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## America's First Air Battles

Lessons Learned or Lessons Lost?

Lt Col Aldon E. Purdham Jr., USAF

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**America's First Air Battles**

**Purdham**

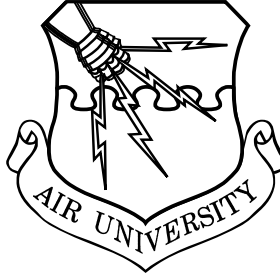
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Lessons Lost?***

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**America's First Air Battles**  
***Lessons Learned or Lessons Lost?***

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## Contents

<i>Chapter</i>		<i>Page</i>
	DISCLAIMER . . . . .	<i>ii</i>
	FOREWORD . . . . .	<i>vii</i>
	ABOUT THE AUTHOR . . . . .	<i>ix</i>
	ACKNOWLEDGMENTS . . . . .	<i>xi</i>
1	INTRODUCTION . . . . .	1
	Notes . . . . .	4
2	INITIAL PERIOD OF OPERATIONS IN THE KOREAN WAR, 25 JUNE-25 JULY 1950 . . . . .	5
	Notes . . . . .	23
3	INITIAL PERIOD OF OPERATIONS IN THE VIETNAM WAR, 2 MARCH-1 APRIL 1965 . . . . .	27
	Notes . . . . .	41
4	INITIAL PERIOD OF OPERATIONS IN DESERT STORM, 17 JANUARY-15 FEBRUARY 1991 . . . . .	45
	Notes . . . . .	64
5	ANALYSIS . . . . .	67
	Notes . . . . .	75
6	CONCLUSION . . . . .	77
	Notes . . . . .	78
	BIBLIOGRAPHY . . . . .	79

## Foreword

*America's First Air Battles: Lessons Learned or Lessons Lost?* provides a successful evaluation of Michael Howard's construct that current doctrine is probably wrong, but what matters is the capability of the military to get it right when a particular conflict begins. In the course of this evaluation, Lt Col Aldon E. Purdham Jr. examines several important airpower factors to include familiarity with the nature and geography of the conflict; parity with the adversary, especially in terms of air superiority; command and control of air assets, especially in interdiction and close air support missions; and the confluence of airpower weapons with doctrine and training.

Colonel Purdham filters these airpower factors through three conflicts of the last half-century—Korean War, Vietnam War, and Operation Desert Storm—looking as much as possible at the early air operational stages of the conflict. He concludes that Professor Howard's construct has some validity, but the real world offers alternative conclusions. The reasons the military doctrine seems out of alignment in the early stages of conflict is not because of poorly developed doctrine, but rather quick changes made in national strategy that cannot be perfectly anticipated in doctrinal writing and conferred in training regimes. Ultimately, the greatest lesson seems to be that airpower leadership and doctrinal focus need to have the flexibility to adapt to changing national direction. It helps immensely that our air forces go to war well trained in the way they will fight. The effectiveness of Desert Storm validates this concept. Perhaps the lessons of Operation Iraqi Freedom provide even greater proof.

Originally written as a master's thesis for Air University's School of Advanced Air and Space Studies (SAASS), *America's First Air Battles: Lessons Learned or Lessons Lost?* was selected by the Air Force Armament Museum Foundation as the best SAASS thesis for academic year 2001–2002. The College of Aerospace Doctrine, Research

and Education (CADRE) is pleased to publish this excellent study as a CADRE Paper and thereby make it available to a wider audience within the US Air Force and beyond.

A handwritten signature in black ink, reading "Dan R. Mortensen". The signature is written in a cursive style with a large initial 'D' and 'M'.

DANIEL R. MORTENSEN  
Chief of Research  
Airpower Research Institute, CADRE

## **About the Author**

Lt Col Aldon E. Purdham Jr., is chief, Future Plans Branch, Headquarters US Central Command, Directorate of Intelligence, Plans Division, MacDill AFB, Florida. He is a career intelligence officer who has served as a Soviet strategic threat analyst and command briefer at the 544th Strategic Intelligence Wing and Headquarters Strategic Air Command at Offutt AFB, Nebraska; as a member of the National Intelligence Community's Targeting Team at the Pentagon in support of Operation Desert Storm; as chief, Operational Intelligence for the 8th Fighter Wing at Kunsan AB, Republic of Korea; as a North Korean political-military intelligence analyst and briefer for the assistant chief of staff, Intelligence, in the Pentagon; as a program element monitor on the Air Staff; and as a human intelligence operations officer, command briefer/speechwriter, and congressional liaison at the Defense Intelligence Agency. Colonel Purdham is a distinguished graduate of the Air Force Reserve Officer Training Corps at the University of Virginia, Charlottesville, Virginia, and Squadron Officer School, Maxwell AFB, Alabama. He earned a Bachelor of Arts degree in Foreign Affairs from the University of Virginia and a Master of Science degree in Education from Kansas State University, Manhattan, Kansas. He is a graduate of the US Army Command and General Staff College, Fort Leavenworth, Kansas, and a graduate of the School of Advanced Air and Space Studies, Maxwell AFB, Alabama. He and his wife, Lauralyn, have four children—Jordan, Delaney, Lindsey, and Sydney.

## **Acknowledgments**

I am indebted to several people for assisting me with this study. I thank Brig Gen William Stofft and Lt Col Charles Heller whose book, *America's First Battles: 1776-1965*, was the inspiration for this study. While reading their book as a student at the US Army Command and General Staff College, I was intrigued by its insights on the US Army's ability to prepare for and adjust to battle. I thought that such analysis would be equally beneficial for the USAF if conducted from an air perspective. I also greatly appreciate the assistance, encouragement, and enthusiasm of my advisor and reader, Dr. Harold R. Winton and Dr. James Corum. Finally, I owe my family the greatest thanks. Words cannot express my gratitude to my wife, Lauralyn, whose cheerfulness never wavered despite the additional family demands placed on her because of my long hours in the library. As for our children, Jordan, Delaney, Lindsey, and Sydney, I can only hope that my time away from them this year and during my Air Force career will have contributed to keeping them safe. I can think of no better return for my time away from them.

## Chapter 1

### Introduction

*To be prepared for war is one of the most effectual means of preserving peace.*

—George Washington

In his 1973 Chesney Memorial Gold Medal acceptance lecture, Prof. Michael Howard made the following statement about military doctrine: “I am tempted indeed to declare dogmatically that whatever doctrine the armed forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.”<sup>1</sup> There are two key assertions in Howard’s observation. First, in times of peace, armed forces imperfectly prepare for their next conflict. Second, their ability to make adjustments to overcome this shortcoming is critical to their combat success.

In *America’s First Battles: 1776–1965*, edited by Charles Heller and William Stofft, a number of distinguished historians determined that Howard’s two propositions hold true for nearly two centuries of US Army history. The intent of this study is to conduct a similar analysis of the experiences of the United States Air Force in the Korean War, the Vietnam War, and Operation Desert Storm. An analysis of the effectiveness with which the Air Force prepared for and adjusted to these conflicts’ initial periods of operations should provide Air Force personnel with invaluable insight in developing and implementing doctrine for future conflicts.

Such doctrine will have a significant influence on the Air Force’s success in those conflicts. A former chief of staff of the Air Force, Gen Curtis E. LeMay, was aware of this influence when he remarked, “At the very heart of war lies doctrine. It prepares the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience that lays the pattern for the utilization

of men, equipment, and tactics. It is fundamental to sound judgment.”<sup>2</sup> Air Force Manual (AFMAN) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, reiterated LeMay’s belief by proclaiming, “Doctrine is a guide for the exercise of professional judgment.”<sup>3</sup> Consequently, since the Air Force expects its airmen to derive sound judgment from its doctrine, the applicability of that doctrine to a given conflict is critical.

Thus, an analysis of the Air Force’s ability to prepare for and adjust to initial periods of operations in past conflicts will assist today’s airmen in developing doctrine for tomorrow’s conflicts. While many studies have analyzed the USAF’s performance over the entire duration of these conflicts, few have emphasized the Air Force’s war preparation during the years leading up to them. George Santayana, the noted Spanish-American philosopher, warned of ignoring lessons from the past when he stated, “Those who can not remember the past are condemned to repeat it.”<sup>4</sup> In an effort to avoid such a fate, this study seeks to answer the following question: What do the initial periods of operations in the Korean War, Vietnam War, and Operation Desert Storm reveal about the effectiveness with which the Air Force prepares for and adjusts to the onset of combat?

One of the greatest difficulties in answering this question is determining the length of combat that represents the initial period of operations. The historians who wrote *America’s First Battles: 1776–1965* focused on land battles that were identified by specific dates. It is far more difficult to identify air battles in this manner because air operations normally consist of multiple missions that are conducted against different targets, over different areas, and for different durations. For this reason, even when air superiority, close air support (CAS), and interdiction occur simultaneously, they may not be associated with the same battle. Instead, they are intended to have a synergistic effect on the overall conflict. Consequently, identifying a specific period of air operations at the beginning of each of the aforementioned wars is not as simple as determining the first ground battles of those wars.

To overcome this dilemma, this study classifies the first 30 days of the Korean War and Desert Storm as the initial periods of operation. It was during these dates that the Air Force devised,

executed, and modified a considerable breadth of air operations. For this reason, the time frame serves as an effective duration from which to analyze how well the Air Force prepared for and adapted to the nature of these conflicts. However, determining the initial period of operations for Vietnam is more problematic because the United States incrementally increased its involvement and operations in Vietnam from an advisory role in the late 1950s to direct combat in the early 1960s.

Given that, this study views 2 March–1 April 1965 as the initial period of operations for the Vietnam War. This determination was based on three primary considerations: first, on 2 March the USAF began its interdiction campaign, known as Rolling Thunder, against North Vietnam; second, during the first week of March, the USAF lifted restrictions on the employment of jet aircraft; and third, also during this time, the USAF allowed pilots to fly fighter missions without a Vietnamese copilot for the first time. Thus, the author concluded that 2 March–1 April 1965 marked the first 30 days during which the USAF was engaged in full-scale air operations in Vietnam.

The analysis of the USAF's preparation for and adjustment to each of these conflicts' initial period of operations consists of a four-step process. In the first step, this study assesses the overall readiness of the USAF to engage in combat operations both in general and in the specific theater on the eve of war. This includes an assessment of the USAF's prewar strategy, doctrine, command and control (C<sup>2</sup>), aircrew training, and equipment. Additionally, this study examines the influence of the previous conflict in determining and shaping these five factors. It also addresses the degree to which these five factors—and the previous war's influence on them—resulted in success during the initial period of operations.

The second step is an analysis of the effectiveness with which the USAF performed its primary missions of air superiority, CAS, and interdiction. Because historical reporting lacks the fidelity to determine first-order effects definitively, this study assesses the effectiveness of these missions primarily on the basis of second-order effects. In the case of air superiority, the key second-order effect was the extent to which friendly forces were able to operate without prohibitive interference by the

opposing air force. The key second-order effect for CAS was the extent to which friendly ground forces were able to gain ground against the adversary. In regard to interdiction, the key second-order effect was the extent to which enemy ground forces were able to launch offensives or their ability to defend against offensives by friendly forces.

In the third step, this study examines the USAF adjustments to its prewar strategy, doctrine, C<sup>2</sup> system, crew training, and equipment during the initial period of operations of each conflict. This part of the study analyzes the degree to which USAF leaders recognized the need for adjustments, decided what those adjustments should be, and implemented them. Ultimately, this step illustrates the ingenuity and flexibility that is required for combat success.

The fourth step is an assessment of the degree to which these adjustments enhanced the USAF's air superiority, CAS, and interdiction missions. This analysis provides the analytical heart of this study by revealing both negative and positive aspects of the USAF's adaptability. Of even greater significance, this step examines the tremendous influence that these successes and failures had on the USAF's performance of its primary missions.

#### Notes

1. Michael Howard, "Military Science in an Age of Peace," *Royal United Services Institute Journal*, March 1974, 7.
2. Air Force Manual (AFMAN) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 1984, ii.
3. AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 2, 1992, vii.
4. On-line, Internet, 22 May 2002, available from [www.quoteland.com/author.asp?AUTHOR\\_ID=124](http://www.quoteland.com/author.asp?AUTHOR_ID=124).

