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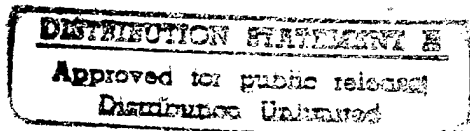
## AIR FORCE HERITAGE TOOLBOOK

A Technology Project

Presented To

The Directorate of Research

Air Command and Staff College



19971202 025

In Partial Fulfillment of the Graduation Requirements of ACSC

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April 1996

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01 DECEMBER 1997

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The views expressed in this academic research project are those of the authors and do not reflect the official policy or position of the US Government or the Department of Defense.

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## *Acknowledgments*

The Air Force Heritage ToolBook is a multimedia resource covering the development of airpower and the history and progression of the United States Air Force from its infancy prior to World War I through its decisive role in the Gulf War. While not a definitive historical record of every campaign, aircraft, or individual, this project successfully captures the life of the United States Air Force as it faced challenges in politics, technology, and leadership. This ToolBook exists because of the guidance and assistance of numerous individuals and agencies. The Team owes special thanks to Lt Col Gary “Mo” C. Morgan, who served as its Faculty Research Advisor and mentor. Also, the group owes special appreciation to the following agencies for their time and assistance:

- Air Force Academy Association of Graduates
- Air Force Association
- Air Force Historical Research Agency
- Air University Library
- National Air and Space Museum of the Smithsonian Institution
- Office of Air Force History
- United States Air Force Museum
- Wright Brothers National Memorial

*Abstract*

The Air Force Heritage ToolBook is a multimedia encyclopedia addressing the heritage of the United States Air Force, from the beginning of modern, powered, heavier-than-air flight to the present. Topics addressed include Air Force leadership, combat heroes, aircraft, campaigns, doctrine, enemies, evolution of the Air Force as an organization, and much more. The framework is based on "airpower eras," including the Early Years, World War I, the Interwar Years, World War II, the Korean War, the Vietnam War, the Cold War, and the Gulf War. This project celebrates the proud heritage of the United States Air Force in both an informative and entertaining style.

## Chapter 1

### The Project

*Only the study of military history is capable of giving those who have no experience of their own a clear picture of what I just called the friction of the whole machine.*

—Major General Carl von Clausewitz

The Air Force Heritage ToolBook is the right product developed at the right time. With the 50th Anniversary of the Air Force approaching, this ToolBook offers members, leaders, friends, and admirers of the Air Force a friendly, easy to understand vehicle to communicate this fascinating story. What sets this technology tool apart from similar academic and commercial efforts are the unique characteristics of Air Force history. The entire history of the Air Force has taken place within the confines of the 20th Century. The combined experience of the authors exceeds the age of the Air Force itself! Capturing the history of the Air Force in this fashion offers not only the opportunity to glimpse the trail left behind, but also to influence the path to be taken in the future. Indeed, it is with this thought in mind that the authors approached the task of developing the Air Force Heritage ToolBook. The development team anticipates this ToolBook will be valuable to today's Air Force leaders. The team also hopes the ToolBook reaches the students who will write the next fifty years of Air Force heritage.

The Air Force Heritage ToolBook explores Air Force history, doctrine and customs from seminal efforts prior to WWI to airpower's decisive role in the Gulf War. It traces the Air Force's history by major era, marking the Air Force's growth and maturation from infancy to its present state. Major eras addressed include:

- Early Years
- World War I
- Interwar Years
- World War II
- Korean War
- Cold War
- Vietnam
- Gulf War

