they possessed a thorough knowledge of their subject matter and presented it with clarity and with confidence to the trainees in the classroom. All had C. A. A. ratings in the courses which they taught, and many had had practical experience in their respective fields. The in-service training program had produced a standardization of teaching methods and course content. Indeed, the results obtained from the in-service training appeared most effective, for instructors were able to put into immediate practice what they learned.

In addition to being required to go through a phase of in-service training for each course taught and to attend the instructor's school at Goodfellow, each instructor was regularly criticized by his fellow instructors and students. Not only did he know at all times where he stood with his students and colleagues, but conferences with the director of academic training were held periodically in an effort to bring about specific improvement in various points of weakness. The pressure to do a good job therefore was always present.

The morale of the civilian instructors outside the classroom appeared to be excellent. No doubt this was partly due to an adequate salary rate, starting

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AHS-90

175

at \$300 per month and increased to \$450 at the end of one month for those retained on a permanent basis.<sup>50</sup>

Although preflight training is no longer offered at the civil contract schools, nevertheless, these schools are still in operation for primary training. Since their establishment in 1950 they have operated on a cost-plus-fixed-fee basis; and according to Mr. W. P. Parker, director of academic training at Hondo, the cost of instruction there approximated .35 per hour, as compared to .60 per hour at the military school at Goodfellow AFB. This difference in cost was partly due to the fact that during 1952 Hondo employed thirteen academic instructors, who taught the same number of courses and students that were taught at Goodfellow, which used from seventeen to eighteen instructors. Also, Goodfellow was required to perform other services that probably were included in the per capita cost; the civilian schools did not have to provide such service.

A study was started by USAF headquarters in 1951 to determine whether civil contract flying training was more economical and efficient than military flying training. This study was based upon a statistical analysis of the attrition rate among basic (primary) trainees at the various schools, including Goodfellow. The findings for the class 52-G, which entered basic training on 2 October 1951 and completed on 30 April 1952, are cited as an example: the average attrition rate for the nine civilian schools and the one military school was 25.14 per cent. Goodfellow had by far the largest attrition rate, 35.8 per cent, as compared to the lowest attrition rate, 17.9 per cent, which was experienced by Bainbridge (Georgia) Air Base.<sup>51</sup> If these figures may be taken as reliable criteria for comparison of the work done by the two types of schools, the obvious conclusion is that the contract schools were doing a better job of instructing. Yet statistics do not always tell the whole story and therefore have to be used with caution. Indeed, the writer was unable to observe any

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SECURITY INFORMATION

~~CONFIDENTIAL~~

INS-90

176

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appreciable difference between the qualifications of the instructors or their work at Goodfellow AFB and Hondo AFB.

There can be no question that the utilization of civilian contract schools is more economical for the Air Force; furthermore, this policy enables it to use more of its own military bases for advanced flying training. The use of civilian instructors in non-military subjects offers many advantages over the use of military personnel: the civilian is an instructor by choice and can leave if he is dissatisfied with his job; if he proves unsatisfactory, he can be discharged; he is not subject to transfer to some other base. It is very likely that the practice of utilizing civilian skills and facilities will remain a permanent aspect of flying training--at least as long as the present international tension remains.

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Chapter VIII

THE PRESENT CONSOLIDATED PREFLIGHT PROGRAM, 1952-1953

The proponents of formalized preflight training made consistent efforts during the years immediately following World War II to reestablish a program similar to wartime preflight training. Various studies were made and plans were drafted, but for one reason or another the most that could be accomplished was the informal four-week phase that had emerged by the middle of 1949. However, a twelve-week consolidated program was finally established late in 1952, and preflight now occupies a position of even greater importance than in any past period. From all indications this concept of training is firmly entrenched and will continue to occupy as permanent a position in the general flying training program as primary, basic, and advanced.

The Proposed Twelve-week Program Plan, 1949

The first official step in setting up the present consolidated program might be said to have begun in December 1948 when ATRC headquarters directed FOTRC headquarters to prepare a plan for preflight military and physical training at Lackland AFB of the Indoctrination Division, ATRC. Consequently, a general outline of the new program appeared in January 1949; it listed the following objectives:<sup>1</sup>

- 1) To provide an adequate period of orientation into service, including administrative processing, military indoctrination, and physical health development designed to enter directly into active flying training.
- 2) To eliminate those who would normally resign during the initial weeks of training, are moral delinquents, or are psychoneurotics who cannot stand up under the rigors of military life as required of an officer in the USAF.
- 3) To conserve aircraft and flying training personnel by eliminating those cadets cited above before they begin Basic Training.

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AHS-90

178

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The proposed new program was to consist of 430 hours of training (40 hours per week), divided into 230 hours of academic courses and 200 hours of drill, ceremonies, physical health development, small arms qualifications, and similar supervised activities.

Unfortunately, announcement of the twelve-week program was badly timed, for in 1949 Secretary of Defense Louis Johnson's determination to cut military expenditures stifled any hopes of establishing an expensive new training program. Instead of the formal twelve-week preflight, the previously discussed four-week program was ultimately adopted. The Korean war in 1950 brought a still further delay in establishing the twelve-week preflight program, since the new course would involve adding more training time at a period when a larger pilot production quota was urgent.<sup>2</sup>

Even though the idea of a thorough preflight training period was not realized immediately, developments were taking place that made its establishment inevitable.

The Proposed 18-Week Consolidated Preflight and  
Light-Plane Screening Program, 1951

Not only was the USAF concerned with various training difficulties resulting from a tight budgetary situation and the reorganization of the armed services into one department; other factors also contributed to make the period following World War II a most difficult one. Flying an airplane no longer had the glamorous and adventurous appeal to American youth that it formerly had, and the job of recruiting well-qualified personnel for the comparatively modest training quotas was not an easy one. Furthermore, the percentage of eliminations and resignations during the period between 1946 and 1952 approximated 30 per cent in primary-basic training alone,<sup>3</sup> despite strict physical and mental entrance requirements. Added to these difficulties was the fact that some cadets were graduating from pilot training improperly

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AHS-90

179

disciplined and without having received a thorough indoctrination in the military traditions of the USAF. Consequently, they were not adequately equipped to assume their full responsibilities as officers. This latter criticism was not necessarily one levied by outsiders, but the justness of it was fully and frankly recognized by USAF training officials themselves.<sup>4</sup>

Obviously, the flying training program was in desperate need of overhauling in order to cut down the high elimination rates and at the same time turn out competent officers and gentlemen. To accomplish these objectives without adding additional cost to the general training program was a challenging task that required long and careful study by ATRC and FTAF officials. The answer to the problems seemed to rest in part upon the establishment of a preflight program that would make the trainees conscious of the importance of future training and achievements. "We needed a program that would not coddle them, yet it could not be so strict that it would cause the cadets to rebel and resign. In short, we needed a program that would be the best possible for the trainees themselves, one in which they would be treated as men and not kids," an FTAF official explained.<sup>5</sup>

In order to set up the proper type of preflight training that would compensate for the current deficiencies, it was first necessary to analyze the principal faults in primary training. Lt. Col. William L. Reynolds and Lt. Col. L. D. DuMontier believed, among other things, that much of the weakness of the primary program was the exclusive use of the AT-6 training plane. They expressed the firm conviction that this was too complicated an aircraft for a beginner and that cadets should be broken into flying gradually with a lighter plane.<sup>6</sup> Other USAF officials held the same view and advocated the long preflight and light-plane screening phase to precede flight instruction in the AT-6. A careful study of the costs involved and the

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AHS-90

180

objectives to be reached resulted in the outlining of a preflight program in November 1951 whereby officer training, technical training, and flying training (cub planes) were combined into an 18-week program.

The objectives listed for the new program were as follows:<sup>7</sup>

- 1) Flight training of sufficient scope to qualify the trainee in the basic principles of contact flying in the local area.
- 2) Technical training of sufficient scope to complement and facilitate the flying training.
- 3) Officer training of sufficient scope to inculcate the Aviation Cadet with the basic concept of customs, courtesies, administrative practices, military air leadership, and moral responsibility of an officer in the Air Force.

The program was divided into three phases: technical training, 68 hours; officer training, 505 hours; flying training, 65 hours. The 65 hours devoted to flying training were to be similar to the first 65 hours in primary, except for more solo flying in the new program. A breakdown of the technical and officer training subjects shows the following distribution of hours:

I. Technical Training	68
A. Principles of flight	20
B. Radio communication	5
C. Flight operations	3
D. Aircraft engineering	20
E. Aural code and visual code	20
II. Officer Training	505
A. Processing and reception	40
B. The aviation cadet organization	12
C. Customs and courtesies	10
D. Personal adjustment	6
E. Effective study	6
F. Effective reading	5
G. Thinking and solving problems	4
H. Effective teaching methods	10
I. Effective expression	40
J. Air Force organization	10
K. Air Force administration	40
L. Leadership	40
M. Military management	36
N. Supply	20

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AHS-90

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181

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O. Geopolitics	15
P. Intelligence	15
Q. Military law	10
R. Organization and functions of the Army	4
S. Organization and functions of the Navy	4
T. Tactical air power concept	6
U. Strategic air power concept	6
V. Air defense	6
W. Small arms	12
X. Drills, caremonies, and inspections	52
Y. Physical training	96

The 573 hours in technical training and officer training were to be completed during the first 12 weeks of preflight, while the light-place screening was to be offered during the last six weeks. The latter would be considered part of the general preflight program, a development which would place a different concept upon the traditional meaning of preflight. But for reasons that are subsequently discussed, it was eventually decided not to combine ground training and flying training into an 18-week preflight program. Today, the six weeks of flying training in light planes is actually a part of primary; after the trainee completes 25 hours flying time in a PA-18 trainer, he and his instructor advance to the AT-6 trainer for 120 additional flying hours. Before the cadet completes his training he must have received six months at primary, five months at basic, and ten weeks at advanced.