## Chapter 2

### **Initial Period of Operations in the Korean War, 25 June–24 July 1950**

*People back home in the Pentagon will draw conclusions from this war which will not be true.*

—Lt Gen George E. Stratemeyer  
Commander, Far East Air Forces  
Personal Diary Entries, 2 October 1950

After withdrawing American troops from Korea in 1949, the administration of President Harry S. Truman did not imagine that just a year later it would have to deploy US forces back to South Korea to repel a North Korean invasion. US national security and military strategy were focused on deterrence of a Union of the Soviet Socialist Republics (USSR) nuclear attack. This emphasis stemmed from the USSR's initial test of a nuclear weapon in August 1949, which shattered Americans' utopian perspective of US security. As W. Sterling Cole, chairman of the US Congress Joint Committee on Atomic Energy, stated, "Prior to that explosion, Americans thought [they] would enjoy an atomic monopoly for some years, and that there would be international control of atomic weapons."<sup>1</sup>

The following year, President Truman approved National Security Council (NSC) Memorandum 68, which established a strategy to deter the nuclear threat posed by the Soviets. This mandate produced an increased focus on a nuclear-capable bomber force and nuclear war-fighting strategy by the USAF. In fact, most of the 1951 USAF budget was earmarked for that part of the Strategic Air Command (SAC) that would have to deter or win a general nuclear war with the USSR.<sup>2</sup>

NSC 68 was based on an assessment that it would likely be years before the USSR was willing to risk war against a nuclear-superior United States.<sup>3</sup> Gen Douglas MacArthur, the commander of Far East Command (FEC), and Secretary of State Dean Acheson also perceived no imminent Soviet danger on the Korean Peninsula. In public statements in mid-1949 and early

1950, respectively, they both excluded Korea from America's defense responsibilities in the Pacific. These estimates, combined with the aforementioned nuclear focus, reveal why the USAF was ill-prepared for a North Korean invasion of South Korea. The noted Korean War scholar, Dr. Robert Frank Futrell, also contended that even FEC, which one would suspect was oriented toward defense of the Korean Peninsula, lacked a contingency plan for such a development.<sup>4</sup>

The Air Force was also temporarily handicapped by the inability of the Republic of Korea (ROK) and the United States to reach a consensus regarding the war's strategic objective. The State Department argued that US military effort in Korea should be intended solely to restore the ROK to its original territorial status. But the South Korean president, Syngman Rhee, envisioned a reunification of the Korean Peninsula under his control. While this divergence did not pose a problem for the Army (because its troops were retreating southward at the time), it did for the Air Force, which desired to balance the destruction of hostile industrial targets against some foreknowledge as to whether such plants would be rebuilt during a friendly occupation of North Korea. This balancing act was made more difficult by Truman's concern that bombardment of North Korea not be indiscriminate.

## **Doctrine**

Following World War II, the doctrine of the Army Air Forces was articulated in War Department Field Manual (FM) 100-20, *The Command and Employment of Airpower*, published in 1943. This manual listed the Air Force's primary missions as being strategic bombardment, air superiority, interdiction, and CAS. In 1946, the Army published additional doctrine for tactical air employment in FM 31-35, *Air-Ground Operations*.

After the Air Force became a separate service in 1947, Air Force leaders realized that both field manuals should be revised. As Air Force leaders sought to revise FM 100-20, they were divided over the difference between strategic and tactical missions and the proper role for theater air forces.<sup>5</sup> Meanwhile, Tactical Air Command (TAC) had become responsible for developing tactical air operations in the new Air Force. In

February 1949, TAC recommended that Headquarters Army Field Forces review FM 31-35 and create a new document upon which to base future joint training. The impetus for this review was the following shortfalls that had been identified during joint tactical exercises from 1947 to 1950: (1) jet fighter-bomber's limited time over target and difficulty identifying targets, (2) the services' inadequate manning of joint operations centers (JOC), and (3) the lack of skill and interest among tactical air control parties (TACP).<sup>6</sup> All three of these shortfalls would prove to be persistent during the Korean War.

The effort to revise FM 31-35 led to the development of the Joint Training Directive (JTD) for air-ground operations published in September 1950. Neither the Air Force nor the Army accepted this new joint directive as service policy.<sup>7</sup> The Air Force contended that the new directive jeopardized its control of mission priorities, while the Army argued that it failed to provide ground commanders with sufficient influence over tactical air support. Despite these sentiments, an Air Force-sponsored study group chaired by Dr. Robert L. Stearns, president of the University of Colorado, concluded that the doctrine espoused in FM 31-35 and the JTD was sound.<sup>8</sup> According to the board, the problem was that neither the Air Force nor Army had provided the trained staffs, control agencies, and communications systems to make the doctrine work.<sup>9</sup> According to this analysis, the CAS system was sound in design but required more aggressive implementation by both services.<sup>10</sup>

Maj Gen Earl E. Partridge and Brig Gen Edward Timberlake, the commander and vice commander of Fifth Air Force, respectively, led the primary air support effort. They were familiar with the employment of tactical airpower and of the organization required for the cooperative operations of tactical air force and a field army in a theater war.<sup>11</sup> General Partridge believed that the way to achieve optimal air and ground cooperation was through close teamwork between air and ground commanders, such as that experienced between Generals Otto P. Weyland and George S. Patton Jr. in World War II. At the onset of war, General Partridge directed that the advance element of Fifth Air Force be located at Taejon where the commander of US Army Forces in Korea (USAFIK), Gen William Dean, had located his

command post.<sup>12</sup> However, because of a lack of communications capability, the advance echelon of Fifth Air Force was unable to deploy forward.

Partridge was also aware that official doctrine called for a joint agency through which Army and Air Force commanders could request and control air resources. Such an agency was called a JOC. A tactical air control center (TACC), which served as the focal point for control of aircraft operations, was supposed to operate in close association with the JOC. Because he was unable to relocate the entire advance echelon to Taejon, on 5 July 1950 General Partridge opened a JOC at Taejon with personnel and equipment deployed from Fifth Air Force in Japan.

Doctrine also required formation of TACPs, which served as the most forward element of the tactical control system and controlled aircraft strikes from forward locations. Partridge provided one TACP to each US infantry regiment and higher unit headquarters engaged in active combat operations and one to each ROK division and corps.<sup>13</sup> Additionally, in spite of a shortage of qualified officers, Partridge assigned experienced air liaison officers (ALO) to units of the Eighth Army and Task Force 77.<sup>14</sup> These officers served as personal representatives of the Air Force commander and were responsible to advise the ground commander on all air matters.

## **Command and Control**

The execution of airpower was complicated by the attempt of MacArthur's staff to direct air operations in Korea from its headquarters in Tokyo. In fact, his staff ordered the air officer on the Far East Advance Command's staff in Suwon, Korea, not to contact Fifth Air Force advance headquarters in Itazuke, Korea, and arrange for air support. Rather, he was told to direct requests for air support to FEC General Headquarters (GHQ) in Tokyo, which would then pass them through Far East Air Forces (FEAF) and Fifth Air Force in turn. General Timberlake stated, "This was a shameful way to operate because it normally took about four hours to get the messages."<sup>15</sup> Recognizing that air resources could not continue to operate in this manner, Lt Gen George E. Stratemeyer, the FEAF commander, prevailed

upon MacArthur to direct USAFIK to route its air support requests directly to Fifth Air Force advanced headquarters in Itazuke, which was now commanded by General Partridge.

General Stratemeyer also integrated into FEAF the 22d and 92d Bombardment Groups that deployed to the theater from SAC several days after the war commenced. By creating a new command—FEAF Bomber Command (Provisional)—to control strategic bombers, Stratemeyer felt the control of air operations could then reside in the field and not in FEAF and GHQ. Despite this arrangement, MacArthur's staff continued to issue directives that Bomber Command's B-29s were to be used exclusively for CAS.<sup>16</sup> While Stratemeyer was not against such employment, he was concerned that FEC GHQ was still attempting to dictate air operations. Consequently, he appealed to MacArthur to allow him to oversee air operations much as MacArthur had allowed Generals George C. Kenney and Ennis C. Whitehead during World War II.

MacArthur responded by saying that Stratemeyer "was to run his show as he saw fit, regardless of instructions from GHQ staff members."<sup>17</sup> Upon receiving this favorable response from MacArthur, Stratemeyer ordered Bomber Command to fly against deep interdiction and strategic targets on 11 July. The following day, he informed Fifth Air Force that it would be responsible for all tactical air operations in Korea.<sup>18</sup> This arrangement was postponed, however, due to the critical situation of USAFIK troops. MacArthur stated that exceptional measures were required. Consequently, both Fifth Air Force and Bomber Command continued to focus their aircraft against the adversary along the front line of the battle area until late July.

Coordination of land-based and carrier-based air operations over Korea also posed a significant problem. To obtain synergy between air force and naval air attacks, Stratemeyer sought to attain operational control of all airpower in-theater, except for those responsible for aerial mining or antisubmarine warfare missions. To overcome Navy objections, Stratemeyer agreed to change the term *operational control* to *coordination control*.<sup>19</sup> It soon became obvious that the Navy and MacArthur did not associate coordination control with centralized control. Thus, for the remainder of the Korean War, Stratemeyer would merely

be able to work closely with the Navy in the execution of airpower. He would exercise control over only Air Force assets.

Based on the operational complications caused by the C<sup>2</sup> practices among the Air Force, Army, and Navy, it should not be surprising that similar problems existed regarding targeting practices as well. On 14 July, General MacArthur's chief of staff, Maj Gen Edward Almond, created an FEC GHQ Target Group that consisted of G2 (Intelligence), G3 (Operations), Air Force, and Navy representatives. The purpose of this group was to advise MacArthur on the employment of Air Force and Navy airpower, recommend measures to ensure coordination of available airpower, and maintain analysis of targets and priorities.<sup>20</sup> While the intent of the group was sound, it was soon apparent that the level of expertise of the group members was not. Therefore, the group had difficulty effectively matching objectives with targets.

Upon his arrival on 20 July as the new FEAF vice commander for Operations, General Weyland recognized this shortfall. Weyland observed that the GHQ staff was unable to accomplish the most efficient and timely employment of airpower in Korea because it lacked joint representation of air, naval, and ground officers.<sup>21</sup> He recommended the implementation of a senior target committee, comprised of officers of each service with wide military experience. MacArthur approved this suggestion by 22 July, and he agreed that the group's first task should be the development of an interdiction plan that would sever the flow of supplies to the North Korean forces.

The group was in existence for only six weeks, but in that short time it built effective relationships for the control of theater air forces in FEC.<sup>22</sup> The FEC GHQ Target Group was also soon disbanded. However, in its absence the FEAF Target Committee grew in stature, adding representatives from the Fifth Air Force and FEAF Bomber Command to complement the members from the Intelligence and Operations staffs of the headquarters. This committee selected major targets for attack and devised air campaigns against entire target systems.<sup>23</sup> As a result, almost 30 days after the start of the war, ad hoc procedures had managed to bring order to the chaotic C<sup>2</sup> situation that existed at the onset of the war.

## **Training**

As mentioned earlier, the nuclear focus of the US military strategy subsequent to World War II became even more intensified following the Soviet detonation of a nuclear weapon in 1949. During the congressional hearings on the B-36, Gen Omar N. Bradley, USA, the new chairman of the Joint Chiefs of Staff (JCS), declared that all of the joint chiefs "believe that the number one priority for the Air Force must be strategic bombing ability."<sup>24</sup> Air Force funding reflected this strategic priority. Although USAF force strength decreased from 60 to 48 groups in 1949, SAC's force strength actually increased from 18 to 19 groups.