The "Early Years" traces the birth of military aviation in the United States, from ballooning and gliders to the advent of powered, heavier-than-air flight. "World War I" introduces the first, large-scale use of military aircraft in war, including the advent of dogfighting and aerial bombardment. "The Interwar Years" illustrates the difficulties early American aviation pioneers faced during the post-war military drawdown. This drawdown, accompanied by dramatic advances in technology, fostered creativity and inspired airpower theorists and visionaries. "World War II" records the first uses of airpower as a decisive instrument of warfare, and looks at the many successes and failures of the great aerial campaigns. "Korea" ushers in the jet age of aerial warfare, and brings the user into the modern concept of airpower as it applies to limited war. "The Cold War" covers a broad period of history, addressing Air Force contributions to deterrence and aerospace research. "Vietnam" explores both successes and failures in the Air Force's longest campaign. Finally, "The Gulf War" brings the user to airpower's greatest achievement—strategic paralysis of the enemy. Throughout the ToolBook, recurring

sections or topics provide unifying threads, including “Aces,” “Medal of Honor Winners,” as well as subjective topics such as doctrine and organization. A section entitled “Flightline” introduces the user (with photos and video clips) to selected major weapon systems contributing to Air Force heritage and major technological advances in aerospace science.

A variety of research techniques were used in the development of this ToolBook, including archival research, interview, and artifact search. Team members conducted individual and team research in the compilation process. The end result is a comprehensive, cohesive inventory of the people, places, tools, and dreams that forged the United States Air Force.

### **Why Use This Product?**

It is all too common to find members of the Air Force unfamiliar with their own heritage. The Air Force, of course, does not span as many decades as our sister services; there are no galleries of Revolutionary War musketry; no carefully polished sabers from the officers of the Continental Navy; no faded photographs of surrender from Appomattox Courthouse, and only few picturesque lithographs of battles in print stores. History has been all too easy a discipline to gloss over. The development team believes the Heritage ToolBook is a remedy to this deficiency.

Currently, the complete Air Force story is not found in one place. Individual pieces of the heritage puzzle exist that describe the chronological progression of the Air Force and the contributions of airpower to both America’s wartime conflicts and peacetime legacy. Likewise, there are separate documents which analyze the evolution of airpower

doctrine as it matured. Finally, there are many books describing the technological development of individual aircraft. This project uses multimedia technology to integrate these three distinctive parts in an educational and entertaining manner.

## **Target Audience**

The Air Force Heritage ToolBook is *not* designed for the military historian seeking an in-depth accounting of every significant moment in the evolution of the United States Air Force. It is designed for those seeking general knowledge of Air Force history and airpower's rich contribution to national defense. The development team envisions the following target audience:

- Students of Airpower
- Air Force Academy Cadets
- AFROTC Cadets
- OTS Cadets
- Basic Military Trainees
- Instructors
- Recruiters
- Public Affairs Officers
- Civil Air Patrol Personnel
- JROTC Cadets and Staffs
- Officer and NCO PME Students
- International Students.

Students about to embark on an in-depth analysis of some aspect of Air Force history can use the ToolBook as a starting point for their journey. The team hopes the ToolBook will be exciting and enjoyable viewing for all those interested in aviation and the United States Air Force.

## **Limits of the Program**

In developing the Air Force Heritage ToolBook, the team addressed a fundamental question of breadth and depth for the project. The act of reporting history, as opposed to merely recording it, is always difficult. It can be challenged by the conflicting interests of (1) the scope of the event, and (2) the interest level of those pursuing knowledge. The nature of recording history requires discerning what to include and exclude in a project. When the development team met to establish parameters for this effort, the team consensus was to emphasize “pride” of Air Force heritage as opposed to an all-inclusive documentation of airpower. As the project took shape, the team discovered the two objectives do not have to be mutually exclusive. The Air Force Heritage ToolBook holds its own as historical study and Air Force banner.

The development team intended this project to be an “introduction” to Air Force heritage. Each of the sections and subsections have been, or could be developed into independent technology projects. Examples include the existing ToolBook on the Persian Gulf War, and the Tuskegee Airmen ToolBook, currently in development. Readers requiring a more in-depth analysis of a particular episode or event may want to investigate these projects.