An examination of the courses listed in the preceding outline reveals that the technical training subjects under the proposed extended preflight program are similar to those offered during the four-week informal preflight phase, except for the allotment of more hours to aircraft engineering and the dropping of applied aero physics in the former. The deemphasis upon physics was in keeping with the observations of Colonel DuMontier cited in Chapter VII, while more emphasis now was placed upon aircraft engineering in the belief that it would not only prove to be a practical subject but would also serve to help motivate the trainees by appealing to their mechanical

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AHS-90

SECURITY INFORMATION

182

aptitudes and interests.<sup>8</sup>

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Most of the new officer training courses were "lifted" from the OGS curriculum, and heavy emphasis was placed upon courses relating to administration and teaching. The reasons listed by Colonel Dufontier for devoting so much time to officer training were: 1) to train a large backlog of men who would be qualified to serve as instructors and administrators in anticipation of large scale production of pilots, 2) to get most of the military training out of the way as quickly as possible and thereby eliminate most of the misfits before they reached primary, 3) to relieve primary, basic, and advanced training of part of their ground courses in order that more time could be devoted to actual flight training, and 4) to inspire pride in the traditions of the service.

ATRC headquarters had to be convinced that the proposed 18-week preflight program could be operated with little additional cost to the USAF and that facilities could be found without opening more bases. Verbal agreement to inaugurate the new program was made to FTAF headquarters in June 1952, when higher headquarters accepted the theses that Greenville AFB and Columbus AFB could be converted into preflight schools without the necessity of constructing new buildings.<sup>9</sup> Tentative plans were subsequently made to consolidate all preflight training at the above bases by November 1952, thus relieving the civil contract schools of their four-week preflight program.

The Present 12-week Preflight Program

Before the anticipated 18-week preflight program went into effect at Columbus and Greenville, plans were altered once again. On 28 August 1952 Brig. Gen. Wycliffe E. Steele, commanding officer at Lackland AFB, announced that "Lackland Air Force Base will become the national center for all preflight training in November, thus revamping the country's whole Air Force

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training program."<sup>10</sup> The writer subsequently made inquiries among USAF officials at AFPS headquarters, FTAF headquarters, and Lackland AFB to determine the reasons for the last minute decision to conduct all preflight training at Lackland. The various causes for the changes are summarized as follows:<sup>11</sup>

- 1) A further study of facilities at Greenville and Columbus revealed that converting these basic (primary) contract schools to preflight schools would be more expensive than originally estimated.
- 2) The above bases could not be converted in time to receive the first large preflight classes that were scheduled to arrive in November.
- 3) Lackland AFB could receive several hundred preflight cadets without expansion of facilities and with no additional buildings required.
- 4) It would be advisable to have one large preflight school in preference to two. Personnel could be more easily pooled and a higher degree of standardization could be maintained.
- 5) It would be more advisable to conduct the light plane screening phase at basic (primary) schools in order that cadets could advance to the AT-6 trainer and thus retain the same instructor.
- 6) The original concept of preflight training (as defined in the foreword of this study) could be maintained if the program was completely separate from flight training.
- 7) Lackland AFB could be expanded at minimum expense in the event of a large increase in pilot production quotas.
- 8) It would be less expensive for light plane screening to be absorbed by the primary schools than by the consolidated preflight school at Lackland.

In connection with the decision to concentrate all preflight training at Lackland, a revised curriculum was issued by FTAF headquarters on 1 September 1952.<sup>12</sup> The objective listed in the new syllabus of instruction was:

"To provide the Aviation Cadet with the fundamental knowledge required for his development as an Air Force officer." The following courses and hours were outlined in detail:

Officer Training

472 Hours

Academic Phase

282 Hours

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AHS-90

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184

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<u>Code</u>	<u>Subject</u>	<u>Hours</u>
EE	Effective Expression	49
AFO	Air Force Organization	10
AFA	Air Force Administration	47
MM	Military Management	40
L	Leadership	35
SUP	Supply and Logistics	20
MG	Military Geography	20
INTEL	Intelligence	15
AW	Air Warfare	26
ML	Military Law	20

Military Phase 142 Hours

<u>Code</u>	<u>Subject</u>	<u>Hours</u>
PT	Physical Training	47
DCI	Drills, Ceremonies, and Inspections	55
CC	Customs and Courtesies	10
AGO	The Aviation Cadet Organization	12
PA	Personal Adjustment	6
SA	Small Arms	12

Testing 8 Hours

Reception and Processing 40 Hours

A comparison of the above program with the preliminary outline drawn up in November 1951 (see page 180-81), shows that the 68 hours of technical training in the latter program were now dropped. These courses were to be offered as ground courses in connection with 25 hours of light plane screening at the primary schools. Additional changes may be noted in the dropping of the following courses: effective study, effective reading, thinking and solving problems, effective teaching methods, military management, organization and functions of the Army, organization and functions of the Navy, tactical air power concept, strategic air power concept, and air defense.\* An additional major change from the old program was the reduction

\*Strategic air power concept, tactical air power concept, and air defense were combined in the new program into one course, called air warfare.

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AHS-90

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185

of physical training from 96 to 47 hours.

Colonel DuFontier probably was responsible, more than any other FTAF or ATRC official, for the alterations in the consolidated preflight curriculum. According to DuFontier the above changes were made in the curriculum mostly on an arbitrary basis. "It takes a long time to arrive at the proper distribution of courses. Instruction has to fit into regular flow. In reducing the number of hours devoted to officer training from 505 to 472 it became necessary to cut those subjects that were considered least important."<sup>13</sup>

Even before the first class of pilot preflight cadets arrived at Lackland AFB on 3 November 1952, another major development in preflight training took place. Events relative to the Korean war aptly demonstrated the need for training more jet combat pilots. Consequently, ATRC headquarters appointed a "motivation committee" of FTAF and TTAF officials to revise the curriculum program of 1 September 1952, since it was felt that the wrong emphasis was being placed on certain subjects "in view of the newly stated objective of training jet combat pilots."<sup>14</sup> Furthermore, ATRC headquarters expressed the feeling that immediate action should be taken to change the preflight curriculum to reduce the emphasis on training officers administratively and increase the students' motivation toward flying combat aircraft.

The conference was conducted at Lackland AFB on 20 October 1952, at which time the following course changes were recommended:

- 1) Reduce Air Force organization from 10 to 7 hours.
- 2) Reduce Air Force administration from 47 to 20 hours.
- 3) Reduce military management from 40 to 20 hours.
- 4) Reduce military law from 20 to 10 hours.
- 5) Reduce supply and logistics from 20 to 10 hours.
- 6) Add a 10-hour course in Air Force history.
- 7) Add a 20-hour course in mathematics and physics.

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AHS-90

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186

The Lackland conference also recommended that the first five changes in the curriculum listed above should become effective 3 November 1952, but that the proposed new subjects--history, mathematics, and physics--should not be implemented until 16 February 1953. The conference recommended that the remainder of the subjects should be left without change, and the time made available by deletion of the 70 hours should be used by the commander of the preflight school as he saw fit during the conduct of the first class. These recommended changes did not go as far to alter the preflight curriculum "to increase the students' motivation toward flying combat aircraft" as ATRC headquarters had suggested, principally because:<sup>15</sup>

- 1) The [consolidated preflight] course [already drawn up] has not yet been conducted, and much of the motivating influence will be carried on through individual work of the instructors in the conduct of the course, and not primarily through the curriculum. It is impractical at this time to determine what changes should be made.
- 2) Plans have been developed over the past year and a half for this training, and training materials for the course are nearing the stage of completion. Action to produce these final training materials was first taken immediately after notification by Air Training Command that the course was to be implemented, and on 11 August 1952 personnel from this Command started writing the training materials which have been written but have not been published and distributed. A change at this time would result in an attempt to change within a period of two weeks work which had been accomplished over a period of three months.
- 3) Sixty-two officers of the one hundred and sixty-nine authorized to conduct this course and a few of the civilians authorized are in place at Lackland, therefore the problems which are normally encountered in starting a brand new program will be multiplied by a change without sufficient personnel to accomplish an extensive change of course.

ATRC headquarters approved the alterations in the curriculum recommended by the motivation committee, and it is essentially the program that is now in use. Additional changes will undoubtedly be made in the allotment of course hours to various subjects sometime in the near future, according to Lt. Col. Robert E. Horton, Assistant Wing Operations officer at Lackland.<sup>16</sup>

The first class of 400 pilot preflight trainees arrived at Lackland

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AHS-90

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187

AFB on 3 November 1952. Subsequent classes entered each two weeks until the maximum of 2,200 trainees was reached in January 1953. Approximately 20 per cent of the trainees in the pilot program are MDAP students, less than 1 per cent are American Negroes and about 79 per cent are American whites. The class system and the honor system are maintained at the schools on a basis similar to that which existed in the wartime preflight school at SACG near the end of 1944. The Lackland Preflight School is under the command of TIAF and operates on a six-day schedule for military subjects and five days per week for academic training. The trainees are given no liberty for the first six weeks, but if doing satisfactory work after that time, they are allowed week-end leaves. According to Colonel Horton, the morale of the trainees is extremely high and from all indications the program is justifying the fond hopes of its promoters.<sup>17</sup>

#### Aircraft Observer Preflight Training

It was pointed out in Chapter VII that there was no preflight training worthy of the name for bombardiers and navigators (aircraft observers) from the end of World War II until very recently. Aircraft observer training was chiefly cross-training for rated officers, and cadets were not taken into the program until late in 1949; even then, there was only a brief two-week informal preflight for entrants without previous military experience. At that time officials in charge of the aircraft observer programs saw the need for an extended preflight program as did those in charge of the pilot program. For one thing, they realized that the rate of elimination for aircraft observers would exceed the 25 to 30 per cent elimination rate experienced in pilot training; and for another, the number of rated officers receiving cross-training would eventually be much smaller than the number of non-officers.<sup>18</sup>

According to Colonel Reid, a preflight program for aircraft observer trainees would have been established as early as 1950 had training officials

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AHS-90

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188

been able to agree upon a curriculum that would fit their special needs. "We did not have exactly the same problem as did the pilots," he explained. "We needed a program that would serve more as a motivation rather than as a compensation for poor academic backgrounds."<sup>19</sup> Another factor which acted against the establishment of a preflight program for aircraft observers which was pointed out by Colonel Reid was the absence of necessary base facilities.