In contrast to SAC's expansion, by December 1948 TAC was stripped of its units and had become merely an operational and planning headquarters under the Continental Air Command. Gen Elwood Quesada, the commander of TAC, elected to retire in part because he was so disappointed by this action. His successor, Maj Gen Robert M. Lee, attempted to maintain the doctrine and mission for his organization. Due to growing criticism from the other services of the USAF's de-emphasis of tactical aviation, USAF convened a Board of Review for Tactical Air Operations in 1949. The board's 1950 recommendations were one of several factors that convinced the USAF to restore TAC as a major command. While proponents of TAC had preserved some semblance of tactical air doctrine, TAC's ability to implement this doctrine would not occur overnight.<sup>25</sup>

The Far East Air Forces were not immune to the budget and training reductions that befell TAC. Such reductions had severely degraded FEAF training for several years prior to 1950. Cross-country missions in Japan had been terminated for an extensive period before the Korean War. As a result, most navigational flights were conducted between two bases with which pilots were well familiar, thereby enabling pilots to rely extensively on radios and ranges. In the process, their dead-reckoning abilities deteriorated and left them poorly prepared for the difficult flying conditions over Korean terrain.<sup>26</sup> A USAF policy prohibiting the depletion of high-velocity aircraft rocket (HVAR) reserves also limited rocket training. While pilots were permitted to use practice projectiles in training, they quickly

discovered in combat that the trajectory of the HVAR was vastly different from the projectiles with which they had trained.<sup>27</sup>

Additionally, because FEAF's primary mission was air defense, FEAF focused its unit tactical training almost entirely on air-intercept and counterair missions instead of on CAS or other bombing missions that are typically expected of theater air commands. Meanwhile, while Fifth Air Force could claim that it had met all of Eighth Army's requests for joint air-ground training, it could do so only because the joint operations were neither realistic nor extensive.<sup>28</sup> Similarly, the training of TACPs prior to the war was marginal at best, because the close support demonstrations between Fifth Air Force and Eighth Army were unrealistic and well-rehearsed scenarios over well-known ranges.<sup>29</sup> An additional problem that handicapped FEAF training was a lack of gunnery ranges. Ultimately, FEAF pilots had to overcome these prewar training shortfalls much like pilots did in World Wars I and II—through combat experience.

Although they were not at peak effectiveness, FEAF aircrews were able to operate on the day the war began. The same cannot be said for the engineer aviation units assigned to FEAF. In fact, engineering units were particularly poorly trained and marginally capable. Poor construction capability proved to be very detrimental to offensive planning and operations from the onset of the Korean War. Old equipment, poor training, and rapid rotations were the greatest problems.<sup>30</sup> Collectively, these impediments degraded FEAF's ability to operate from Korean airfields during the initial period of operations. As was the case with pilots, engineers had no alternative but to improve their performance as the war progressed.

Because of the Soviet nuclear threat, the Air Force was focused on SAC at the onset of the Korean War. This translated to budget reductions in TAC and FEAF, which severely reduced these commands' aircrew training. Because FEAF's primary mission was air defense, FEAF training focused predominantly on air-intercept and counterair missions—not CAS or interdiction. Consequently, FEAF aircrews entered the Korean War with little preparation for what awaited them.

## Equipment

In February 1949, ROK President Rhee tasked Maj Gen Claire L. Chennault, USAF, retired, to devise a plan for a 99-aircraft ROK Air Force (ROKAF). MacArthur opposed such an effort for three reasons: it was not essential to the maintenance of internal order in Korea, it might increase the possibility of war between North and South Korea, and it would substantiate North Korean charges that the United States was creating an arms race in Korea.<sup>31</sup> Consequently, South Korea assembled an air force on its own; and when US military forces departed on 29 June 1949, the ROKAF consisted of 16 planes (L-4s, L-5s, and T-6s) and 39 trained pilots.<sup>32</sup> This small force was by no means a credible deterrent to a North Korean invasion. Therefore, when war broke out, the ROKAF was completely reliant on US airpower.

Air Force chief of staff Gen Hoyt S. Vandenberg described the USAF in 1950 as a shoestring Air Force. Of that “shoestring” force, FEAF had 30 squadrons, which equated to nine of the USAF’s 48 combat wings.<sup>33</sup> These units represented the largest grouping of USAF force strength outside of the United States. FEAF’s aircraft were reflective of FEAF’s defensive priority. The 553 operational planes included 365 F-80s, 32 F-82s, 26 B-26s, 22 B-29s, 25 RF-80s, 6 RB-29s, and 26 C-54s.<sup>34</sup> Most fighter wings had received the latest F-80 model (F-80C) between 1949 and 1950. However, the recent conversion of F-51s to F-80Cs was not without its problems, the most significant of which was the F-80C’s requirement for longer and stronger runways. By July 1950, only four airfields in Japan had 7,000-foot (ft) runways that combat-loaded jet fighters required, and there were no such airfields in Korea.<sup>35</sup>

The F-80C’s inability to deploy to the primitive airfields in Korea meant that it had to base its operations out of Japan. However, its limited fuel load, range, loiter time, and bomb-carrying capacity reduced its effectiveness. General Partridge wanted to replace the F-80 with the P-47, which he thought was a better strafing and dive-bombing airplane, but none were available.<sup>36</sup> As an alternative, in July 1950, Fifth Air Force decided to replace the F-80s in six squadrons with the propeller-driven F-51s—the all-around workhorse of World War II. In recalling

the F-51's prowess during World War II, it must be noted that ground troops greatly supported the employment of the F-51 for CAS operations.<sup>37</sup>

The fact that the F-51 carried a larger munitions load, had a greater loiter time, and could operate from shorter airstrips than the F-80 made the decision to replace the F-80 with the F-51 seem logical at first.<sup>38</sup> However, Fifth Air Force soon realized that the jet fighter-bomber capability of the F-80 had advantages over the F-51. FEAF's "Summary Report" cited numerous ways in which the F-80 was superior to the F-51: it had an advantage in speed for surprise attack and rapid escape, it had far better self-defense ability, it could overfly the weather when required, and it required less maintenance.<sup>39</sup> Further, in comparing the F-80 and F-51, the F-51 losses to enemy action in relation to sorties flown were more than double those of the F-80, which also could fly twice the sorties of the F-51 per day because of better parts availability and less maintenance time.<sup>40</sup> The F-51's liquid-cooled engine, which was especially vulnerable to ground fire, accounted for this high loss rate. Mindful of this vulnerability, General Partridge declared, "One lucky shot in the radiator could bring the plane down."<sup>41</sup>

In addition to the aircraft that were assigned to it at the onset of the Korean War, FEAF was also assigned B-29s from SAC's 22d and 92d Bombardment Groups on 3 July 1950. General Vandenberg initiated this action due to the necessity of destroying North Korean objectives beyond the 38th parallel. Several weeks into the war, Vandenberg ordered two additional bombardment groups (98th and 307th) of B-29s to deploy to Korea.

## **Air Superiority**

Air-to-air combat in the Korean War was dramatically different than in World War II. In the Korean War, jet fighters approached, engaged, and disengaged at much higher speeds than did propeller-powered fighters during World War II. The primary USAF jet fighter, the F-80C, was called on during the first days of the Korean War to provide escort for the C-54s that were evacuating American citizens from South Korea. During these operations on 27 June 1950, four F-80C fighters

engaged eight North Korean IL-10 fighters. The F-80C pilots shot down four of the IL-10s, which marked the first aerial victories for a USAF jet fighter.<sup>42</sup>

Despite this success, General Stratemeyer argued that aerial cover responsibilities were limiting FEAF's ability to establish air superiority by attacking North Korean airfields. Realizing the criticality of this request, MacArthur permitted Stratemeyer to begin air attacks against enemy airfields north of the 38th parallel. But due to the worsening situation in the forward battle area, F-80Cs continued to focus on air patrols in the Seoul area well into July. The F-80C performed these patrols so effectively that, in referring to this aircraft, Stratemeyer remarked: "I wouldn't trade the F-80 for all the F-47s and F-51s you could get me. It does a wonderful job in ground support and can take care of the top-side job if enemy jets appear."<sup>43</sup>

While the F-80 received glowing praise from Stratemeyer, the North Korea air force (NKAF) quickly learned to exploit its short range and limited fuel capacity. Specifically, NKAF pilots discovered the length of time that Fifth Air Force jets could remain in the battle area before they exhausted their fuel supply.<sup>44</sup> One instance of this occurred on 12 July 1950 when three North Korean Yak-9s attacked a flight of F-80s that were strafing ground targets. The F-80s evaded the attackers; but because they were low on fuel, they could not counterattack the Yaks. A similar scenario unfolded the next day when two Yaks surprised a flight of F-80s that were strafing along the front. Yet again, the F-80s escaped; but they were unable to pursue the Yaks due to low fuel.

MacArthur was so concerned about these developments that he instructed Stratemeyer to dedicate a part of the FEAF specifically to counterair operations. In response, on 15 July, General Partridge tasked F-80s and B-29s to strafe the Yak aircraft and crater the runways at Kimpo airfield.<sup>45</sup> On 18 July, pilots from the aircraft carriers in Task Force 77 also continued attacks against airfields in the Pyongyang area. These attacks resulted in the destruction of 14 enemy aircraft and damage to 13 more. While this action served as a quick-fix solution to the problem, Fifth Air Force FACs and fighter pilots began to work together to produce a long-term solution. They discovered a

way to break up the NKAF scheme of operations by improving the coordination of their air-ground radio control. The effectiveness of this coordination was evident along the front line of the battlefield when F-80s shot down one Yak on 17 July, three on 19 July, and two on 20 July. One F-80 pilot from the 19 July attacks said: "We were attacking enemy targets when we were called by the ground controller and informed of the Yaks, and that controller took us right to them although we were low on ammunition and just about ready to go back to our home base."<sup>46</sup>

As a result of these improvements in FEAF tactics and performance, the NKAF attempted no more offensives after 20 July 1950. Thus, while facing the small NKAF that possessed not a single jet turbine aircraft in the summer of 1950, FEAF aircraft enjoyed virtual air supremacy over all of Korea. FEAF aircraft would not be truly tested until late November 1950 when the Chinese, with fast and maneuverable MiG-15 jet fighters, entered the conflict.<sup>47</sup> Consequently, in July 1950, Stratemeier could declare, "the air battle was short and sweet. Air supremacy over Korea was quickly established."<sup>48</sup> Such supremacy in the air was a critical enabler for numerous facets of the US military effort during the first few weeks of the war. It allowed B-29s to conduct strategic bombing missions into North Korea without fighter escorts, navy aircraft carriers to launch air attacks within close proximity to the shore, and Eighth Army troops to maneuver during the day while large CAS efforts forced North Korean ground forces to remain in defensive positions during the day and attack only at night.<sup>49</sup>

### **Close Air Support**

Because of their amphibious operations against Japan during World War II, the Navy and Marine Corps's emphasis on CAS prior to the Korean War exceeded that of the Air Force. The Navy-Marine Corps system for air requests and air direction stressed rapid response and decentralized management of CAS sorties.<sup>50</sup> After World War II, these two services nurtured their CAS system in amphibious exercises to the point that they ensured CAS strikes would arrive within minutes.<sup>51</sup> The

Army–Air Force CAS relationship, on the other hand, was quite different upon entering the Korean War.

“There was no definite system. We saw some tanks, got on each radio channel until we got fighters in the Chochiwon area, and any fighter who heard us would give us a call and we would give them the target.”<sup>52</sup> These words from a Korean War airborne controller in July 1950 convey the chaotic CAS system that operated at the onset of the war. In the summer of 1950, the Eighth Army did not have the necessary communications net to make such a process viable. As the G-3 air officer in the JOC at that time stated, “The Army had no equipment available. We had no strike-request nets.”<sup>53</sup>

CAS was particularly reliant on effective C<sup>2</sup> for success because it required close coordination between air and ground components. The absence of this coordination was evident early on when one Army L-19 liaison aircraft and an Air Force fighter-bomber collided in the air and others narrowly missed colliding.<sup>54</sup> Additionally, fratricide would remain a concern throughout the war. Between June 1950 and April 1953, aircraft dropped ordnance on friendly positions 108 times.<sup>55</sup> Fortunately these incidents resulted in few casualties. Based on these occurrences, the effectiveness of CAS depended more on the Eighth Army/Fifth Air Force organization to request and direct ground attack sorties than it did on the operational characteristics of FEAF aircraft.<sup>56</sup>

Communication between Army and Air Force elements improved with the employment of TACPs. However, attrition became an increasing problem for TACPs’s men and equipment. Korea’s rough roads caused much damage to the radio equipment, and the TACPs’s unprotected jeeps made it difficult for them to get close enough to the adversary. Consequently, the responsibility fell on the US Army to call in air-support requests directly to the JOC. However, Army troops had a difficult time doing so during the first few weeks of the war because they were unable to identify concentrated enemy formations while they were rapidly retreating.