## Chapter 2

### Organizational Format

*The peculiar strength of the Romans always consisted in the excellent organization of their legions.*

—Flavius Vegetius Renatus

The Air Force Heritage ToolBook development team spent a considerable amount of time deciding how to organize this project. At one point the “organization” of the Air Force itself was considered a framework model. This functional breakout seemed attractive at first. However, the team rejected this model because of emphasis on capabilities and organization at the expense of people. The team also considered organizing by “decades.” This approach was attractive in its simplicity. It allowed an easy division of labor, but the team rejected this approach, too. Ultimately the team decided the Air Force did not develop along “organizational,” or strict “chronological” lines. The team discerned the Air Force was shaped by the environment in which it operated. The team elected to organize the project into eight “eras” of American history and development which are defined by events and personalities. The eras are: the “Early Years,” “World War I,” “Interwar Years,” “World War II,” “Korea,” “Cold War,” “Vietnam,” and finally the “Gulf War.” In addition, several general sections highlight contributions of significant individuals, social factors, and sacrifices. Specifically, “Medal of Honor,” “Aces,” and various “Spotlights” are placed throughout the ToolBook.

While each ToolBook segment can stand alone, the authors' intent is to present an integrated picture of American airpower heritage.

## **Research**

The team decided to maximize the use of non-copyrighted materials. The principle reason for this limitation was the compressed time allotted in the academic year and the challenge of gaining official releases. Complications from copyright issues could potentially slow progress on the ToolBook. Team members pursued all available avenues of research, including the Internet, historical repositories here at Maxwell and other locations, and personal interviews. This history comes alive when the team includes human stories from those who participated in the actual events. Even though the team elected to use mostly non-copyrighted materials, the information it found was comprehensive and in no way impugned the quality of the project.

## **Credits and Bibliography**

Photo credits, media sources, and bibliographical information are cited within the ToolBook. Following each era, a "gallery" screen is included, listing recommended additional sources of information (books, movies, and other) pertaining to that era. Our goal was to create a page similar to trailers found in documentary programs where the viewer may go "for more information." (See Bibliography below for a composite resource list.)

## Chapter 3

### Development Process

*Appreciate all those details; they are not without glory. It is the first step that leads to glory.*

—Frederick the Great

The development team followed a logical approach to building the Air Force Heritage ToolBook. At the first team meeting, it selected a leader, Maj Mike Fowler. This decision was based on his technical expertise and extensive historical depth. Similarly, it structured the team along two lines, research and technology. Members from both teams contributed significantly to the research pool. The team next established goals appropriate to producing a first-class product within the time constraints of ACSC. Then the team organized the ToolBook framework. Each team member was assigned a specific era to research. The team examined those topics that “crossed” eras—aircraft, leaders, etc. Individual members were responsible for the common areas occurring within their “era.” The technological group then consolidated and refined all areas during assemblage of the ToolBook. In addition to solving potential problems with redundancy, this concept of creating a focal point for construction helped to provide the ToolBook with a “single voice,” as opposed to an “assembled” texture which is often indicative of products with several authors. Several members of the research group with a talent for writing assisted in this effort.

The group was extremely well matched in terms of cooperation and cohesion. Everyone was agreeable to adopting style and format ideas selected from among the various inputs for application throughout the ToolBook. Simply put, the development team got along well and recognized the greater good of the product over any individual academic goals or objectives of the members.

### **Technical Lessons Learned**

The authors decided early in the research process to strive for a “commercial” quality look and feel in the Air Force Heritage ToolBook. While existing ToolBooks in the ACSC curriculum possessed satisfactory content, the team perceived most of these ToolBooks lacked a commercial look, interface, and presentation. After honing the target audience, the team determined the ToolBook should be a new concept from the ground up. The development team expects the target audience to have access to computer resources capable of running the ToolBook at its full potential (See Appendix A).

The next issue to be resolved was the look, or appearance of the ToolBook. After experimenting with various formats, the team arrived at the current format on the CD-ROM. The use of graphically-enhanced backgrounds, enhanced font titles with shadows and graphic icons enabled us to set the mood for each of the “eras” covered. These same elements of style assist the user by providing readily identifiable frames of reference for the various sections within the ToolBook.