The decision in August 1952 to move the consolidated pilot preflight program to Lackland AFB simplified the problems relative to an aircraft observer preflight program. At a meeting of USAF officials in Washington in December 1952, it was decided to establish a preflight school for observer trainees at the Lackland base where "plenty of room was available." (An official directive from Washington establishing the observer program had not reached T.T. headquarters at the time of the writer's last visit there, 15 January 1953).

The first class of observer trainees arrived at Lackland early in March 1953, and plans are now developing to increase the program to a student load similar to the pilot program. The aircraft observer program has been designated the "Panther Program," to distinguish it from the pilot program, which is called the "Tiger Program." The curricula for the two programs are identical, although greater emphasis is placed upon physics and mathematics in the Panther Program than in the other. Incidentally, it was in anticipation of the inauguration of an observer preflight program that the motivation committee that met at Lackland on 20 October 1952 was prompted to recommend the addition of mathematics and physics.

#### Advantages of the Extended Preflight Program

Most of the advantages for lengthening the preflight program to 12 weeks and consolidating all training at one base have already been discussed. Perhaps

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AHS-90

SECURITY INFORMATION

189

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some of these points may be briefly reviewed at this time, along with various points that have been omitted.

The proponents of the present program assert that its chief advantage is one of economy. They maintain that the 12-week program will save the USAF considerable money in the long run by eliminating most of the undesirables before they reach primary. Preliminary estimates of the elimination rate in preflight have been set at 7 per cent, and for light plane screening at ten per cent--total, 17 per cent. Another 10 or 12 per cent elimination is expected before the trainees are combat-ready.<sup>20</sup> Under the previous arrangement most of the eliminations occurred in primary, where the cost of training in the AT-6 approximated .35 per hour. It costs about .17 per hour to train men in the PA-18, light plane; consequently, a considerable saving in flight training can thus be realized.<sup>21</sup> It seems hardly possible that this saving, however, will be sufficient to pay the cost of the extended preflight and light plane training phases. Future studies will prove or disprove the thesis held by the present preflight proponents.

Major P. A. Davis, course monitor for primary training, FTAF headquarters, expressed the belief in a recent interview that the consolidated preflight program would help the IDAP trainees. He pointed out that these foreign students would have more time in which to get adjusted, learn the English language, and receive the proper military indoctrination necessary for future survival. Indeed, the need for more preliminary training for IDAP students was a major consideration in favor of the longer preflight program.<sup>22</sup>

Other advantages of the present preflight program are: 1) a more rapid adaptation to a large-scale pilot-training program is possible, should the need arise; 2) centralization makes possible the standardization of training; 3) training at one large base can be conducted much more cheaply than under the former arrangement; 4) the problems relating to flow of students are greatly

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AHS-90

190

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simplified; and 5) a more thorough officer training program will result from the extended program.

Recommendations Relative to Future Preflight Training

It seems to this writer, after a careful examination of the evolution of preflight training since World War I, that certain suggestions are in order. First, the present preflight program is undoubtedly the best that the USAF has ever had, and it should be given a chance to produce results before any drastic changes are made in it. Future changes should come only after the most judicial considerations have been made, and they should not be made for the mere sake of change itself. This does not preclude the necessity of constant study for improvements in the program, but frequent and drastic changes often result in much confusion and wasted time and money.

Secondly, the USAF might do a better job during preflight training in selling the trainees upon the relative safety of jet planes. This could be done partly by statistical comparisons of the rate of accidents in jet planes as compared to standard planes. The writer recently has discussed the flying programs for aviation cadets with several college and university students who have expressed an interest in a USAF career. Invariably, these students have the idea that jet flying is too dangerous, and they prefer to pursue a training program that will lead to an administrative position.

Thirdly, the USAF might offer for high school and college students regularly conducted tours of the preflight school at Lackland AFB. Perhaps short demonstration flights could be given to some of the prospective candidates; and it should be made clear that flying requires intelligence and skill, but that one does not have to be a superman in order to learn to fly fast modern planes.

The present program is too new to make possible an effective evaluation

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AHS-90

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191

of the results being obtained. Without exception, the various officials with whom the writer has discussed the consolidated program are of the opinion that the USAF now has the best preflight program it has ever had and that it will remain a permanent aspect of the general training program. They also assert that the extended preflight program was not established to raise the common level of cadets' academic background, that regardless of future educational prerequisites, the extended preflight program will be beneficial to all trainees except officers, West Point graduates, and AFROTC graduates.

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Chapter IX

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BRIEF SUMMARY OF PREFLIGHT TRAINING SINCE WORLD WAR I

A summary and evaluation of preflight training during World War I is presented in Chapter VI of this study. Almost three years elapsed after September 1941, when the first five-week preflight school opened at Maxwell Field, before a well rounded and adequate program had evolved. When the war ended in 1945, the ten-week formal program was quickly suspended; preflight did not again emerge as a training program of major importance until seven years later.

During the years between 1946 and 1948 an informal two-week preflight program was in operation at Randolph Field which consisted of little more than the initial processing and military indoctrination of the cadet trainees. Despite numerous recommendations by various USAF officials to formalize and extend the period of preflight training during the post-war years, the program by 1949 had been lengthened to only four weeks. This was hardly a long enough period in which those people unsuited for future training could be discovered and eliminated; the results were that the misfits and inapts were generally not discovered until after they had received a lot of expensive flying training. Furthermore, the period of preflight training was too brief to enable the cadets to receive sufficient military training required for the development of competent officers--and there was not enough time available in the basic and advanced stages to compensate for this deficiency.

The four-week informal preflight training program which operated during 1949-1952 was conducted at civil contract schools. Although these schools did a good job, in relation to training costs, by their very nature they could not provide a complete military atmosphere necessary for men training to be officers in the USAF. Another disconcerting feature of preflight training during this

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193

period is that it was given to pilot candidates only, while the bombardiers and navigators did not have a preflight program even worthy of the name. Also, preflight training for pilots was conducted at ten different fields, and standardization of instruction was difficult to achieve.

Late in 1952 a 12-week consolidated preflight school was opened at Lackland AFB for USAF cadet pilots. This program places major emphasis upon officer training and motivation in an effort to compensate for previous inadequacies. As was pointed out in Chapter VIII, the program is still too new to determine the extent the objectives for which it was established have been realized. But its proponents are enthusiastic in their convictions that the present preflight program not only represents the best that heretofore has been devised, but that it will become a permanent and indispensable aspect of future flying training.

Since early March 1953 bombardier-navigator (aircraft observer) trainees have been entering the 12-week preflight program along with cadet pilot trainees. Although the curricula are the same, more emphasis upon mathematics and physics is given to aircraft observers. A more distinct academic program for the latter trainees appears necessary, and such change will undoubtedly develop in the future.

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G L O S S A R Y

AAF	Army Air Forces
AAFPS	AAF Preflight School
AAG	Air Adjutant General
AAFTC	AAF Training Command
AAFFTC	AAF Flying Training Command
AHS-90	Air Forces Historical Studies-90
ATRC	Air Training Command
ACTC	Air Corps Training Center
AC/AS	Assistant Chief of Air Staff
AG/S	Assistant Chief of Staff
AG	Adjutant General
B-N	Bombardier-Navigator
CAA	Civil Aeronautics Administration
C/AC	Chief of Air Corps
C/AS	Chief of Air Staff
CFTC	Central Flying Training Command
CG	Commanding General
CO	Commanding Officer
C/S	Chief of Staff
CTD	College Training Detachment
CPT	Civilian Pilot Training
DCS/O	Deputy Chief of Staff for Operations
DC/S	Deputy Chief of Staff
DC/AS	Deputy Chief of Air Staff
DAC/AS	Deputy Asst. Chief of Air Staff
EFTC	Eastern Flying Training Center
FTC	Flying Training Command
FTEAF	Flying Training Air Force
GCTC	Gulf Coast Training Center
GHQ	General Headquarters
GO	General Orders
OCAC	Office of Chief of Air Corps
OAC/AS	Office of Assistant Chief of Air Staff
OC/S	Office of Chief of Staff
OCS	Officer Candidate School
ODCS	Office, Deputy Chief of Staff
R&R	Routing and Record Sheet
P	Pilot
SAAAB	Santa Ana Army Air Base
SAACC	San Antonio Aviation Cadet Center
SETC	Southeast Training Center
S/J	Secretary of War
TAND	Training Analysis and Development
T&O	Training and Operations
TC	Training Command
TTC	Technical Training Command
TXK	Teletypewriter Exchange Message
WCTC	West Coast Training Center
WEFT	Wings-Engine-Fuselage-Tail
WFTC	Western Flying Training Command
WTS	War Training Service