The employment of airborne TACs was perceived as the solution to this problem. Such a tactic was not new. In Italy during World War II, “Horsefly” liaison pilots had led fighters to

hard-to-find targets. In Korea, these airborne TACs became known by their call sign as Mosquitoes. The results of this tactic were so successful that Lt Col John R. Murphy, chief of the operations section in the JOC, described the first day's use of this tactic as "the best day in Fifth Air Force history."<sup>57</sup> The flight activity of the Mosquitoes attests to the important role they performed. They flew 269 sorties in July 1950 and more than 1,000 sorties each month for the rest of the year.<sup>58</sup>

Eighth Army battalion commanders quickly learned the value of the Mosquitoes. They discovered that TACPs could forward a strike request to the Mosquitoes, which remained on station over the battle area for as long as three hours at a time. The Mosquitoes, in turn, could rapidly pass the request to the TACC. The TACC coordinated all air requests within the JOC. This process quickly became the accepted means to communicate air-support requests from the frontline ground units to the JOC. While this process was effective, it also produced several undesirable outcomes. Most notably, higher echelons were unable to review air requests because they went directly from the regiment to the JOC.

Because ground commanders relied on TACPs for this information, regimental commanders, in particular, insisted that TACPs remain near their command posts. These command posts were a considerable distance from the front. As a result, TACPs normally passed target information to a Mosquito controller, who then directed fighters to a given target.<sup>59</sup> In the process, ground commanders soon became just as possessive of Mosquitoes as they had of TACPs. With the ground commanders focusing on Mosquito and TACP operations along the front lines, Fifth Air Force deployed additional Mosquitoes to locate enemy targets in the enemy's assembly areas behind the lines.<sup>60</sup>

Mosquitoes also played another significant role. As mentioned earlier, the short range of the F-80 limited its ability to support the war from its Japanese air bases. Mosquitoes reduced the need for F-80 pilots to loiter in the target area by locating enemy targets for attack prior to the arrival of the F-80s. The F-80s's use of Misawa tanks also helped to overcome the range limitation. With the 265-gallon Misawa tanks instead of the

standard Lockheed wing tanks, F-80s could loiter for as much as 45 minutes. Although some F-80 pilots expressed concern about the stress these tanks placed on the aircraft's wing tips, others stated that with these tanks "the general attitude . . . toward the F-80 is one of confidence and pride."<sup>61</sup>

A second significant problem with the F-80 in July 1950 was its lack of wing racks for weapons employment. As a result, up to this point in the war, F-80 pilots had to rely entirely on the aircraft's six .50-caliber nose guns. The aircraft's excellent aim and fast airspeeds enabled pilots to surprise enemy forces and attack them with precision before they had time to take defensive action. Despite this, more powerful weapons were needed to destroy heavily armored enemy vehicles such as the Soviet-built tanks used by North Korean ground forces. The only such weapon that an F-80 could carry was a 5-inch HVAR. Because they received virtually no training on the employment of this weapon during peacetime, F-80 pilots learned to use this weapon in combat. Largely through trial and error, pilots discovered that HVARs were most effective when they approached a tank from the four o'clock position and fired the weapon from a 30-degree angle and a range of 1,500 ft.<sup>62</sup>

In the first few weeks of the war, F-80s flew approximately 200 sorties each day against the enemy's forward troops and communications. Although the F-80 was not suited ideally for CAS, North Korean prisoners reported that F-80 air attacks destroyed nearly all of their transportation. They added that because of these attacks, the North Korean commander told his superiors he would need more troops to accomplish his mission.<sup>63</sup>

Meanwhile, despite its vulnerability to ground fire, the F-51 sought to match the results of the F-80. Because the F-51s at Taegu had communications connectivity with the TACC at Taejon, they could scramble when the ground situation demanded immediate air support. During the first few days of the war, Taegu F-51s effectively dropped 500-pound (lb) bombs filled with thermite and napalm against North Korean tanks and troops. These firebombs were especially demoralizing to enemy troops. According to one officer at Taegu, "as soon as we would start dropping thermite or napalm in their vicinity

they would immediately scatter and break any forward movement.”<sup>64</sup> In addition to these frontline air operations, B-26s effectively attacked bridges and supply dumps immediately behind the battle line.

Collectively, these attacks by the F-80s, F-51s, and B-26s forced the North Korean troops to change their tactics. “Enemy forces were reluctant to move or fight by day, tanks and trucks used back roads and trails when they had to make daylight marches, forward-area supply dumps were dispersed, and all troops exercised vigorous camouflage discipline.”<sup>65</sup> While these tactics reduced the vulnerability of North Korean troops to air attack, they also slowed their advance. Using steeper angle-rocket attacks and napalm, FEAF pilots destroyed the enemy’s tanks. The North Korean soldiers attested to the damage and demoralization of USAF air strikes.<sup>66</sup> Likewise, Eighth Army ground units believed that CAS was essential.<sup>67</sup> In fact, General Dean, commander of USAFIK, declared, “Without question the Air Force definitely blunted the initial North Korean thrust to the southward.”<sup>68</sup>

## **Interdiction**

As alluded to earlier, a comprehensive and coordinated interdiction campaign was not formulated or conducted in Korea until late July 1950. The primary reasons for this were twofold. First, MacArthur and his headquarters staff pressed for FEAF to focus its airpower against the enemy forces on the front line. Second, the chaotic and uncoordinated C<sup>2</sup> and targeting infrastructures made the development and execution of an interdiction plan almost impossible. By late July, MacArthur was willing to broaden airpower’s role beyond that of CAS, and General Weyland had organized a targeting committee of senior officers to devise an interdiction plan for the war. Thus, nearly 30 days after the war began, airpower was finally being employed as Vandenberg and Stratemeyer had originally advocated. In fact, on 3 July, Vandenberg had informed Stratemeyer, “It is axiomatic that tactical operations on the battlefield cannot be fully effective unless there is simultaneous interdiction and destruction of sources behind the battlefield.”<sup>69</sup>

Even though an interdiction campaign did not begin before late July, interdiction operations certainly did. FEAF B-26s, F-82s, and F-80s conducted the initial interdiction missions. The B-26Bs, which operated out of Iwakuni Air Base in Okinawa, were extremely effective during early operations. Their adequate fuel capacity allowed them to reconnoiter the enemy's lines of communication (LOC), and the preponderance of "gun-nose" variants enabled them to optimize their 14 forward-firing machine guns during low-level attacks.<sup>70</sup> Meanwhile, the all-weather F-82s also had the range to both escort bombers into North Korea and search for targets at night along the Han River. The North Koreans' lack of understanding of US air-power contributed to the B-26 and F-82's early success. The North Korean forces were constantly wide open to attack from the air as they took little, if any, cover while moving along roads.<sup>71</sup>

Despite these early successes, FEAF interdiction operations entailed several problems. Fifth Air Force encountered communications and intelligence delays. This was especially true regarding the official bomb line along the Han River. While no bombing restrictions existed north of the line, a pilot had to have positive identification of a target south of the line before attacking it. Due to the fluid ground situation, it was difficult for pilots to distinguish friendly from enemy troops. On 3 July, five F-51s erroneously attacked ROK troops south of the bomb line. In response, on 7 July MacArthur ordered USAFIK to establish a more realistic bomb line and to report changes in the line throughout the day. He also mandated that all ROK vehicles be painted with a white star similar to US vehicles.<sup>72</sup>

Some problems were more easily solved than others. F-82s, for instance, were FEAF's only night and all-weather capable counterair fighters. Consequently, FEAF considered it too critical to the defense of Japan and withdrew it from the war in early July. B-26 light bombers compensated fairly well for the F-82's departure, but they were difficult to maneuver at low levels; and they were susceptible to small-arms fire. While FEAF directed that the B-26s perform their missions at medium altitude to avoid the ground threats, this complicated their ability to destroy road and rail bridges. By showing their ingenuity,

B-26 pilots soon devised effective tactics to overcome this challenge. B-26C “glass noses,” which were equipped with bombsights for medium-altitude bombing, led B-26B “hard noses” to the target.<sup>73</sup> Shortly thereafter, B-26B crews began to make their own successful attacks from medium altitude with glide and dive-bombing tactics.

B-29s also experienced some problems during the first few weeks of the war. Having never flown missions before to the front, the B-29 crews were unable to contact the forward TACPs. As a result, they never located their targets. On the next day, the B-29 crews successfully contacted the TACP and attacked their assigned targets. Nevertheless, General Partridge reported that he had more fighter-bombers than targets. For this reason, he suggested that the B-29s be released from CAS missions so they could strike targets deeper in North Korea.<sup>74</sup>

## **Conclusion**

The USAF was unprepared for the Korean War largely because prior to 25 June 1950 the US national security and military structures had placed little significance on South Korea or the conventional military capability that was required to defend it. Not surprisingly, the USAF put its emphasis on SAC and its long-range bombers instead of TAC and its tactical fighters. Even though strategy was heavily centered on nuclear employment, Air Force tactical doctrine had remained relatively sound. However, sound doctrine is of little benefit if it lacks the necessary training and communications to make it work. Such was the case with the USAF’s tactical airpower at the onset of the Korean War. Despite this, the USAF’s aircraft and pilots demonstrated significant flexibility and ingenuity in overcoming aircraft, training, communications, and other short-falls as they began combat operations in Korea.

It is also significant to note that the USAF had the tremendous advantage in Korea of facing an adversary that lacked a modern air force. Thus, the USAF was able to make adjustments, improvements, and innovations during the first few weeks of combat that it would not have been able to make had it faced a formidable opponent. The Korean War did not, however, prompt a major reevaluation of USAF air doctrine or capability.

Consequently, the ability of the USAF to operate against a more sophisticated air threat would not be closely examined until the USAF was faced by such a threat, as it would in Vietnam.

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## Chapter 3

### **Initial Period of Operations in the Vietnam War, 2 March–1 April 1965**

*In retrospect, I'm absolutely convinced that we lost the war wrong. We should have fought that war in an advisory mode and remained in that mode. When the South Vietnamese failed to come up and meet the mark at the advisory level, then we never should have committed US forces. We should have failed at the advisory effort and withdrawn.*

—Gen Voney F. Warner, 1983

After the Korean War, President Dwight D. “Ike” Eisenhower declared that never again would the United States become involved in a war such as the one in Korea in which the full capability of the US armed forces could not be employed.<sup>1</sup> As a result, military strategists focused on nuclear deterrence and massive retaliation instead of conventional warfare. The Air Force was no exception. In fact, until about 1960, the Air Force continued to believe that its robust nuclear capability would satisfy the requirements of any limited war.<sup>2</sup> Gen T. R. Milton, former commander of Thirteenth Air Force, corroborated this condition when he noted that the theater air forces in the 1950s were “all trying to be little SACs with the primary and almost the only mission being the nuclear one.”<sup>3</sup>

Many senior defense and Air Force officials did not view this lack of balance as inimical. In fact, Secretary of Defense Charles E. Wilson believed “the problem of deterring small wars cannot be considered separately from the problem of deterring war generally [and that] the capability to deter large wars also serves to deter small wars.”<sup>4</sup> The Air Force’s belief that it could tailor airpower entirely for nuclear war and still handle any lesser form of warfare was inherently shortsighted. Gen John P. McConnell recognized this and concluded that the Air Force was very unprepared for conventional warfare in the early 1960s.<sup>5</sup>

President John F. Kennedy recognized this ill-preparedness as well. He assumed office just two weeks after Soviet Premier Nikita S. Khrushchev's speech decrying Soviet support for "wars of national liberation."<sup>6</sup> Contrary to the nuclear exchanges on which the US military had focused, a war of national liberation consisted of guerilla actions aimed at subversion. While such actions would not trigger nuclear retaliation, they could, nonetheless, weaken the power of the targeted state until it was defeated. Consequently, the Soviet premier's remarks led to an intense reexamination of US national security and military strategy. President Kennedy did not think his predecessor's massive retaliation strategy was appropriate for this new international environment. Consequently, he initiated a strategy of flexible response, which allowed the military to respond to potential threats with a variety of force options.