The team found developing sophisticated aesthetic properties for the ToolBook a technically challenging process. Building this graphics-intensive book required several specific steps. First, each section had to be outlined in detail (See Appendix B). Every

page in the book had to be identified by period and subject. While this technique was helpful in maintaining focus, it impeded significant restructuring as the deadline grew nearer.

Following page identification, the team began working on the actual page construction. Every page was built individually, in order to permit the maximum use of graphic capability. This factor is why the ToolBook is so large in megabytes. This permitted the team to overcome color palette limitations within the ToolBook. Early experimentation showed that merely putting a graphic background on a ToolBook page and then attempting to insert other graphics (photos, video) resulted in "palette shift" of such magnitude that many of the graphic objects on the pages were unrecognizable. This is an inherent limitation of the 256-color palette contained in the ToolBook software. In many cases, the preferred background dominated the palette, leaving no room for the colors needed in additional graphics. After experimentation, the team found they could place as many graphics as desired on the background prior to bringing them into the ToolBook, as they all fell on the same palette. As a result, the following process for building ToolBook pages evolved:

- Each element to be used on a specific background page was edited using Aldus Photostyler (owned and registered to team member Maj Mike Fowler). The graphics were edited, converted to 24-bit, and prepared for compilation.
- Individual graphics were combined on a blank page using Altamira Composer (also owned and registered by Maj Fowler). This software permitted the team to format a page with individual graphics and text, as well as layer, shadow, and distort individual elements.
- The completed "layout" page was then exported back into Aldus Photostyler, where it was cleaned up and converted back to 8-bit (256-color) graphic format.
- The "completed" page (in terms of graphics) was inserted into ToolBook and the appropriate text boxes and navigation items were added.

The next effort focused on interface. The development team wanted the book to rely heavily on user input via “buttons” to navigate themselves to a specific era or page. Unfortunately, the button format included with the ToolBook software did not always fit the style of the rest of the project. As a result, Maj Fowler designed unique buttons for use throughout the book. Although time consuming, the benefits in consistency of appearance throughout the book were well worth the effort.

Finally, the team reviewed the entire project for content and appearance. The end product met the team’s goal of producing a sophisticated “commercial” quality, multimedia experience for the user, combining the very best of text, graphics, video, animation, sound, and interface.

## Chapter 4

### ACSC Research Program Criteria

*A man's worth is no greater than the worth of his ambitions.*

—Emperor Marcus Aurelius Antonius

Air Command and Staff College divides the assessment of technology projects into two major divisions: “Value of the Product,” and “Compliance with Standards and Guidance.” Each of these two divisions are further divided into subsections, and assigned grades according to the resulting matrix of criteria. The Air Force Heritage ToolBook team seeks to exceed all of ACSC’s established criteria. In fact the team attempted to establish new benchmarks concerning the quality and use of ToolBook technology products.

#### Value of Product

##### Identification of Need

If one tries to find an existing product that broadly addresses the history and development of the United States Air Force, it soon becomes obvious that no such product exists. As the men and women who have inherited the magnificent legacy of the Air Force approach its 50th Anniversary, the need for such a product, and the urgency of developing it becomes evident.

## **Review of Subject Matter**

The Air Force Heritage ToolBook is best characterized as a collage of stories, photographs, symbols, and history-making moments that together define the Air Force of today. The development team reviewed and challenged for completeness and content several drafts of the ToolBook. In addition members of the ACSC faculty reviewed ToolBook drafts. The Faculty Research Advisor sent draft copies of the ToolBook to historical agencies off base for their unbiased, professional review. Throughout, the goal was not to develop a totally inclusive portrayal of the history of airpower; rather, the team sought to accentuate the most significant aspects of Air Force heritage.

## **Organization**

A great deal of thought and discussion went into the organization of this project. The final product is a result of several revisions, not the least of which was the experience the team gained in using ToolBooks in the present ACSC curriculum. In addition to the considerations addressed earlier in subject organization, the development team sought to keep the ToolBook simple to use, with few scrollbars, short text blocks, and easy, intuitive buttons.