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AHS-90

196

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197

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AHS-90

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199

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34. The stanine scores for pilots, navigators, and bombardiers were changed from time to time to correlate with the student flow of each category. The following table shows the extent of the changes made during world War II:
 

Date	B	N	P
2 July 1942	-	5	-
28 Nov. 1942	3	5	3
10 July 1943	4-4	6	6
12 Aug. 1943	6-4	6	4
1 Nov. 1943	5-4	6	4
15 Nov. 1943	5-5	7	5
27 Dec. 1943	6-5	7	6
24 Oct. 1944	7	7	7

(Ltr., Capt. S. L. Thorndike to Maj. Beemer, sub.: Minimum Qualification for Aircrew Training, 28 Dec. 1943, in AAFFTC Documents; photographic copy of AAFFTC Elimination Rates, Consolidated Chart, 1922-1947, Statistical Division, Hq. FTAF.)
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SECURITY INFORMATION

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AHS-90

200

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AHS-90

SECURITY INFORMATION

201

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AHS-90

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11. RFR No. 1 from T&O to Chief, Training Section, sub.: Period of Time at Cadet Replacement Centers, 28 August 1941 (typed copy), in McNaughton "Notes."
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AHS-90

SECURITY INFORMATION

204

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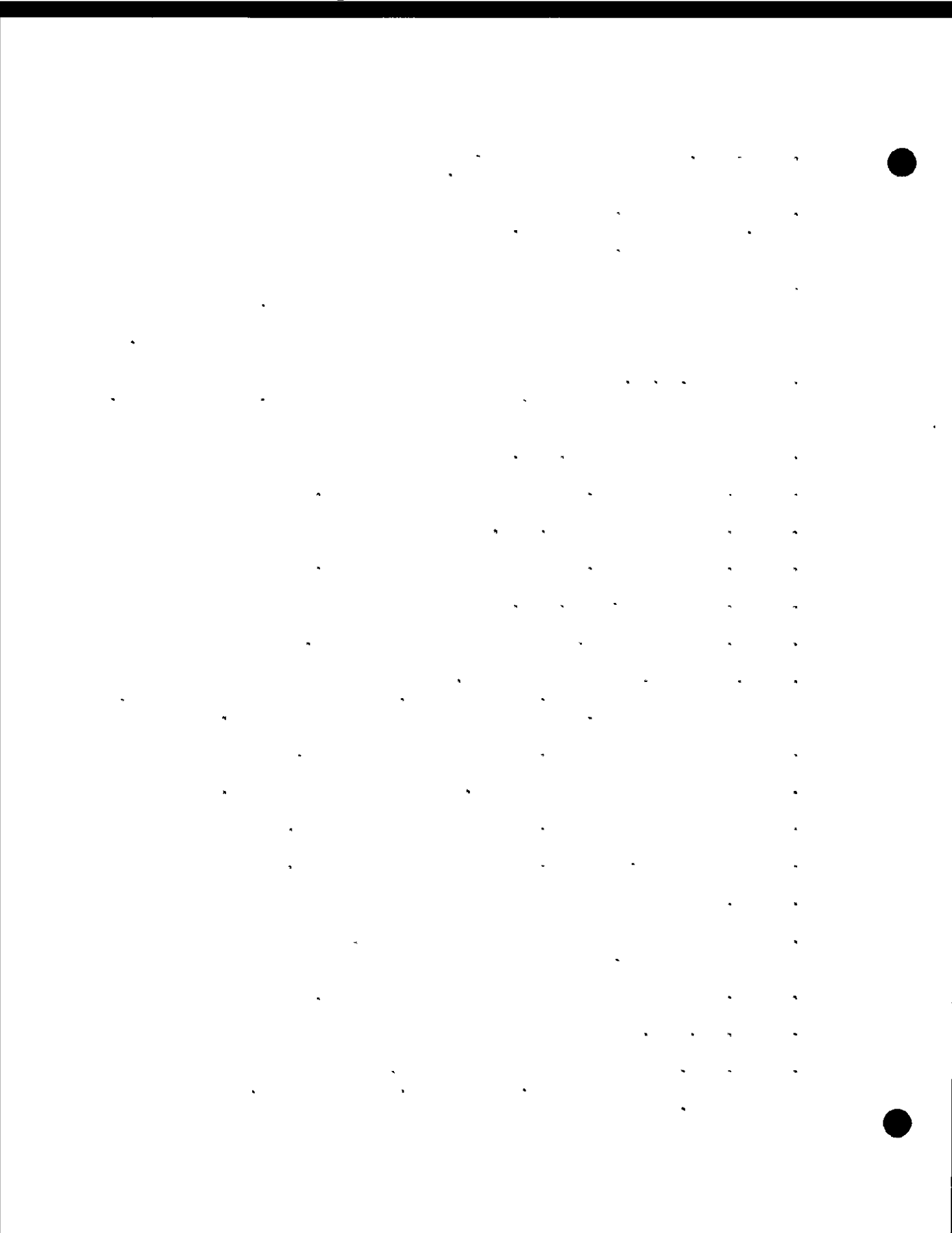
AHS-90

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37. Ltr., Hq. AAFTC to CG AAF, sub.: Psychological and Oxygen Classification, 30 March 1943, in AAFTC Documents.
38. Interview with A. B. Edgar, AAF Preflight (Pilot), Maxwell Field, by 1st Lt. A. N. Kooker, Hist. Off. AFTRC, 30 Oct. 1943 (photostatic copy), in AAFTC Documents.
39. Minutes of Conference on Amalgamation of FTC and TTC and Organization of AAFTC, 22 July 1943 (typed copy), in McLaughton "Notes."
40. TMI, CG AAF to CG AAFTC, 29 May 1943, in AFTRC 353, College Training.
41. Ltr., Col. W. A. Robertson to CG AAFTC, sub.: Recommendation for Changes in Academic Program, 9 Oct. 1943, in Hist. AAFTC, 1 Jan. 1943 to 31 Dec. 1943, III, Documents.
42. Hinton, Air Victory, p. 237.
43. Hist. AAFTC, 1 Jan. 1939 to 7 July 1943, p. 671.
44. Hist. SECIC, 1939-1941, p. 345.
45. Hist. AAFTC, 1 Jan. 1939 to 7 July 1943, p. 676.
46. Hist. CTC, 1942-43, p. 285.
47. Hist. AAFTC, 1 Jan. 1939 to 7 July 1943, p. 678.
48. Ltr., from Hq. FTC to CG AAF, sub.: Preflight Training for Aviation Cadets (Aircrew), 4 Sept. 1943, in Hist. AAFTC, 7 July 1943 to 31 Dec. 1943, XI, Documents. Hereinafter cited as AAFTC Documents.
49. Flight Table "E," 20 Jan. 1943, in AAFTC Documents.
50. Flight Table "E," revised 11 Feb. 1943, in AAFTC Documents.
51. FTC Memo 50-25-2, 27 Feb. 1943, in AAFTC Documents.
52. FTC Memo 50-25-1, 24 Feb. 1943, in AAFTC Documents.
53. Ibid.
54. Special Report, College Training Program, Hq. FTC, 20 April 1943, in AAFTC Documents.
55. Hist. AAFTC, 1 Jan. 1939 to 7 July 1943, p. 582.
56. Ibid., p. 564.
57. Ltr., Hq. AAFTC to CG's all CTD's, 2 Oct. 1943, sub.: College Training Evaluation Report, in Hist. AAFTC, 1 Jan. 1943 to 31 Dec. 1943, VI, Documents.

SECURITY INFORMATION

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AHS-90

SECURITY INFORMATION

206

~~CONFIDENTIAL~~  
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58. FTC Memo 50-25-1, Hq. FTC, 25 Nov. 1943.
59. Ibid.
60. Memo to AC/AS, TG from CG Hq. FTC, 7 Oct. 1943, in AFTC Daily Diary.
61. FTC Memo 50-23-1, Preflight Training, Program of Instruction, 23 May 1944, in AFTC Documents; AHS-48 Documents.
62. AHS-48, p. 15.
63. Ltr., from Capt. i. L. Thorndike to Maj. Eeemer, sub.: Minimum qualifying scores for Aircrew Training, 28 Dec. 1943 (photostatic copy), in AAFTC Documents.
64. AHS-48, p. 15.
65. See footnote 61 above.
66. Hist. SETC, Dec. 1941-Jan. 1943, p. 360.
67. AHS-48, p. 17.
68. Interview by author with Lt. Col. L. D. DuMontier, Dr. of T&D, Hq. FTAF, 15 Jan. 1953.
69. "Identification and Tactical Function of Aircraft," Instructor Guide (1 March 1943), p. 65.
70. AHS-48, p. 18.
71. Hinton, Air Victory, p. 240.
72. AHS-48, p. 19.
73. Ibid.
74. Hinton, Air Victory, p. 240.
75. See footnote 68 above.
76. AHS-48, p. 15.
77. Interview by author with Maj. Gen. G. P. Disosway, CG FTAF, 15 Jan. 1953.
78. AHS-48, p. 16.
79. Ltr., Lt. Col. Louis A. Guenther to CG SETC, sub.: Reconsideration of Training Program, AAF Preflight School (Pilot), 26 Sept. 1942 (photostatic copy), in AHS-48 Documents.
80. See footnote 68 above.
81. AHS-48, p. 19.