As part of this effort, Kennedy directed Secretary of Defense Robert S. McNamara on 1 February 1961 to train and equip US troops for counterinsurgency warfare. As Gen William W. Momyer, USAF, retired, points out in *Air Power in Three Wars: World War II, Korea, Vietnam*, "This reorientation of our defense priorities toward smaller conflicts prompted considerable debate about how best to cope with [wars of national liberation]."<sup>7</sup> In the Air Force, the debate ensued between two sides. One side advocated that existing tactical forces could adjust to counterinsurgency warfare without major changes, while the other believed that counterinsurgency was the combat of the future that required a special force.<sup>8</sup>

By 1964 the US armed forces were fully engaged in combat operations in Vietnam. Early that same year, General LeMay, the Air Force chief of staff, called for concentrated air attacks against targets in North Vietnam. The JCS agreed that air strikes against North Vietnam would show the resolve of the US commitment to South Vietnam and would force North Vietnam to end its support to the Vietcong.<sup>9</sup> However, the joint chiefs favored a graduated response that would enable them to gain their objectives without severely straining US military resources.<sup>10</sup> The US military began its combat involvement in Vietnam with these competing strategies.

## Doctrine

Not surprisingly, the Air Force's growing preoccupation with nuclear war had a significant influence. Even General LeMay's views on Air Force doctrine changed as the Soviet nuclear capability became an increasing threat to the United States. During the postwar years, LeMay believed that the United States "could afford the luxury of devoting a substantial portion of [its] Air Force effort to support ground forces," because none of the world's hostile countries had the capability to threaten America.<sup>11</sup> He declared, "The enemy didn't have the capability to destroy us. He couldn't initiate an effective air offensive blow against us because he couldn't mount one."<sup>12</sup> However, by 1956 LeMay was convinced that Soviet aircraft were capable of attacking the United States with nuclear weapons. In light of this development, LeMay argued, "Offensive air power must now be aimed at preventing the launching of weapons of mass destruction against the United States or its Allies. This transcends all other considerations, because the price of failure may be paid with national survival."<sup>13</sup>

Consequently, in 1955 the Air Force released its new doctrine, Air Force Manual (AFMAN) 1-2, *United States Air Force Basic Doctrine*, with the backdrop of this Cold War mentality. Air Force vice chief of staff Gen Thomas D. White stated that this edition of AFMAN 1-2 provided "a clear discussion of the area between the two extremes of conflict [general war and full peace] so as to permit emphasis on the broad potentialities of air forces as a persuasive instrument in combating the international tension brought about by Cold War conditions."<sup>14</sup> Additionally, while the old doctrine associated the control of air only with wartime activity, the new doctrine stated, "Control of the air is achieved when air forces, in peace or war, can affect the desired degrees of influence over other specific nations."<sup>15</sup> Col Jerry Page and Col Royal Roussel of the Air War College Doctrine Division added that control of the air did not require continuous attacks against something. Rather, they contended that the Air Force could have much influence even when it did not drop a bomb or fire a bullet. They believed this to be the case during the Korean War.<sup>16</sup>

Due to this focus on the Cold War and the national security strategy of massive retaliation, neither the Air Force's 1955 nor its 1959 doctrine was well suited for the Kennedy administration's new national security strategy in 1961 of flexible response. In fact, Air Force doctrine had changed so little since its origin that LeMay remarked in the autumn of 1961, "I think we have been consistent in our concepts since the formation for the GHQ Air Force in 1935. Our basic doctrine has remained generally unchanged since that time."<sup>17</sup>

Despite this preoccupation with nuclear warfare, the Air Force leadership anticipated the Kennedy administration's interest in counterinsurgency. In fact, in March 1961, the Air Force presented a study on "Cold War problems" to President Kennedy.<sup>18</sup> As part of this study, the Air Force activated the 4400th Combat Crew Training Squadron at Hurlburt Field, Florida. The 4400th was tasked to develop tactics and techniques for counterinsurgency operations. However, in reality, the Air Force—as well as the other services—paid only lip service to counterinsurgency and continued to focus on its strategic nuclear role. It considered the 4400th to be adequate for counterinsurgency commitments.<sup>19</sup>

Consequently, three years would pass before the Air Force published its newest doctrinal document, AFMAN 1-1, *United States Air Force Basic Doctrine*, in August 1964. AFMAN 1-1 reflected the Air Force's desire to look forward—not backward.<sup>20</sup> The previous edition of Air Force doctrine stated, "Basic doctrine evolves from experience and from analysis of the continuing impact of new developments."<sup>21</sup> But the new manual declared, "Basic doctrine evolves through the continuing analysis and testing of military operations in the light of national objectives and the changing military environment."<sup>22</sup> By choosing to exclude experience from doctrinal development, Air Force doctrine makers in 1964 failed to incorporate valuable lessons from the Korean War. The US Air Force entered the Korean War convinced that it would fight an unlimited war against an industrialized nation by attacking clearly defined strategic targets. Although none of these assumptions proved to be true for Korea, the Air Force viewed Korea as an anomaly. Consequently, the 1964 doctrine was based on the same assumptions

as the Joint Training Directive of 1950. Worse yet, the Air Force in 1964 distanced itself even further from its tactical doctrine upon which Air Force leaders in the Korean War heavily relied. As a result, the Air Force struggled to overcome some of the same problems in Vietnam that it had faced in Korea.

### **Command and Control**

As early as 1962, Air Force chief of staff General LeMay advocated a more imaginative and responsive employment of airpower.<sup>23</sup> According to General Momyer (Seventh Air Force commander from 1966 to 1968) on 23 April 1962, LeMay made the following observations to Gen Paul D. Harkins, commander of US Military Assistance Command, Vietnam. “The command system was too cumbersome; the TACS was not being allowed to operate as efficiently as it had during World War II and the Korean War. Requests for air cover and for strikes against the ambush forces operating along most of the major roads were being processed much too slowly.”<sup>24</sup> LeMay recommended that to correct all these things, airpower would have to be centrally controlled by an air operations center (AOC) using the facilities of the already established tactical air control system (TACS). He added that the proper use of TACS would eliminate much of the delay.<sup>25</sup> The AOC of the 2d Air Division was selected to fulfill the former recommendation. Meanwhile, the latter recommendation would take longer to resolve because all four services in Vietnam were using both the South Vietnamese Air Force-USAF TACS and the US Army air-ground system.

According to the Air Force, these dual systems resulted in a lack of overall air efficiency and safety.<sup>26</sup> To resolve this dispute, the Army and Air Force chiefs of staff eventually signed a “Concept for Improved Joint Air-Ground Coordination” in March and April 1965.<sup>27</sup> This agreement specified that the joint commander would determine the daily proportion of aircraft for CAS, air superiority, and interdiction missions. In turn, the air commander had to report the apportionment for CAS to the ground commander, who would then allocate the CAS missions to his subordinate commanders. By early 1965, this agreement also led the Army and Air Force to restructure

TACS for more timely and responsive CAS, thereby fulfilling LeMay's recommendation.<sup>28</sup> The focus of the new TACS was TACC. TACC ordered all preplanned CAS missions to the South Vietnamese Army and US Army forces.

Although the kinks in TACS had been worked out by the start of Rolling Thunder in March 1965, the unity of control of the Air Force assets employed against North Vietnam had not. Instead of acting under a single commander, the air organizations operated under several different commanders. In Southeast Asia, Air Force assets were part of Thirteenth Air Force, which was located in the Philippines and was subordinate to the Pacific Air Forces (PACAF) commander in Hawaii. In South Vietnam, meanwhile, Air Force assets belonged to the 2d Air Division (redesignated Seventh Air Force on 14 March 1966), which was located at Tan Son Nhut airfield in South Vietnam. The commander of the 2d Air Division was expected to perform two roles: air component commander for MACV and forward commander for Thirteenth Air Force (2d Air Division's higher echelon). Finally, Navy carrier air units in the Gulf of Tonkin were organized as Task Force (TF)-77 and received their orders from the Seventh Fleet and from the commander in chief Pacific Fleet (CINCPACFLT) in Hawaii.<sup>29</sup>

In an effort to centralize control of airpower, the Air Force sought to place carrier aircraft under the operational control of CINCPACAF. However, CINCPACFLT preferred that the naval air assets stay under his control. Specifically, the CINCPACFLT wanted TF-77 to have the same relationship with the 2d Air Division that it had with Fifth Air Force during the Korean War.<sup>30</sup> The commander in chief Pacific Command (CINCPAC) concurred with CINCPACFLT on this issue; and in March 1965, PACAF was designated the "coordinating authority" for Rolling Thunder.<sup>31</sup> As was the case when FEAF was appointed the "coordinating authority" for air operations during the Korean War, such authority did not provide PACAF with operational control over TF-77 during Vietnam.

As was the case during Korea, PACAF and the 2d Air Division still struggled to transform "coordinating authority" into a harmonious relationship with TF-77. This impasse was finally overcome by a proposal to divide North Vietnam into six

“route packages,” or areas of operations, beginning at the demilitarized zone.<sup>32</sup> The Air Force was assigned three of the areas—route packages one, four, and five—while the Navy was assigned four. However, the Air Force did not consider this to be an ideal solution. General Momyer represented the Air Force’s view in stating, “Dividing North Vietnam into route packages compartmentalized our airpower and reduced its capabilities.”<sup>33</sup> Consequently, the route package system, which was a compromise effort to produce a unified and concentrated air effort, failed to effectively control two air forces from two different services. While such an arrangement rested outside of the control of the Air Force, it, nonetheless, had a tremendous impact on Air Force operations and decisions.

## **Training**

Despite the Kennedy administration’s new national security strategy of flexible response, the Air Force’s training prior to the Vietnam War remained locked to its nuclear-oriented doctrine. General McConnell stated in 1968 that “[The Air Force] did not even start doing anything about tactical aviation until about 1961 or 1962.”<sup>34</sup>

In September 1961, TAC teamed with the Military Air Transport Service (MATS), the Air Force Reserve, and the Army’s 82d and 101st Airborne Divisions to conduct Swift Strike, an exercise that included more than 15,000 airborne troops.<sup>35</sup> Of the exercises that occurred up to 1965, perhaps the most prominent was Operation Desert Strike, which was held in the western United States and involved more than 100,000 soldiers and airmen.<sup>36</sup> Fifteen squadrons from TAC flew from a total of 25 airfields located between Texas and Oregon, and MATS completed 2,500 tactical transport sorties. Consequently, while TAC was engaged in tactical training during its large-scale exercises prior to the Vietnam War, that training was not focused heavily on missions such as air superiority and CAS.

In light of its inattention to CAS since the end of the Korean War, the Air Force dismantled the TACS that successfully directed strikes on the battlefields of World War II and Korea and rebuilt a new one for Vietnam.<sup>37</sup> The forward air controllers (FAC) and their O-1 aircraft were an important component of

the new control system. The aircrews who flew the O-1s in the 19th Tactical Air Support Squadron received training in visual reconnaissance and strike control at the Tactical Air Command's FAC School.<sup>38</sup> While waiting to receive more than 100 more O-1s from the Army in early 1965, TAC accelerated its training to ensure that three new squadrons of O-1s would be available in Vietnam later that summer.