## **Technology Product Design/Application Ease**

These subjects were a recurring theme in the development of this project. Individuals and agencies who have reviewed preliminary drafts of the ToolBook are consistently impressed with the high quality and inclusiveness of the product. The team tried to make the ToolBook easy and enjoyable to use. To this end, the team included a

creative training aid in the opening screens to help the audience use the Air Force Heritage ToolBook to its fullest potential.

### **Conceptual Development**

From the outset, the team sought to balance breadth and depth of research, while entertaining the viewer. The final product occupies a vast amount of digital storage, as compared with most of the existing ToolBooks now in use at ACSC. The decision to look at the history of the Air Force in terms of historical “era” enabled the team to capture the events and the “mood” of the Air Force through fifty years of heritage.

### **Contributions to the Learning Process**

The lack of existing organized material on Air Force heritage speaks to the need for this product, especially for those individuals identified as our target audience. Several research team members, experienced in the Air Force training and accession arena, emphasized the void this project will fill. This ToolBook will enhance any curriculum offering foundations in Air Force history or the history of airpower in general. Additionally, its ease of use and basic format will make it a superior tool for the large numbers of international students attending Air Force training programs every year.

## **Compliance With Standards and Guidance**

### **Mechanics of Writing**

Quality presentation has been an overarching goal throughout the development of this project. The team agreed that skilled writing was essential to the “story telling”

format desired in the ToolBook. The team sought to tell the Air Force story with a single voice, and the writing style reflects this aim.

### **Style and Format**

An old adage states, “the proof is in the pudding.” Throughout its development, our team sought to respond to the guidance provided by the ACSC Research Directorate. The “conversational” tone of the text is intended to enhance the “story” aspect of this project. The development team sought to create more than a compilation or academic analyses of facts. The team made every effort to obtain material free of copyright complications. Although the development team has confidence all the material is free from restriction, they welcome any notices to the contrary in order that appropriate releases can be obtained (Current copyright releases are at Appendix C).

## Chapter 5

### Conclusion and Future Directions

*It is better to struggle with a stallion when the problem is how to hold it back, than to urge on a bull which refuses to budge.*

—General Moshe Dayan

In his book, *How We Invented The Airplane*, Orville Wright stated,

Our first interest (in the problem of flight) began when we were children. Father brought home to us a small toy actuated by a rubber string which would lift itself into the air. We built a number of copies of this toy, which flew successfully. . . . But when we undertook to build a toy on a much larger scale it failed to work so well. The reason for this was not understood by us at the time. . . . In the spring of 1899 our interest in the subject was again aroused through the reading of a book on ornithology. We could not understand that there was anything about a bird that would enable it to fly that could not be built on a larger scale and used by man. . . . (David McKay Company, Inc., New York, 1953, pp. 18-19)

In the experience of children playing with a toy, combined with the study of birds in flight, dreams were born. Two men on the sandy beaches of Kitty Hawk solidified their dreams and broke mankind's bonds of terrestrial limitations. In historical terms, the ink is barely dry on recording this seminal event of airpower. In less than a century, the vision of two brothers has enabled their country to enforce its national political will with might. For nearly fifty years, proud men and women in blue, officers and enlisted, have nurtured and carried this technological and revolutionary responsibility. From the dunes of Kitty Hawk to the frontiers of space, this heritage has developed.

The dreams and reality of airpower have been captured in this Air Force Heritage ToolBook. The authors hope this informative and entertaining product will inspire new dreams to lead us into the next millennium.

Where can this study now proceed? The authors found themselves challenged by the limiting constraints of time. The development team has attempted to set forth a quality product hoping others will build upon their efforts. Each subsection of this project deserves further study. Such future efforts by others could and will enrich the pride of those who wear Air Force blue. A toy from a father and the curiosity piqued by the study of birds in flight inspired two brothers to develop powered flight. May this product inspire those who explore it, inviting all to look beyond self-perceived limitations and to celebrate the proud heritage of airpower.