SECURITY INFORMATION  
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AHS-90

SECURITY INFORMATION  
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207

- 82. See footnote 61 above.
- 83. See footnote 10 above.
- 84. FTC Memo 50-1-1, 21 April 1943, (typed copy) in McNaughton "Notes."
- 85. Hinton, Air Victory, p. 237.
- 86. FTC Memo 50-27-1, 12 May 1944; reissued 3 Aug. 1944, in AAFTC Documents.
- 87. Ibid.
- 88. Interview by author with Maj. James F. Burdette, formerly military instructor at Santa Ana, 23 Jan. 1952; 16 Jan. 1953.
- 89. FTC Memo 50-21-11, 9 Nov. 1944, in AAFTC Documents.
- 90. See footnote 31 above.
- 91. FTC Memo 50-21-1, 27 Aug. 1943, in AAFTC Documents.
- 92. AHS-48, p. 25.
- 93. FTC Memo 50-21-1; see footnote 91 above.
- 94. FTC Memo 50-21-10, 9 Nov. 1944, in AAFTC Documents.
- 95. FTC Memo 20-28-1, in AAFTC Documents.
- 96. FTC Memo 50-0-3, in AAFTC Documents.
- 97. FTC Memos 34-3; 34-3A; 34-3B, in AAFTC Documents.

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AHS-90

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Chapter IV

1. Hist. of Maxwell Field, 1 Jan. 1939 - 7 Dec. 1941, pp. 264-66.
2. Interview with Professor R. Bliss Edgar, AAF Preflight School (Pilot) Maxwell Field, Alabama, by 1st. Lt. Arthur R. Kooker, Historical officer AFTFC, at Maxwell Field, Alabama, 30 Oct. 1943 (photostatic copy), in Hist. AAFPTC, VIII, Documents.
3. Ibid.
4. Interview with Maj. Louis E. Dreyer, CO, 882d Preflight Training Squadron (P), San Antonio Aviation Cadet Center, San Antonio, Texas, by Asst. HO, A-2, AAFPTC, 2 March 1944 (photostatic copy), in Hist. AAFPTC, VIII, Documents.
5. Ibid.
6. History of the Preflight School (Pilot), Santa Ana Air Base, Santa Ana, California, 15 June 1942 - 1 January 1943, pp. 55-60 (carbon copy of monograph), in USAF HD.
7. Hist. SETC, 1939-1941, p. 325.
8. Report of Conference on Preflight Training, Fort Worth, Texas, 10-11 July 1944 (mimeographed copy), in Hist. AAFPTC, July 1943 - Dec. 1944, XI, Documents.
9. Interview by author with Maj. J. Burdette, formerly military instructor at Santa Ana, 23 Jan. 1952.
10. Hist. CFTC, 1941-42, p. 357.
11. See note 4 above.
12. Record of Preflight Conference, 6 Nov. 1945, p. 8, (carbon copy of minutes) in USAF HD.
13. Memo, A/GS, G-1, to CAG, 14 Jan. 1942, in AAG 210.1-I-1, Appointments.
14. AG 201.1 (21 Jan. 1942), RE-A, 26 Jan. 1942, as quoted in Hist. AAFPTC, 1 Jan. 1939 to 7 July 1943, p. 628.
15. Memo, AG/AS, A-1, to Chief, Personnel Div., SOS, 8 June 1942, in AAG 210.1K-1, Appointments.
16. Hist. AAFPTC, 1 Jan. 1939 to 7 July 1943, p. 629.
17. Ltr., A/GS, A-1, Hq. AAF, to CFTC, 31 July 1942, in AAG 201.1-L, Appointments.

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AHS-90

~~SECURITY INFORMATION~~

209

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18. See note 2 above.
19. Memo, SW to A/CS, G-1, Hq. AAF, 29 Aug. 1942, in AAG 210.1-L, Appointments.
20. See note 2 above.
21. Memo, AFRIT to CG FTC, 18 Dec. 1942, in AAG 352.16, Instructors.
22. Hist. CFTC, 1943, p. 174.
23. Hist. CFTC, 1941-42, III, p. 367.
24. See note 8 above.
25. Hist. CFTC, 1943, VI, p. 1180.
26. Memo, AC/AS, A-1, to A/CS, G-1, 17 Oct. 1942, in AAG 210.1-L, Appointments.
27. Hist. CFTC, 1941-42, p. 356.
28. See note 2 above.
29. See note 8 above.
30. Ltr., Col. W. F. Stewart, CG USAF Preflight School, Lackland AFB, to J. E. Hollon, 1 Feb. 1953.
31. Interview by author with T. R. Kemp, Chief, Training Methods and Instruction, Training Branch, Goodfellow AFB, 11 June 1952.
32. Interview by author with Lt. Col. L. D. DuMontier, Dr. of Training Analysis and Development, FTAF DCS/O, 15 January 1953.
33. AHS-48, pp. 37-38.
34. Hist. AAFFTC, 1 Jan. 1939 to 7 July 1943, III, p. 644.
35. TWX, CG SOTC to CG FTC, 13 July 1943, in A-3 Div. files, Specialized Aircrew Training Section, AFTAC; TWX, CG SOTC to CG FTC, 14 July 1943, in ibid; TWX, CG SETC to CG FTC, 14 July 1943, in ibid.
36. Hist. CFTC, 1943, I, p. 239.
37. See note 2 above.
38. Statistics compiled as result of interviews by author with W. F. Parker, Dr. of Academic Training, Hondo AFB, 10 June 1952, and T. R. Kemp, Chief, Training Methods and Instruction, Training Branch, Goodfellow AFB, 11 June 1952.
39. See note 4 above.
40. History of the Preflight School (Pilot), Santa Ana Air Base, Santa Ana, California, 15 June 1942 - 1 Jan. 1943, p. 60.

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AHS-90

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210

- 41. Ibid., p. 61.
- 42. Ibid.
- 43. Hist. CFTC, 1944, V, p. 813.
- 44. Memo, CG WCTC to CG FFC, 14 May 1943, in A-3 Div. files, Specialized Aircrew Training Sec., AFTRC.
- 45. See note 31 above.
- 46. See note 4 above.
- 47. Ibid.
- 48. Hist. CFTC, 7 Dec. 1941 - 31 Dec. 1942, III, pp. 348-49.
- 49. AHS-48, p. 45.
- 50. Hist. SFTC, 1941-42, pp. 367-68.
- 51. Hist. EFTC, 1943, I, p. 218.
- 52. See note 8 above.
- 53. Hist. EFTC, 7 Dec. 1941-1 Jan. 1943, I, pp. 370-71.
- 54. History of Preflight School (Pilot), Santa Ana Air Base, Santa Ana, California, 15 June 1942 - 1 Jan. 1943, p. 134.
- 55. Hist. AAFTTC, 1 Jan. 1939 to 7 July 1943, III, p. 690.
- 56. Hq. AFTRC, Daily Diary, A-3 Div., 17 March 1944.
- 57. Hist. SAAAB, 1942, pp. 120-21.
- 58. See note 8 above.
- 59. See note 4 above.
- 60. Interview by author with Maj. P. A. Davis, Course Monitor, Primary Training, Hq. WAAF, 15 Jan. 1953.
- 61. See note 4 above.
- 62. See note 8 above.
- 63. See note 30 above.

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AHS-90

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NOTES

Chapter V

1. Consolidated Preflight Flow Charts, 1941-44 (photostatic copy), in AHS-48, Documents.
2. Various statistics on the number of preflight students during World War II are inconsistent; for example, the statistical training chart prepared by the Personnel Statistics Division, and issued on 12 August 1948 (a photostatic copy of the chart is in USAF HDO, shows the total number of graduates from preflight during the period from 12-31-42 to 8-31-45 to be as follows:

Pilot trainees	231,992
Bombardier trainees	40,720
Navigator trainees	41,684
Navigator-bombardier trainees	7,541
Preflight School (SAAGC)	10,999

Total	332,936
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3. Estimated entry for Students, Pilot Training, 30,000 Program, 27 November 1941, in Training Programs, 30,000 Program, Hist. Sec. files, AFTRC.
4. See note 3 above.
5. Hist. AFTRC, 1941-42, I, p. 346.
6. Interview with Maj. Louis E. Dreyer, CO, 882d Preflight Training Squadron (P) San Antonio Aviation Cadet Center, San Antonio, Texas, by Asst. HO, A-2, AAFOTFC, 2 March 1944 (photostatic copy), in Hist. AAFOTFC, VIII, Documents.
7. Hist. AAFOTFC, 1 Jan. 1939 to 7 July 1943, p. 733.
8. Pilot Training Flow Chart, 80,000 program, Hq. AAFOTFC, 1 May 1943, in Pilot Training Flow Charts, Hist. Sec. files, AFTRC.
9. Hist. WOTC, 1943, pp. 198-99.
10. See note 1 above.
11. AAF Consolidated Flow Chart, 1 July 1939 through 30 June 1948, prepared by Personnel Statistics Division, Director of Statistical Services, Comptroller, 12 August 1948 (photostatic copy), in USAF HD.
12. See note 1 above.
13. Ibid.