Meanwhile, SAC continued to train its bombers for its nuclear mission. However, in light of the focus on flexible response, this training was not intended to prepare bombers only for a strategic role as had historically been the case. Rather, the training was meant to mold SAC bombers into a conventional retaliatory force. The Kennedy administration was determined to optimize the use of the existing bomber force for this purpose.<sup>39</sup> In that light, the B-58 proved to be a particularly valuable member of the retaliatory force. This was evident from the B-58 training in 1961 alone that included flights from New York to Paris, New York to Los Angeles and back, and Tokyo to London. Similarly, the B-52 showed its prowess for worldwide deployability with training flights of more than 12,500 miles from Okinawa to Spain and more than 11,300 miles during a route that began and ended in North Carolina.

Based on the Air Force's focus on SAC, US aircrews were very effective in employing nuclear weapons, but they were far less effective in employing conventional weapons as the Vietnam War approached. At the onset of Rolling Thunder, the average circular error probable (the radius of a circle centered on the target within which half of the bombs fall) was approximately 750 ft.<sup>40</sup> Such a level of inaccuracy was relatively insignificant when nuclear weapons were used. However, it could prove very costly when trying to hit small targets with conventional weapons. Conventional air training was so far behind that the Air Force needed several years to improve the circular error probable of its conventional bombing to roughly 365 ft.<sup>41</sup>

## **Equipment**

In early 1965, the Air Force was only beginning to build up its air strength in South Vietnam. At that time, the Air Force had deployed more than 200 aircraft to the country. Just three

years later, Air Force strength in South Vietnam consisted of more than 750 aircraft.<sup>42</sup> The increase in the number of KC-135 refueling aircraft in Southeast Asia is a particularly telling example of this buildup. In March 1965, four KC-135s were based in Thailand; by 1972, that number was 110, not including the Okinawa-based tankers that supported B-52s.<sup>43</sup> In addition to the low number of aircraft at the start in Vietnam, the Air Force also relied heavily on old aircraft that were near the end of their useful service. The F-100, F-104, RF-101, and F-102 are a few examples of such aircraft.

The most significant air-to-air threat facing USAF aircraft during the initial period of operations in the Vietnam War was the MiG-17. While the F-105 was faster at all altitudes than the MiG-17, the MiG was far more maneuverable; and North Vietnam's ground-control intercept (GCI) radar network further enhanced the MiG's capability by vectoring it directly to ingressing F-105s. Since the F-105D had been developed to employ tactical nuclear weapons, it was designed to ingress and egress target areas at extremely high speeds. Thus, F-105s "never tried to out turn or out climb a MiG."<sup>44</sup> Instead, F-105s chose to outrun MiG-17s. To improve its performance against the MiG-17, the Air Force began replacing the F-100Ds with F-4Cs. The F-4C was superior to the F-100D in speed, acceleration, climb rate, and radar-intercept capability. Although it lacked the maneuverability of the MiG-17, the F-4 could dictate the terms of an air-to-air engagement because of its greater power.<sup>45</sup>

The Air Force's CAS and interdiction capability underwent significant improvements from 1964 to 1965. The impetus for these improvements was the severe problems that the USAF experienced with its B-26 bomber and T-28 air-to-ground aircraft. All of the B-26s and T-28s were grounded in 1964 because of flying mishaps attributed to wing failures. This measure caused Maj Gen Joseph Moore, the commander of the 2d Air Division, to state that "Second Air Division is practically out of business."<sup>46</sup> In May 1964, an excellent replacement was found in the Navy's A-1 airframe. With its long loiter times and large ordnance loads, the A-1 was ideally suited for CAS operations. The only major weakness of the A-1 was its

low airspeed, which occasionally resulted in long response times to tasked targets.<sup>47</sup>

Following the authorization to employ jet aircraft in South Vietnam, B-57 aircrews flew the first jet air strikes in South Vietnam on 19 February 1965. Soon after, F-100 and F-4 jets also began flying attack missions. The F-100, with its multiple arrays of weapon loads, and the F-4, which could carry as many as seventeen 750 lb bombs, represented a substantial increase in firepower.<sup>48</sup> Modified versions of USAF undergraduate training airframes, such as the T-38 (became the F-5) and T-37 (became the A-37), also joined the war effort in early 1965.<sup>49</sup> The fact that each was highly maneuverable, maintainable, and forgiving contributed to their success.

### **Air Superiority**

The air superiority tactics employed in Vietnam were fundamentally different from those of Korea. In Korea, the USAF achieved air superiority early. It maintained air superiority by preventing Chinese air units from using the North Korean air bases located behind the positions held by the Chinese army in North Korea. It did so by damaging North Korean airfields.<sup>50</sup> During the Vietnam War, on the other hand, the USAF's protective fighter screen covered only Thailand and South Vietnam. Therefore, the North Vietnamese air force (NVAF) operated from airfields that were immune to attack until the third year of the Rolling Thunder campaign.<sup>51</sup> Additionally, in 1965 the NVAF began bolstering its integrated air defense system by gradually increasing its number of surface-to-air missiles (SAM).<sup>52</sup> Consequently, beginning in 1965, the Air Force carried out air missions, such as interdiction, while simultaneously trying to gain air superiority.

While the US Air Force was concerned about the air-to-air threat in South Vietnam, the most significant threat facing US aircraft at the beginning of 1965 was anti-aircraft fire. At that time, older US aircraft were ideally suited for missions over North and South Vietnam. However, the North Vietnamese were also rapidly increasing their air defense threat in 1965. In September 1964, North Vietnam had 22 early warning (EW) and four fire control (FC) radars.<sup>53</sup> By March 1965, the North Vietnamese had

increased their EW radars to 31 and their FC radars to nine.<sup>54</sup> SAMs would later pose a significant threat to USAF aircrews in Vietnam. However, that was not the case as early as March 1965. In fact, North Vietnam did not launch the first of thousands of SA-2 SAMs at Air Force aircraft until July 1965.<sup>55</sup>

On 21 March 1965, Air Force aircraft began attacking North Vietnamese supply routes south of the 20th parallel and gradually shifted their assault north. Over the first month of these attacks, US aircraft did not face any NVAF fighters. However, NVAF training proved its effectiveness when a MiG-17 first downed a US aircraft on 4 April 1965.<sup>56</sup> In response to the increased MiG-17 threat, the Air Force deployed EB-66 electronic warfare aircraft to Southeast Asia in April 1965. The EB-66s carried radar jammers that could mask the approach of US strike aircraft and degrade the effectiveness of North Korean GCI radars.<sup>57</sup> As mentioned earlier, the F-4C was also introduced into the Vietnam War at this time. The F-4's extended range AIM-7 Sparrow radar-guided air-to-air missile (AAM), and close range AIM-9 Sidewinder infrared AAM provided the F-4 with a tremendous air-to-air capability.

Even though the F-4 was not as maneuverable as the MiG-17, the AIM-7 and AIM-9 allowed the F-4 to counter the MiG-17 without engaging in a dogfight. With its radar and AIM-9 capabilities, the F-4C could detect and destroy enemy aircraft before they were close enough to pose a threat.<sup>58</sup> However, in Vietnam, the F-4 was unable to capitalize on these advantages, because US Air Force rules of engagement (ROE) required that aircrews identify aircraft visually before attacking them.<sup>59</sup> Consequently, when pursued by an F-4, a MiG-17 could stay just outside of the effective threat envelope of the AIM-7 and use its maneuverability to overcome the high speed and acceleration of the F-4. Although NVAF pilots did not achieve air superiority, they did challenge US air dominance in Vietnam more so than Chinese pilots did in the Korean War.

### **Close Air Support**

Because counterinsurgency operations provide only few and fleeting opportunities for the employment of CAS, the CAS system in Vietnam developed gradually, and that development

was sometimes painful and uneven.<sup>60</sup> In fact, after examining this system in one study in 1965, the Air Force's Special Air Warfare Board concluded, "The present tactical air control system has grown up in the absence of a framework of doctrine for the conduct of tactical operations."<sup>61</sup> General Momyer corroborated this conclusion when he stated that prior to 1965 "it required a magician to figure out where the planes were flying."<sup>62</sup>

To improve this situation, CINCPAC announced in April 1965 that the primary air mission in South Vietnam would be CAS, with the highest priority given to troops in contact.<sup>63</sup> CAS sorties increased dramatically following this mandate from approximately 2,000 sorties in January to more than 13,000 in December. This new focus on CAS required the Air Force to perform a mission for which two decades of doctrine and training had poorly prepared it.<sup>64</sup> This new emphasis on support of the ground war differed greatly from the Air Force's strategic mission that had monopolized its attention since World War II.

While the CINCPAC mandate to focus on CAS was issued in April 1965, the impetus for the change had already begun. The Air Force provided advisors to each Army echelon down to the battalion level. These advisors served as FACs and ALOs in TACPs. In this arrangement, ground commanders would specify targets, prioritization, and desired effects. The Air Force advisors, meanwhile, would inform the ground commanders how tactical airpower could best satisfy their requests. Even though FACs had operated very effectively from the air during the Korean War, the Air Force largely ignored this practice between the Korean War and the beginning of US involvement in Vietnam, preferring to limit FAC operations to the ground. For this reason, the Air Force gave all of its light spotter planes to the Army after the Korean War. It was not until 1963 that the Army provided the Air Force with O-1 aircraft for FAC training.<sup>65</sup>

On 9 March 1965, the Air Force removed most of the remaining restrictions on the use of jet aircraft in Vietnam. Removing these restrictions required new tactics and procedures for CAS. An important consideration in formulating these tactics was striking a balance between attacking the target accurately and avoiding ground fire. To achieve this balance, Air Force pilots flew at 1,500 ft as frequently as possible, because the

enemy used predominately small arms fire and anti-aircraft artillery (AAA) against ingressing aircraft. Air Force pilots also devised a plan of attack to confuse the enemy forces and keep them from determining from which direction the strikes would come. A flight of four jets normally would coordinate with the FAC, who would provide the flight leader with additional details of the mission. The flight leader could then recommend changes, and the FAC would determine whether to implement them. Finally, the FAC would mark the target with smoke, and the flight leader would strike the target while still operating under control of the FAC.<sup>66</sup>

Despite improved coordination and practices, the CAS mission continued to encounter difficulties. Ultimately, foliage, terrain, and weather conditions of South Vietnam hindered CAS operations.<sup>67</sup> More importantly, the nature of the war itself in March and April 1965 was not ideally suited for CAS. Unlike conventional warfare, counterinsurgency operations rarely involved definitive battles of large-scale forces. Instead, most engagements in Vietnam consisted of small-size hit-and-run raids by the Vietcong that normally lasted 20 minutes or less.<sup>68</sup> Consequently, very seldom did US aircrews have well-defined CAS targets to attack. Even when they did, enemy soldiers usually took cover before the aircrews arrived. Of note, USAF achieved more favorable CAS results as larger battles developed in late 1965 and early 1966.<sup>69</sup> However, such results remained elusive in early 1965.

## **Interdiction**

After the North Vietnamese and Vietcong attacked US installations at Pleiku and Qui Nhon in early 1965, President Lyndon B. Johnson moved from a strategy of exchanging retaliatory strikes to one of gradually increasing pressure.<sup>70</sup> The first strikes implementing this strategy were initiated in February 1965 in Operation Flaming Dart. These attacks were soon followed by those on 2 March 1965, which marked the start of the Rolling Thunder bombing campaign that would continue through October 1968.

The initial plans for Rolling Thunder called for attacks against LOCs in Laos and below the 19th parallel in North

Vietnam. Generals LeMay and McConnell—the Air Force chiefs of staff immediately before and after February 1965, respectively—strongly argued that the initial view of Rolling Thunder was overly restrictive. While they agreed that LOCs in the southern part of North Vietnam were valid targets, they thought the most significant elements of the enemy's logistical network were ports, railroads, marshalling yards, supply centers, and bridges in the northern part of North Vietnam. They argued that attacks against hundreds of jungle trails in the South would be less effective than attacks against key logistical targets in the North.<sup>71</sup>

On 2 March 1965, the first Rolling Thunder attack struck the Xom Bang ammunition depot just north of the 19th parallel. The next attack, which targeted an island off the coast of Vietnam and another ammunition depot north of the 19th parallel, was not conducted until 13 days later on 15 March.<sup>72</sup> While Air Force senior leaders were displeased with the focus and irregularity of the bombing, they could not blame the process for the poor results of the bombing operations. The bomb damage assessment of the Flaming Dart raids during February 1965 revealed that air attacks destroyed less than 10 percent and damaged less than 5 percent of the 491 buildings that were targeted.<sup>73</sup> As mentioned earlier, the Air Force's training focus on nuclear bombing between the Korean and Vietnam Wars largely accounted for this poor performance. While it would take some time, the Air Force would improve its bombing effectiveness.