## Appendix A

### Systems Requirements

The following hardware is *required* to use the Air Force Heritage ToolBook:

- 386DX-33 or higher IBM or compatible computer (486DX or higher recommended)
- 4 MB RAM (8 MB or more recommended)
- SVGA with 512K video RAM at 640x480 256 colors or higher graphics monitor (32K colors recommended)
- MS-DOS 5.0 or higher
- Windows 3.1 or higher
- CD-ROM drive (double speed + highly recommended)
- MPC-compatible (16-bit digital sound board recommended)

While these are minimum system requirements, to fully appreciate the quality and potential of this product the user should have as many of the recommended options as possible. The ToolBook was designed and developed around the recommended settings. While it can be operated on a lesser system, degradation of video performance and speed will be substantial. This ToolBook is not intended for “laptop” or “notebook” use. While some laptop computers may possess the minimum requirements, generally speaking they are not designed to exploit the extensive multimedia capability incorporated in this ToolBook.

## Appendix B

### CD-ROM Outline

The following outline is included to illustrate the breadth and depth of the Air Force

Heritage ToolBook project:

- I. Opening Section
  - A. Opening Page (with animation)
  - B. Title Page
  - C. Credit Page
  - D. Main Menu
  - E. "How To" Section (Autorunning tutorial)
  - F. Bibliography
- II. The Early Years
  - A. Introduction
  - B. Pioneers of Flight
  - C. Ballooning
  - D. The Wright Brothers
    - 1. Entrepreneurs
    - 2. Kitty Hawk
    - 3. The First Flight
    - 4. Working with the Army
  - E. The Signal Corps
    - 1. Early Aviator Requirements
    - 2. The First 24 Army Aviators
    - 3. Aviator's First War—Mexico
  - F. Spotlight: Names to Remember
    - 1. Samuel Langley
    - 2. Lt. Frank P. Lahm
    - 3. Glenn H. Curtiss
  - G. An Airman's Story
  - H. The Early Flightline
  - I. For More Information
- III. World War I
  - A. Introduction

- B. Preparing for War
    - 1. Getting Started
    - 2. Bolling Commission
    - 3. Liberty Engine
    - 4. Flight Schools
  - C. Aviators at War
    - 1. Map
    - 2. Chateau-Thierry
    - 3. Saint Mihiel
    - 4. Argonne-Meuse Offensive
    - 5. Flying for the Allies
      - a) Lafayette Escadrille
      - b) Fiorello LaGuardia
      - c) Lambert & Springs
      - d) Raoul Lufberry
      - e) Frank Luke
      - f) Eddie Rickenbacker
      - g) Kiffin Rockwell
      - h) Quentin Roosevelt
    - 6. The Squadrons
  - D. Aircraft Roles
    - 1. Background
    - 2. Artillery Reglage
    - 3. Contact Patrol
    - 4. Charting Territory
    - 5. Strategic Bombing
    - 6. Pursuit
    - 7. Balloons
  - E. Billy Mitchell
  - F. Gen. Pershing
  - G. Aces
  - H. Medal of Honor
  - I. An Airman's Story
  - J. The WWI Flightline
  - K. For More Information
- IV. The Interwar Years
- A. Introduction
  - B. Doctrinal Development
    - 1. Billy Mitchell
    - 2. Air Corps Tactical School
  - C. Organizational Changes
    - 1. Introduction
    - 2. Army Reorganization Act of 1920
    - 3. Air Corps Act of 1926
    - 4. Establishment of GHQ Air Force