SECURITY INFORMATION  
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SECURITY INFORMATION

AHS-90

212

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14. Ibid.
15. 8th SCU, Hq. AFTRC, Daily Diary, 5 Jan. 1944, 20 Jan. 1944, 28 March 1944.
16. See note 1 above.
17. Ibid; Hist. AAFTC, 7 July 1943 - 31 Dec. 1944, p. 317.
18. Hist. WFTC, 1 Sept. - 31 Oct. 1944, p. 182.
19. Hist. EFTC, Sept.-Oct. 1944, p. 74.
20. Hist. WFTC, 1 Sept. - 31 Oct. 1944, pp. 186-87.
21. Hist. AAFTC, 1 Jan. 1945 - 30 Apr. 1945, p. 61.
22. Hq. CFTC, Daily Diary, 101, 27 Apr. 1945.
23. Hist. CFTC, 1 May 1945 - 30 June 1945, p. 366.
24. See note 9 above.
25. Ltr., Irving Ripps, Chief Historian, Hq. ATC, to W. J. Hollon, 13 Sept. 1951.
26. See note 9 above.
27. The detailed flow charts cited in footnote 1 above give only the totals of holdovers for each class without regard to causes.
28. 1st ind. (memo for CG AFFTC from Hq. GCTC, sub.: Standard of proficiency and eliminations, 6 Apr. 1942), Hq. AFFTC to CG GCTC, 14 Apr. 1942, in AFTRC 352.15.
29. See note 1 above.
30. Hist. SAAAB, 1943, pp. 137-38.
31. Ibid., pp. 197-99.
32. Hist. CFTC, 1943, p. 324.
33. Hist. EFTC, 1943, pp. 259-60.
34. Hist. WCTC, 1941-42, p. 287.
35. Hq. AFTRC, A-1, Div. Daily Diary, 8 Oct. 1942, 2, 7, 14, and 21 Nov. 1942, 2 Dec. 1942.
36. TC Memo 50-25-11, 8 Apr. 1944.
37. Report of Conference on Preflight Training, Fort Worth, 10-11 July 1944 (mimeographed copy), in Hist. AFTRC, July 1943 - Dec. 1944, XI, Documents.

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AHS-90

213

38. Hist. AFTC, 1 Jan. 1939 - V-J Day, Table 23, p. 1277.
39. Ibid., pp. 1242, 1277.
40. Interview by author with Maj. P. A. Davis, Course Monitor, Primary Training, Hq. USAF, 15 Jan. 1953.
41. See note 36 above. Most of the French graduates were given flying technical training. Only 1165 were turned out as pilots, 53 as navigators, and 221 as bombardiers.
42. Hist. AFTC, 1 Jan. 1939 - V-J Day, p. 1264.
43. See note 38 above. The total number of Latin American students who were graduated as pilots, navigators, or bombardiers between January 1942 and October 1945 was 398. Several hundred others eventually completed some phase of technical training.
44. Hist. AFTC, Nov.-Dec. 1944, p. 533.
45. Interview by author with Maj. James T. Purdette, formerly military instructor, Santa Ana Preflight School, 23 January 1952.
46. See note 42 above.
47. See note 1 above.
48. Ibid.
49. 1st ind. (ltr. for CG SETC from OGAC, sub.: The two class system in pre-flight schools, 4 Sept. 1941) CG SACTC to OGAC, 17 Sept. 1941, in AFTRC Hist. Sec. files.
50. Ltr., Col. William F. Stewart, CG Lackland Preflight School, to J. E. Hollon, 1 February 1953.
51. Interview by author with Lt. Gerald Tackwell, USAF, 15 May 1952.
52. Ibid.
53. Hist. AFTC, 1943, p. 255.
54. Hist. AFTC, 1943, p. 1238.
55. Ibid.
56. Interview by author with Col. Louis W. Proper, CS FTAF, 15 Jan. 1953.
57. Hist. AFTC, 1943, p. 254.
58. See note 51 above.
59. Hist. SAAAB, Activation - 31 Dec. 1942, p. 165.

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214

AHS-90

- 60. Hq. AFTRC A-1 Div., Daily Diarv, 14 Oct. 1942.
- 61. AHS-43, p. 52.
- 62. Hist. AAFPTC, 1 Jan. 1939 to 7 July 1943, p. 692.
- 63. Hist. CFTC, 1943, pp. 1253-54.
- 64. Hist. AAFPTC, 1 Jan. 1939 to 7 July 1943, p. 693.
- 65. See note 49 above.
- 66. Report of Conference on Preflight Training, 6 Nov. 1945, p. 14 (carbon copy), in USAF HD.
- 67. TWA, C. C. Moseley, Aviation Contractor, Cal-Aero Flying School, Ontario, California, to C/AS 127 Sept. 1942, in AAG 211F, Cadets, as quoted in AHS-48, p. 49.
- 68. WFTC Training Memo No. 26, 24 March 1943.
- 69. See note 66 above.
- 70. Ibid.
- 71. See note 45 above.
- 72. See note 40 above.
- 73. See note 66 above.

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AHS-90

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NOTES

Chapter VI

1. Lt. Col. L. D. DuMontier, previously identified, made this statement to the writer on 3 June 1952. In a subsequent interview on 15 January 1953, he was asked to qualify the statement and replied as follows: "It may be stretching a point to state that the modern airman has to be a scientist, however, he does have to know a little bit about a great number of scientific fields. But when you consider the fact that one-third of the USAF personnel is in the training business, then it is not altogether an exaggeration to say that the modern airman also has to be a teacher."
2. Ltr., CG AFTRC to CG AAF, 4 Sept. 1943, in A-3 Div. files, Specialized Aircrew Training Sec., AFTRC.
3. Interview by author with T. E. Kemp, Chief, Training Methods and Instruction, Training Branch, Goodfellow AFB, 11 June 1952.
4. Interview by author with Maj. F. A. Davis, Course Monitor, Primary Training, Hq. FTAF, 15 Jan. 1953.
5. Interview by author with Dr. Arthur R. Doerr, former navigator in AAF, 3 March 1952.
6. Ltr., DC/S SACTC to CG AAFTRC, 17 Oct. 1942 (typewritten copy), in McNaughton "Notes."
7. Record of Preflight Conference, 6 Nov. 1945, p. 8 (carbon copy of minutes), in USAF HD.
8. Ibid., p. 13.
9. Conference on Amalgamation of FPC and TTC and Organization of AAFTC, 22 July 1943 (typed copy of minutes), in McNaughton "Notes."
10. Interview with Professor R. Eliss Edgar, AAF Preflight School (Pilot) Maxwell Field, Alabama, by 1st Lt. Arthur R. Kooker, Historical officer AFTRC, at Maxwell Field, Alabama, 30 Oct. 1943 (photostatic copy), in Hist. AAFTC, VIII, Documents.
11. Interview with Maj. Louis E. Dreyer, CO, 832d Preflight Training Squadron (P), San Antonio Aviation Cadet Center, San Antonio, Texas, by Asst. HO, A-2, AAFCFTC, 2 March 1944 (photostatic copy), in Hist. AAFTC, VIII, Documents.
12. Interview by author with Dr. Tom Greer, former instructor at Santa Ana Pilot Preflight School, 5 July 1951.
13. See note 7 above.

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AHS-90

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216

14. Ibid.
15. Interview by author with Lt. Col. L. D. DuMontier, Dr. of Training Analysis and development, FTAF DCS/O, 8 June 1952.
16. Ibid.
17. Notes by Lt. A. R. Kooker on Conference on Preflight Training, Hq. AFTRG, 11 July 1944, as cited in Hist. AAFTC, 7 July 1943 - 31 Dec. 1944, p. 332.

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NOTES

Chapter VII

1. Hist. CFTC, 1 May 1945 - 30 June 1945, p. 366, in FTAF HD.
2. Hist. EFTC, 1 Sept. - 15 Dec. 1945, p. 108, in USAF HD.
3. Hist. AAFFTC, 1 Jan. 1946 - 31 March 1946, p. 40.
4. Ltr., CG AAFFTC to CO Goodfellow Fld., 11 Feb. 1946, 353 Tng.
5. Ltr., CG AAFFTC to CO Randolph Fld., 11 Feb. 1946, 353 Tng.
6. FTC Memo 50-3-2, p. 1.
7. Hist. AAFTC, 1 July - 30 Sept. 1946, p. 365 (Document III, 1).
8. Hq. FDTRC, Staff Conference, 13 Dec. 1946, A-2 Div., Hq. FDTRC, as cited in Hist. FDTRC, 1 Oct. - 31 Dec. 1946, p. 24.
9. Ltr., to the writer from Irving Ripps, Historian, ATC USAF, 18 July 1952.
10. Data supplied by Stat. Control Sect., Hq. FDTRC and quoted in Hist. FDTRC, 1 July - 30 Sept. 1947, p. 71.
11. Ltr., AFTRC to CG FDTRC, sub.: Flying Training Directive #2, in Hist. FDTRC, 1 July - 30 Sept. 1947, p. 117 (Document I, 1).
12. FDTRC Reg. 50-9-1, Hq., 25 Sept. 1947, in FTAF HD.
13. Hist. FDTRC, 1 July - 30 Sept. 1947, p. 11.
14. 1st ind. (ltr., FDTRC to Randolph Fld., 28 July 1947), Randolph Field to FDTRC, 13 September 1947.
15. Hist. FDTRC, 1 July - 30 Sept. 1947, p. 16.
16. Ibid., p. 18.
17. Hist. FDTRC, 1 Oct. - 31 Dec. 1947, p. 4.
18. Ltr., FDTRC to AFTRC, 13 Nov. 1947, A-3 Div., Hq., FDTRC.
19. Hist. FDTRC, 1 Oct. - 31 Dec. 1947, pp. 67, 159-62, 141, 145, 150.
20. Leland D. Baldwin, The Stream of American History (New York, 1952) II, 870.
21. 1st ind. (ltr., Hq. FDTRC to CO, Randolph Fld., 18 Nov. 1947), Col. Stanton T. Smith, Commandant, Air Force Pilot School (Primary and Basic) Randolph Fld., Texas, 10 Dec. 1947, in Hist. FDTRC, 1 Oct. - 31 Dec. 1947, Document II, 12 (p. 209).