By the end of March, the purpose of Rolling Thunder had shifted from attacking North Vietnam's will to fight to interdicting the country's supply routes. As a result, target selection became even more focused on interdiction targets such as bridges, tunnels, rail lines, roads, river transportation, and other key rail, road, and river chokepoints. Looking beyond the initial period of operations, Rolling Thunder sorties flown each week increased fourfold to fivefold from the outset of the campaign.<sup>74</sup> These attacks began to degrade North Vietnam's rudimentary transportation system. However, ultimately, the Rolling Thunder attacks would not be successful in bringing the North Vietnamese to the negotiating table.

## Conclusion

After the Korean War, the United States was convinced that never again would it become involved in a war like the one in Korea, where the full capability of the US military could not be employed.<sup>75</sup> Consequently, Air Force strategy and doctrine remained as committed to nuclear deterrence and massive retaliation as ever. While the Air Force attempted to develop counterinsurgency doctrine, it essentially only paid lip service to this form of warfare. Lack of joint doctrine also resulted in a chaotic C<sup>2</sup> structure that involved even less coordination and integration of air operations than was the case in Korea.

Because much of the Air Force's training prior to the Vietnam War corresponded with its nuclear-oriented strategy and doctrine, US aircrews were very effective in employing nuclear weapons but not conventional ones. However, unlike their counterparts in the Korean War, these aircrews were able to operate at airfields in-country for several years prior to the initial period of operations. This advantage likely assisted them in making adjustments during that initial period, thus resulting in improved CAS and interdiction operations. Additionally, the A-1 and F-4 CAS aircraft that aircrews flew in Vietnam were more effective than the F-51 and F-80 CAS platforms that aircrews flew in Korea. Yet, despite the employment of a new fighter and AAMs, the Air Force was not as successful in improving its air superiority capability. This diminished success was largely due to restrictive ROE and a robust North Vietnamese effort to strengthen its air defense system as the war ensued.

By the end of the Vietnam War, enemy tactics had evolved from counterinsurgency to conventional force-on-force operations. Given that, as the US Air Force looked to the future, it would once again be faced with the dilemma of predicting on which type of war it should base its strategy and doctrine. Desert Storm would reveal the answer to that dilemma.

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CADRE PAPER

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## Chapter 4

### **Initial Period of Operations in Desert Storm, 17 January–15 February 1991**

*What we did not learn was how to defeat a modern, well-trained, well-motivated, well-led force in a dynamic environment. We did not learn how to engage in a combat scenario without any significant preparation time or how to engage in an air operation where you did not have a large indigenous infrastructure to depend on for support.*

—Frank Kendall  
Undersecretary of Defense for  
Tactical Warfare Programs, 1991

The Soviet Union dramatically expanded its nuclear and conventional military capability during and following the Vietnam War. While the Soviet nuclear buildup was of concern to the United States, the United States was able to counter this threat with its own robust nuclear capability. However, the United States was not able to counter the rapidly expanding Soviet conventional forces in the Warsaw Pact as easily. In 1986, Soviet and Warsaw Pact mechanized infantry divisions in Eastern Europe numbered between 90 and 120. In contrast, the United States and the North Atlantic Treaty Organization (NATO) could counter this threat with only 45 divisions. To make matters worse, Soviet armored forces were prepositioned in the forward area, poised to attack the weaker NATO forces before US reinforcements could arrive on the scene.<sup>1</sup>

While the Soviet conventional military capability increased during the 1970s, President Jimmy Carter's administration focused on countering the Soviet nuclear threat. The administration's countervailing strategy was intended to "deter any strategic exchange [with the Soviet Union] by insuring the required overall survivability of our own strategic forces, together with the maximum possible flexibility in their use."<sup>2</sup> Meanwhile, in the 1980s, the administration of President Ronald W. Reagan emphasized the importance of increasing both the US

military's strategic and conventional capabilities. When he accepted the Republican Party's presidential nomination in 1979, he stated, "America's defense strength is at its lowest ebb in a generation, while the Soviet Union is vastly outspending us in both strategic and conventional arms."<sup>3</sup> Secretary of Defense Caspar W. Weinberger corroborated the importance of increased flexibility and capability in US security strategy in March 1981 when he told a congressional hearing "Wars break out over irreconcilable conflicts in vital interests. To cope with that situation requires a far more comprehensive doctrine, strategy, and policy. Neither mutual assured destruction nor essential equivalence is sufficient for this purpose."<sup>4</sup>

The concern of Soviet conventional military capability was not based only on the increased strength of Soviet ground forces. Rather, it was based on the substantial improvements of the Soviet air force during the 1970s and 1980s. These improvements included the introduction of MiG-23, MiG-29, Su-27, and Su-24 aircraft as well as forward-hemisphere, extended-range missiles. The upgrades in aircraft and weapons enabled the Soviets to conduct head-on attacks against NATO aircraft. This was a significant improvement over the rear-only attack capability demonstrated by the adversary during the Vietnam War. These upgrades and increases in the Soviet air force played a role in the Reagan administration's decision to bolster the US conventional war-fighting capability. The Air Force followed suit by modifying its strategy to include not only strategic nuclear attacks but tactical conventional attacks as well.

## **Doctrine**

The concern of the Soviet conventional threat to NATO prompted the Air Force and Army to combine their efforts to achieve and exploit their understanding of Soviet military doctrine and operations. In October 1973, the new commander of TAC, Gen Robert J. Dixon, initiated a formal dialogue with Gen William E. DePuy, the commander of the Army's Training and Doctrine Command (TRADOC). Dixon declared that the purpose of this dialogue was to achieve "an unprecedented cooperative

effort to develop concepts, procedures and tactics in order to make the most efficient and effective use of existing forces.”<sup>5</sup>

General Dixon further believed that “neither the Army nor the Air Force alone [could] win a significant conflict; they could only win as a team.”<sup>6</sup> Consequently, when the Army transitioned from its defensive war-fighting construct to a more offensive one, the new strategy—known as AirLand Battle—called for air and land assets to fight the close battle collectively, while air resources simultaneously attacked the enemy’s second-echelon forces deep in his own territory. In 1982 the Army updated FM 100-5 to reflect this new AirLand Battle doctrine that emphasized the counteroffensive and the engagement of second-echelon forces. In April 1983, the two services took this doctrine one step further when the Air Force and Army chiefs of staff released a joint-service memorandum of agreement that specified how the two services would work together in executing the AirLand Battle concept. This memorandum involved several revolutionary concepts. As the *Gulf War Air Power Survey (GWAPS)* points out, “The new doctrine recognized, for the first time, the concept of a single air component commander and land component commander, and it also increased the amount of joint coordination required between land and air units in conducting tactical air support for land forces.”<sup>7</sup>

By this time, TAC and TRADOC began to examine how the new AirLand Battle philosophy could be applied to regions other than central Europe where contingencies were more likely to occur. One of these regions was the Persian Gulf.<sup>8</sup> When the Rapid Deployment Joint Task Force (RDJTF)—the predecessor of US Central Command (USCENTCOM)—was formed in early 1980, the Army and Air Force components, later US Army Forces Central Command (USARCENT) and US Air Forces Central Command (USCENTAF) adopted the AirLand Battle procedures during their exercises and contingency plans. As a result of its components’ focus on AirLand Battle, CENTCOM was familiar with joint Air Force-Army operations upon its activation in January 1983.

Despite these gains in Army-Air Force battlefield coordination in 1983, CENTCOM’s exercise Internal Look in 1990 did not include AirLand Battle. While airpower did support ground

forces in this exercise, it did so in a new mission. Lt Gen Charles A. Horner, CENTAF commander, called this new mission "Push CAS." Horner intended for Push CAS to maintain constant airpower over the battlefield to ensure that CAS was always immediately available to the Army. If CAS was not needed, these Push CAS sorties would be "rerouted" to an interdiction role. This concept that Horner employed and Gen H. Norman Schwarzkopf supported in Internal Look became CENTAF's standard operating procedure when Desert Storm began six months later.<sup>9</sup> Because Push CAS differed from the AirLand Battle concept that was practiced in NATO, Desert Storm ground commanders who had been stationed in NATO were very frustrated with this practice. Lt Gen Frederick Franks was arguably the most vocal in voicing that frustration.

The greatest obstacle facing the Air Force and Army was the fact that AirLand Battle was not a joint doctrine. Consequently, even though the two services agreed on some issues, particularly that close air support was important and it should be an Air Force mission, they disagreed about the two following issues: (1) the influence senior ground commanders should exercise over Air Force interdiction operations and (2) the process for coordinating the effects of fixed-wing air and extended-range Army systems.<sup>10</sup> As Dr. Harold R. Winton contends, "One can conclude that although very significant agreement existed at the tactical level, noticeable divergence characterized the operational level."<sup>11</sup>

The most contentious issue dividing the Army and Air Force concerned the two services' interpretation of the fire support coordination line (FSCL). The ground commander controlled and coordinated any air operations in direct support of the land battle inside of the FSCL, while the joint force air component commander (JFACC) exercised control of air operations beyond the FSCL. The Army's interpretation of AirLand Battle resulted in the Army pushing the FSCL further back, thereby, increasing the territory within which the Air Force had to coordinate its strikes. Although the FSCL was not intended to be a boundary, it became one in Desert Storm. Consequently, as the FSCL continued to be pushed back as the VII and XVIII Corps advanced during the ground offensive, the Air Force

refused to fly interdiction short of the FSCL.<sup>12</sup> Meanwhile, the corps did not use their allocation of CAS sorties because they were not in contact with Iraqi forces.<sup>13</sup> This confusion between the Army and Air Force may have contributed to the escape of two Iraqi Republican Guard divisions to Iraq.

As important as the Air Force and Army doctrinal changes were, perhaps the most significant doctrinal development was the Defense Reorganization (Goldwater-Nichols) Act of 1986, which redistributed power among the unified commands, the JCS, and the military services. It further empowered the CINCs and the chairman of the JCS by bestowing on them new responsibilities in resource allocation as well as national security planning and operations.<sup>14</sup> This reorganization had a dramatic impact on the JFC. Yet, while this legislation gave birth to the role of a JFACC, this role would not likely have matured in Desert Storm if not for General Schwarzkopf's delegation of the entire air offensive to Horner.

### **Command and Control**

In his book, *AirLand Combat: An Organization for Joint Warfare*, Col Thomas A. Cardwell III concludes that Desert Storm marked "the first time the US did not experiment with a command structure, but used the one specified in joint publications. Specifically, the use of a JFACC allowed the joint force commander, CINCCENT, to effectively conduct the war."<sup>15</sup> As a single joint force air commander, the JFACC brought a level of unity of command to Desert Storm that was not observed in Korea or Vietnam. Particularly, the JFACC exercised tactical control over all air assets by providing "detailed and, usually, local direction and control of movements and maneuvers necessary to accomplish mission or tasks assigned."<sup>16</sup>

Consequently, General Horner's role as the JFACC represents perhaps the most significant difference between the air-power operations in Desert Storm and those in Korea and Vietnam. No longer was the Air Force commander authorized only coordination control over Navy and Marine Corps air assets as had been the case in Korea and Vietnam. Rather, the JFACC served as the focal point for air planning and employment decisions. As a result of this arrangement, "Centralized control

and decentralized execution became the norm.”<sup>17</sup> Further, not only did the JFACC gain tactical control over the aircraft of the Navy and Marine Corps but he also gained operational control of the SAC bombers that were tasked for Desert Storm. In the process, “two generations of command and control problems went away nearly overnight.”<sup>18</sup>

Despite these improvements in C<sup>2</sup>, some of the practices from Korea and Vietnam continued—albeit to a lesser degree—during Desert Storm. While the concept of route packages was not officially practiced in Desert Storm as it was in Vietnam, the Air Force sorties flown from Incirlik Air Base in Turkey against targets in northern Iraq were similar in practice to route packages. This operation, known as Proven Force, was responsible for attacking targets north of 34.5 degrees north latitude in Iraq.<sup>19</sup> The greatest difference from the Vietnam route packages is that Proven Force aircraft eventually attacked targets further south, and other coalition aircraft later struck targets in northern Iraq.