- 5. Establishment of the Army Air Force
- D. Development of the Strategic Bomber
- E. Record Flights
  - 1. Introduction
  - 2. Altitude
  - 3. Endurance
  - 4. Transcontinental Navigation
  - 5. Navigational Flights
  - 6. Notable Flights
  - 7. Speed
- F. An Airman's Story
- G. The Interwar Flightline
- H. For More Information
- V. World War II
  - A. Planning for War
    - 1. Introduction
    - 2. AWPD-1
    - 3. Spotlight: Gen. "Hap" Arnold
    - 4. Women's Airforce Service Pilots (WASP)
  - B. The War in Europe
    - 1. The Enemy
    - 2. Problems in North Africa
    - 3. Daylight Precision Bombing
    - 4. Spotlight: Gen. Ira Eaker
    - 5. Big Week
    - 6. Spotlight: Lt Gen Doolittle
    - 7. Escort Options
    - 8. Spotlight: Gen. Spaatz
    - 9. Operation OVERLORD
  - C. The War in the Pacific
    - 1. The Enemy
    - 2. The Flying Tigers
    - 3. Doolittle's Raiders
    - 4. Firebombing Tokyo
    - 5. "The Bomb"
    - 6. Paul Tibbets and the Enola Gay
  - D. Aces
  - E. Medal of Honor Recipients
  - F. An Airman's Story
  - G. The WWII Flightline
  - H. For More Information
- VI. Birth of the USAF
  - A. Air Force Day
  - B. National Security Act of 1947
  - C. Department of the Air Force

- D. Air Force Structure—1948
- E. Air Force Representation in DoD—1948
- VII. The Korean War
  - A. USA v. Communism
  - B. Roots of the Division
  - C. USAF 1st War
  - D. Exercise of Air Power
    - 1. Strategic bombing
    - 2. Aerial Interdiction
    - 3. Close Air Support
    - 4. Reconnaissance
    - 5. Air to Air
  - E. Charts and Maps
    - 1. Chain of Command
    - 2. Status of the War
    - 3. Air Bases
  - F. The Enemy
  - G. An Airman's Story
  - H. Aces
  - I. Medal of Honor Recipients
  - J. The Korean War Flightline
  - K. For More Information
- VIII. The Vietnam War
  - A. The Road to War
    - 1. Introduction
    - 2. America's Longest War
    - 3. Air Force Units Deploy
    - 4. The Enemy
    - 5. U.S. Political Objectives
    - 6. Objectives in Conflict
    - 7. A Strategy for Defeat
  - B. The Air War in Vietnam
    - 1. Operation FARM GATE
    - 2. Operation RANCH HAND
    - 3. Command and Control
      - a) Air Command Arrangements
      - b) Targeting Request and Approval Cycle
      - c) Route Pack System
    - 4. The Gulf of Tonkin
    - 5. Electronic Warfare
      - a) Self Protection
        - (1) Introduction
        - (2) Radar Homing and Warning
        - (3) Electronic Countermeasure Pods
        - (4) Countermeasure Dispensers

- b) Force Protection
            - (1) Introduction
            - (2) Wild Weasels
            - (3) Standoff Jammers
            - (4) Chaff Corridors
          - 6. Rolling Thunder
          - 7. Linebacker I
          - 8. Linebacker II
          - 9. The MIA/POW Issue
          - 10. The Ho Chi Minh Trail
        - C. Aces
        - D. Medal of Honor Recipients
        - E. An Airman's Story
        - F. The Vietnam Flightline
        - G. For More Information
- IX. The Cold War
  - A. The Temperature Drops
    - 1. Introduction
    - 2. Background: Ideologies
    - 3. Storm Warnings at Yalta
    - 4. The Marshall Plan
    - 5. National Security Act of 1947
    - 6. Women in the Air Force
  - B. The Berlin Airlift
    - 1. Background: Why Berlin?
    - 2. A Light at the End of the Tunnel
    - 3. The Routes to Survival
  - C. The Big Three: SAC, MAC and TAC
    - 1. Background
    - 2. Strategic Air Command
      - a) Early History
      - b) Spotlight: Gen Curtis LeMay
      - c) Strategic Deterrence
        - (1) Mission for a Cold War
        - (2) The Strategic Missile Force
        - (3) The Bombers
      - d) The Spy Planes
        - (1) RC-135
        - (2) SR-71
        - (3) U-2
    - 3. Military Airlift Command
    - 4. Tactical Air Command
  - D. NORAD
    - 1. The Mission of NORAD
    - 2. Manning the "DEW" Line

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## Appendix C

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