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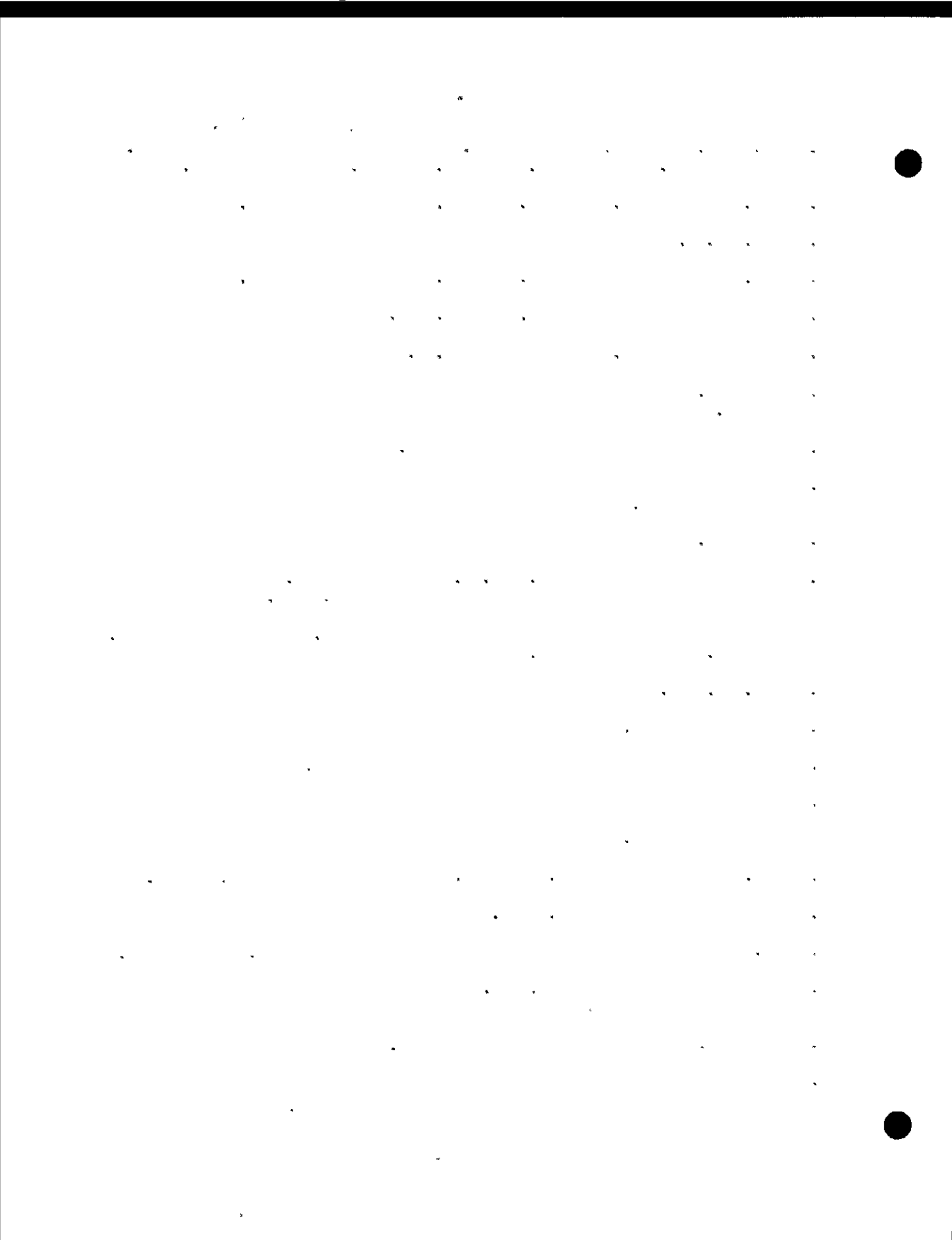
218

22. Ltr., Col. George B. Dany, DC/S Hq. FDTRC to CO, Randolph Fld., 18 Dec. 1947, in Hist. FDTRC, 1 Oct. - 31 Dec. 1947, p. 141 (Document I).
23. Hist. FDTRC, 1 Oct. - 31 Dec. 1947, p. 150 (Document I, 1).
24. Ibid., p. 7.
25. Hist. FDTRC, 1 Jan. - 31 Mar. 1948, p. 173 (Document I, 1).
26. Hist. FDTRC, 1 July - 31 Dec. 1948, p. vii.
27. Hist. FDTRC, 1 Apr. - 30 June 1948, p. 9.
28. FDTRC Reg. 51-21, 7 July 1948, and FDTRC Reg. 52-21A, 15 July 1949, in FTAF HD.
29. Hist. ATRC, 1 July 1949 - 31 Dec. 1949, p. 75.
30. "Preflight Training Now Included in Cadet Program," Wing Spread, 29 July 1949, in FTAF HD.
31. FDTRC Reg. 50-21A, 30 June 1949, in FTAF HD.
32. Interview by author with Lt. Col. L. D. DuMontier, Dr. of Training Analysis and Development, FTAF headquarters, DCS/O, 15 Jan. 1953.
33. Preliminary draft of extracts from Chapter I, Hist. FTAF, 1 May - 31 Dec. 1951, pp. 102-3, in FTAF HD.
34. Ibid., p. 102.
35. See note 32 above.
36. FDTRC Reg. 51-105401-1, 15 January 1952, in FTAF HD.
37. See note 33 above.
38. See note 32 above.
39. Hist. CFTC & WFTC, 1 Sept. - 31 Dec. 1949, pp. 208-9, 213-14, 218-19.
40. Hq. AAFFTC, GO 19, 12 Feb. 1946.
41. Ltr., to the writer from Irving Lipps, Historian, ATC USAF, 18 July 1952.
42. Interview by author with Lt. Col. M. T. Reid, Dr. of Observer Training, FTAF, 15 January 1953.
43. FDTRC Reg. 51-30, 10 Oct. 1949, in FTAF HD.
44. See note 41 above.

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219

45. Interview by author with Lt. Col. M. T. Reid, Dr. of Observer Training, FTAF, 10 June 1952.
46. Ltr., Irving Wipps, Historian, ATRC, USAF, to W. E. Hollon, 18 July 1952.
47. The story of civilian contract training is well covered in a recent article by Eileen F. Barrett, "Civilian Contract Training," Training Analysis and Development Information Bulletin (Spring, 1951), pp. 12-19.
48. Col. W. R. Morgan, formerly director of Training, Stalling Air Base, Kingston, N. C., "Recommended Project Streamline" (mimeographed copy in possession of the author).
49. Ibid.
50. Interview by author with Mr. W. P. Parker, Hondo Air Base, 11 June 1952.
51. TRC-T3, in FTAF HD.

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NOTES

Chapter VIII

1. Hist. FDTRC, 1 July 1948 - 31 Dec. 1948, pp. 31-32.
2. Interview by the author with Lt. Col. William L. Reynolds, Dr. of Primary Pilot Training, FTAF headquarters, 28 Dec. 1952.
3. Interview by the author with Lt. Col. H. C. Collins, Dr. of Primary Pilot Training, FTAF headquarters, DCS/O, 15 Jan. 1953.
4. Interview by the author with Brig. Gen. G. P. Disosway, CG FTAF, 15 Jan. 1953.
5. Interview by author with Lt. Col. L. B. Shulstad, Asst. Dr. of Primary Pilot Training, FTAF headquarters, 15 Jan. 1953.
6. Interview by author with Lt. Col. L. D. Du'ontier, Dr. of Training Analysis and Development, FTAF headquarters, 10 June 1952; interview with Lt. Col. William L. Reynolds (see note 2 above), 10 June 1952.
7. FTAF Course Outline 51-\_\_\_ (number unassigned), in FTAF HD.
8. Interview by author with Lt. Col. L. D. Du'ontier (see note 6 above), 15 Jan. 1953.
9. Interview by author with Lt. Col. William L. Reynolds (see note 6 above), 10 June 1952.
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221

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11



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AHS-90

223

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SECURITY INFORMATION

AHS-90

224

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- Lt. Col. Mel Schulstad, DCS/O, Hq. FTAF, Waco, Texas.
- Lt. Col. William Reynolds, DCS/O, Hq. FTAF, Waco, Texas.
- Colonel Nolan C. Hatcher, USAF, former flight instructor, Randolph Field.
- Major F. A. Davis, Course Monitor, Primary Training, Hq. FTAF, Waco, Texas.
- Lt. Col. L. D. DuMontier, Director of Training and Analysis and Development, Hq. FTAF, Waco, Texas.
- Lt. Col. Robert L. Horton, Asst. Wing Operations Officer, Lackland Air Force Base, San Antonio, Texas.
- Colonel William T. Stewart, Commanding Officer, Lackland Air Force Base.
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SECURITY INFORMATION  
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AHS-90

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225

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210.105C-2	Candidates for Appointment
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211E1	Cadets
211F	Cadets
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352.11H	Courses of Instruction
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MHS-90

~~RESTRICTED  
SECURITY INFORMATION~~

226

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AHS-90

~~RESTRICTED~~ SECURITY INFORMATION  
~~CONFIDENTIAL~~

I N D E X

A

AAF Headquarters, 33, 51, 70, 101  
 AAF Military Training Center, 152  
 Air Corps, 14, 17, 18, 20, 22, 23,  
 25, 26, 28, 42, 55, 56, 58, 59,  
 61, 62, 64, 65, 96, 133, 170  
 Air Corps Training Center, 10, 12  
 13, 17, 18  
 Air Service, 9, 10  
 Allied Nations, 142  
 Arnold, H. H., 7, 15, 17, 21, 35,  
 36, 46, 47, 55, 169  
 Arrowood, Roy W., 98  
 ATRC Headquarters, 160, 164, 177,  
 182, 183  
 Aviation Cadet Qualification Exam-  
 ination, 20, 35, 39, 46, 75

B

Bainbridge AFB, 175  
 Bennett, Lt. Col. Burlin, 134  
 Bombardment training, 25, 71-73, 123,  
 165-169, 187-188, 193, see also  
 Aircraft Observer training  
 Brant, Maj. Gen. Gerald G., 60  
 British trainees, 128-129  
 Brooks Field, 9, 17  
 "Eurma Road," 94, 99  
 Bushey, Col. Orin J., 40

C

CAA, 38, 47, 174  
 Carlstrom Field, 8  
 Cassady, Lt. Col. Emmett B., 156,  
 157  
 Central Flying Training Command,  
 80, 129, 130, 151  
 Central Instructor's School, 112  
 Chicago, University of, 143  
 Chief of Air Corps, 15, 21, 22, 55,  
 58, 62, 63, 64, 65, see also  
 Arnold  
 Chief Signal Corps Office, 2  
 Chinese trainees, 130-131  
 Civil Air Regulations, 78, 79  
 Civilian instructors, 97-100

Civilian Pilot Training, 16, 36, 46, 47,  
 49, 50, 169-176  
 Classification centers, 27-34, 53  
 Code, aural and visual, 84-5  
 College Park, Maryland, 2, 3  
 College Training Detachment, 48, 49  
 College Training Program, 32, 35-52, 73-82  
 Columbus AFB, 160, 171, 182, 183  
 Craig Field, 129, 173

D

Davidson, Lt. Col. Howard, 169  
 Davis, Col. M. F., 7  
 Davis, Major P. A., 189  
 Dawson, Lt. P. F., 68  
 Defense, Department, of, 157, 160  
 Disosway, Maj. Gen., G. P., 88  
 Dreyer, Maj. Louis E., 113  
 DuMontier, Lt. Col. L. D., 85, 87 89 107,  
 149, 179, 181, 182, 185  
 Duncan Field, 10

E

Eastern Flying Training Command, 27, 80, 148  
 Edgar, R. P., 69-70, 97  
 Eighth Air Force, 67-68  
 Ellett, Lt. D. E., 68  
 Ellington Field, 6, 8, 26, 71, 106, 126, 135,  
 151, 167

F & G

FDTRC Headquarters, 156, 157, 158, 160, 177  
 FTAF Headquarters, 50, 88, 167, 182, 183,  
 185, 189  
 Flying Training Command, 72, 86, 134, 152  
 Fort Meyer, Virginia, 2  
 Fort Worth conferences, 51, 70, 89, 99, 106,  
 112, 116, 128  
 Foulis, Lt. P. D., 2, 3  
 French trainees, 129-130  
 FTC Headquarters, 37, 38, 41, 42, 43, 49,  
 75, 79, 80, 87, 105, 116, 137, 152  
 Germany, 17, 18, 21, 121  
 Giles, Lt. Gen. Barney H., 5

~~RESTRICTED~~

~~CONFIDENTIAL~~



SECURITY INFORMATION

AHS-90

228

~~RESTRICTED CONFIDENTIAL~~

Goodfellow AFB, 109, 112, 115,  
118, 152, 156, 160, 161, 171,  
172, 174, 176  
Gosport system, 10  
Greenville, AFB, 171, 182, 183  
Grubbs, Major Stanley D., 66  
Group psychological testing, 30  
Guenther, Lt. Col. Louis A., 67,  
68  
Gulf Coast Training Center, 14,  
27, 29, 57, 58, 62, 79, 107,  
108, 109, 119

H

Hanley, Maj. Gen. Thomas J., 70  
Hinton, Harold E., 86  
Hondo AFB, 109, 111, 115, 175, 176  
Horton, Lt. Col. Robert E., 186,  
187  
Humphreys, Lt. F. E., 2, 3

J & K

Johnson, Louis, 170, 178  
Kelly Field, 8, 9, 13, 15, 23, 24,  
26, 29, 66, 93, 98, 112, 113, 116,  
120, 121, 140  
Korean War, 160, 178

L

Lackland AFB, 95, 106, 115, 117, 113,  
133, 143, 168, 173, 177, 182, 183,  
186, 187, 188, 190, 193, See also  
Lackland Preflight School  
Lahm, F. P., 2, 3, 10, 11  
Latin American trainees, 130  
Lee, Theopolis, 169  
Lindbergh, Col. Charles A., 9  
Link trainer, 56, 57, 58

M

Maps, Charts and Aerial Photos, 88-  
89  
March Field, 8  
Marshall, Gen. George C., 17  
Mathematics, Applied Aero, 87-88  
Maxwell AFB, 17, 18, 23, 24, 26, 27,  
53, 57, 58, 59, 62, 63, 64, 66, 67,  
69, 71, 89, 93, 94, 97, 99, 102,  
103, 106, 110, 112, 114, 116, 119,  
120-124, 133, 135, 139, 140, 148,  
151, 192, see also Maxwell Field  
Preflight School

Mather Field, 166  
MDAP, 160, 187, 189  
Military Aeronautics, Division of, 7, 8  
Military training subjects, 91-93  
Minter Field, 24  
Morale, 25  
Hoffett Field, 18, 19, 23  
Moseley, C. C., 169

N, O, P

Navigator training, 25, 71-73, 123  
Nashville, Tenn., 29, 138, 139, 148  
Negro trainees, 119, 132  
OCS, 102-103, 182  
Office of Chief of Air Force, 19  
Ohio State University, 86  
Parker, W. P., 111, 175,  
Parks, Oliver P., 169, 170  
Pearl Harbor, 19  
Perrin AFB, 160, 165  
Pershing, Gen. John J., 4  
Physical training subjects, 93-95  
Physics, Applied Aero, 89-90  
Post Field, 8  
Preflight curriculum, 55ff  
Principles of Flight, 90

R

Randolph Field, 13, 15, 17, 24, 27, 64, 71,  
111, 116, 153, 154, 156, 157, 159, 161,  
169, 170, 192,  
Recognition, aircraft, 85-87  
Recognition, Naval Vessel, 90  
Reid, Lt. Col. M. T., 167, 187, 188  
Reis--El Eara, Major Henry, 115  
Replacement Training Center, 23, 60  
Renshaw system, 86, 143  
Reynolds, Lt. Col. William R., 50, 179  
Roosevelt, W. D., 14, 17  
Royal Canadian Air Forces, 21, 55, 56, 57,  
157  
Russia, 121

S

San Antonio Aviation Cadet Center, 14, 24,  
54, 66, 93, 100, 106, 116, 121, 123, 124,  
139, 147, 151, 187  
Santa Ana AFB, 18, 24, 27, 29, 66, 67, 70,  
94, 98, 110, 111, 113, 116, 121, 126,  
133, 135, 139, 148, 151, see also Santa  
Ana Preflight School  
Santa Ana Classification Center, 45  
Selfridge, Lt. T. E., 2

RESTRICTED

~~CONFIDENTIAL~~

SECRET



SECURITY INFORMATION

AHS-90

~~RESTRICTED~~

~~CONFIDENTIAL~~

Selman Field, 26  
 Signal Corps, 2  
 Signal Corps Training Section, 7  
 Smith, E. B., 93  
 Snyder Board, 98, 104, 108  
 Southeast Training Center, 18, 57, 58,  
 67, 79, 97, 103, 104, 107, 108,  
 119, 123, 129, 138  
 Stanford Research Institute, 170, 171  
 Stanine, 31-32  
 Steele, Brig. Gen. Wycliffe E., 182  
 Stratemeier, Maj. Gen. George E., 71

World War II, 4, 5, 6, 10, 11, 13, 16,  
 17, 20, 27, 34, 53, 63, 85, 96, 100,  
 101, 107, 109, 117, 141, 142, 150,  
 152, 154, 164, 166, 171, 178, 187  
 Wright, Orville, 1, 2  
 Wright, Wilbur, 1, 2

Y

Yount, Maj. Gen. Barton K., 20, 44, 52, 60

T

Taliferro Field, 6  
 Technical Training Command, 32, 33,  
 69  
 Texas Technological College, 33  
 Texas, University of, 4-5, 139  
 Training Aids Division, 118  
 Training Analysis and Development,  
 85, 86  
 Training Center, 60  
 TTAF, 185, 187  
 Turner Field, 128

U

USAF, 51, 157, 160, 164, 165, 168  
 175, 177, 178, 179, 182, 190,  
 191, see also USAF Training  
 Command

W

Waco AFB, 160  
 War Department, 21, 23, 37, 46, 102, 151  
 Weaver, Brig. Gen. Walter A., 22, 58,  
 60, 61, 62, 65, 66, 96, 97, 132  
 Webster, Major R. W., 55  
 WEF system, 86  
 Welsh, Brig. Gen. W. W., 22  
 West Coast Training Center, 18, 24, 27,  
 42, 46, 49, 57, 58, 62, 70, 79, 80,  
 86, 103, 107, 108, 110, 119, 130  
see also WFTC  
 West Point honor code, 136-37  
 Williams AFB, 24, 131  
 World War I, 4, 5, 6, 7, 8, 20, 27,  
 53, 56, 192

SECURITY INFORMATION  
~~CONFIDENTIAL~~  
 RESTRICTED

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