The air tasking order (ATO) was also a critical means for the JFACC to carry out C<sup>2</sup> of his air assets, because it contained all of the sorties the JFACC desired to be flown. Thus, ATOs approved by the JFACC were directive in nature and guided the actions of the relevant component commanders. However, the ATO process involved a very complicated organizational architecture. *GWAPS* describes this complex architecture as one that “combines technology, compartmented information, many people having myriad occupational specialties and perspectives, sometimes conflicting organizational responsibilities, and numerous agencies—with so many linkages and pathways that naming, let alone tracing, all the connections may be impossible.”<sup>20</sup> Thus, the interdependent and interlocked nature of the ATO process increases the potential for C<sup>2</sup> failures. “At some point,” adds *GWAPS*, “the system may become so complicated that Gulf War-type organizational ad hoc solutions or fixes may be inadequate.”<sup>21</sup>

One of the greatest obstacles at the beginning of Desert Storm was disseminating the ATO to the deployed units. A combination of systems was first used to transmit the ATO to deployed wings. The computer assisted force management

system (CAFMS) later replaced these systems and transmitted the ATO throughout the theater. Eventually, CAFMS was linked directly to wing operations centers, control and reporting centers, air support operations centers, and the Marine Corps Tactical Air Operations Center. By 24 December 1990, CENTAF received the eight central processors it needed to complete its ATO dissemination network in the theater. However, because the Navy did not have CAFMS terminals and it operated under a different communications format, the Air Force transmitted the ATOs to Navy carriers via three different systems in succession.<sup>22</sup>

The TACS was another critical factor to effective C<sup>2</sup> of air operations during Desert Storm. As stated in *GWAPS*:

TACS is the working manifestation of what Air Force personnel refer to as “centralized control and decentralized execution.” As such, its conceptual architecture is straightforward. AWACS [airborne warning and control system] aircraft, for example, monitor the movement of friendly and hostile aircraft, pass their pictures of the air situation to fighters and ground command centers, and then direct other aircraft to carry out the orders which commanders on the ground give to that portion of the TACS.<sup>23</sup>

Development of TACS was delayed by the CINC’s decision to put a higher priority on the movement of combat units into theater. Despite this, by the end of 1990, CENTAF had completed a working multinational TACS. The TACS integrated the capabilities of the E-3 AWACS, Navy E-2C, airborne battlefield command and control center, E-8A joint surveillance target and attack radar system (JSTARS), and numerous other aircraft and capabilities.<sup>24</sup> With such a network, General Horner believed that he had real-time control of the air. Although he did not, he came closer than any previous air component commander.

## **Training**

Due to the lackluster US air-to-air performance in Vietnam, the Air Force in 1973 began to focus on dissimilar air combat training (DACT). The Air Force believed that the value of air-to-air training between like aircraft was limited, because it revealed only who was the better pilot. Meanwhile, DACT allowed pilots to better leverage their aircraft’s advantages

against an adversary's weaknesses. As a result of this new focus on DACT, General Momyer, the TAC commander, activated the first aggressor squadron at Nellis AFB, Nevada, in June 1973. The aggressor squadron flew DACT against the aircrews attending Fighter Weapons School at Nellis.

Instead of following USAF tactics and doctrine, the aggressor squadron used those of the Soviet air force.<sup>25</sup> Consequently, Fighter Weapons School pilots familiarized themselves with the air-to-air tactics they could expect to encounter in engagements with Soviet aircrews. To do so, the aggressor squadrons received the F-5E. With its long-range radar and significant maneuverability, the F-5E demonstrated the characteristics of the Soviets' most advanced fighter—the MiG-23. Additionally, each aggressor squadron relied heavily on GCI controllers to emulate the Soviets' rigid and close control over aircraft maneuvers.

The most intense DACT flying took place during Red Flag exercises, which simulated a wartime environment at Nellis AFB. Vietnam also revealed that a pilot's performance during his first 10 sorties in combat was critical to his long-term combat survival.<sup>26</sup> Those who were well prepared for and learned quickly from those first 10 missions were normally those who survived their tours of duty. Those who failed to prepare and learn did not survive. The purpose of Red Flag was to provide pilots with training that equated to 10 combat sorties, thereby, increasing pilots' probability of survival during combat. The fact that aircrews described Red Flag as "the heart-pumpinest, palm-sweatinest war we have" attests to the realism with which this exercise simulated combat flying.<sup>27</sup>

Gen Wilbur L. Creech, who succeeded General Dixon as the commander of TAC, expanded the command's training program by initiating the following exercises: Green Flag (Nellis AFB), Maple Flag (Cold Lake, Canada), Blue Flag (Eglin AFB, Florida), Checkered Flag (home bases), and Copper Flag (Tyndall AFB, Florida).<sup>28</sup> These exercises trained aircrews on sophisticated and realistic electronic warfare, suppression of enemy air defenses, ground-attack, air superiority, and mission employment training.

Seven years after the first Red Flag was conducted, TAC began to tailor Red Flag to a contingency in Southwest Asia. In

doing so, aircrews could familiarize themselves with the requirements, demands, and environment they could expect to face in that theater. To further enhance the realism of aircrew training, Air Force leadership initiated a program that allowed aircrews to conduct live air-to-air and air-to-ground attacks at Tyndall AFB and Eglin AFB, respectively. Such an opportunity enabled pilots to learn valuable lessons about weapons employment prior to rather than during combat. Aircrews who flew in the Korean and Vietnam Wars did not have the luxury of learning these lessons before entering those conflicts.

The Air Force's lackluster air-to-air performance over the skies of Vietnam also revealed the importance of specialized aircrew training. In an effort to improve in that area, the Air Force required aircraft to focus on either an air-to-air role or an air-to-ground role—not both. In the process, the Air Force abandoned the welded-wing tactic that had restricted its Vietnam performance and replaced it with the “fluid two,” which paralleled the “loose deuce” approach practiced by the Navy.<sup>29</sup> Both Air Force fighter pilots in a two-ship formation were now free to engage the enemy, thereby dramatically increasing their effectiveness. This tactic was taken one step further when the Interceptor Weapons School at Tyndall AFB integrated “Six Pack” tactics with the F-106.<sup>30</sup>

The Air Force's air-to-ground training was not to be outdone by these significant improvements in air-to-air training. The Air Force increased its focus on training at low-altitude in high-threat environments. Pilots indicated that the stress they experienced from this training was far greater than that during air-to-air training. As one pilot shared, “It's a demanding mission and not for the faint of heart or those behind the power curve.”<sup>31</sup> This training involved sophisticated threat avoidance techniques such as low-level terrain masking to avoid enemy radar detection and maneuvering to escape the AAA and man-portable SAM threats.

This increased emphasis on training would prove to be very valuable during Desert Storm. Because a strike package against a target in the Baghdad area might include a variety of air-to-air and air-to-ground aircraft, aircrew familiarity with other aircraft operations was critical. The experience mission

and package commanders gained from Red Flag and other large-scale exercises provided them with knowledge on planning, coordinating, and executing missions involving large strike packages.<sup>32</sup> In fact, *GWAPS* stated, “Red Flag had provided the Air Force with a solid basis on which to plan and execute strikes involving multiple types of aircraft.”<sup>33</sup>

In an effort to ensure aircrews were well prepared to conduct operations over Iraq, General Horner continued to train aircrews once they arrived in-theater. While Horner strove to make these exercises as realistic as possible, he raised the minimum training altitude for fighter aircraft to 1,000 ft after a series of accidents occurred in early October. He permitted only the B-52s to practice missions at 500 ft.<sup>34</sup> While these changes were attributed to safety considerations, they mirrored the practice during the air campaign of flying above 10,000 ft as opposed to low level. Additionally, the heavy sortie flow during the first several days of Desert Storm meant that the risk of coalition aircraft flying into each other would be high. To reduce this risk, Horner continued to increase the size and scope of training exercises. The hour-long exercises that began with a dozen aircraft in September became week-long exercises with more than 2,000 sorties in November.<sup>35</sup>

## **Equipment**

While USAF aircrews were well trained upon entering Desert Storm, the systems employed by those aircrews also added to the USAF's overwhelming advantage over Iraq in Desert Storm. During the almost 20 years between Vietnam and Desert Storm, the Air Force fielded several improvements in aircraft, weapons, and capabilities.

In 1978, the F-4G replaced the F-105G as the primary aircraft for defense suppression. It was equipped with a new anti-radiation missile (ARM) and high-speed ARM. Meanwhile, the F-15E became operational in 1989 as a supplement to and eventual replacement for the F-111. The F-15E's capabilities included day-night, adverse-weather, extended-range, and increased payload. Perhaps the aircraft that represented the greatest advancement between Vietnam and Desert Storm was the F-117, which was used operationally for the first time in

December 1989 during the Panamanian invasion. Its stealth and precision-strike capabilities enabled it to attack targets well within the enemy's threat envelope without the aid of a large defense suppression package. This ability allowed the F-117 to capitalize on the element of surprise while reducing the risk to additional aircrews.

Consequently, by the time of Desert Storm in 1991, some of the post-Vietnam War aircraft had been in the Air Force operational inventory for over a decade, while others had for less than a year. Thus, as Eliot A. Cohen and Thomas A. Keaney pointed out in *Revolution in Warfare? Air Power in the Persian Gulf*, "It was the combination of US capabilities coalition, not all of which were based on advanced technologies, that made airpower so predominant [in Desert Storm]."<sup>36</sup> Cohen and Keaney summarized the technological advantage as follows:

The F-117s, Tomahawk missiles, and conventional air-launched cruise missiles delivered conventional warheads with great precision, unchecked by Iraqi defenses. Airborne warning and control aircraft monitored Iraqi and coalition flight activity, and the JSTARS aircraft monitored and targeted Iraqi ground forces throughout the Kuwaiti theater. In addition, satellites and airborne platforms provided communications, precise navigation, and reconnaissance information to air and ground forces.<sup>37</sup>

In addition to the newest aircraft, a variety of tried-and-true aircraft supported the Air Force effort. F-111s, A-6s, and B-52s performed air strikes involving both advanced precision-guided and unsophisticated unguided bombs. Strike missions were also critically reliant on aircraft, such as F-4Gs, EA-6Bs, and A-7s, which destroyed enemy radars; as well as aircraft, such as EF-111s and EA-6Bs, which electronically jammed radars. Tanker aircraft, such as KC-10s and KC-135s, also made it possible for the Air Force to conduct mass formations of aircraft. Likewise, these operations would not have been possible if not for the airlift platforms—the C-5s and C-141s—that brought assets to the theater.<sup>38</sup>

Aircraft munitions had also undergone significant improvements since Vietnam. The AIM-7F and AIM-9L upgrades represented the principal improvements in air-to-air combat. The AIM-7F was a semi-active radar missile with a beyond-visual-range capability, and the AIM-9L was an infrared missile

intended for close-in engagements. While each of these missiles could be launched at a target from any aspect within the missile's range, the AIM-9L involved a substantial improvement. Its all-aspect capability enabled the pilot to fire its missile head-on against an enemy aircraft before it entered dog-fight range. In addition to the upgrades in air-to-air weapons, air-to-ground munitions were also enhanced after Vietnam. These weapons included precision-guided bombs, laser-guided penetrator weapons, AGM-80 HARMs, runway-attack munitions, and imaging infrared antitank missiles.<sup>39</sup>

### **Air Superiority**

*GWAPS* stated that during the Iran-Iraq War, Iraqi pilots had not only avoided air-to-air engagements but had generally broken off strike missions and returned to base if their aircraft received a radar lock-on from an Iranian fighter.<sup>40</sup> Consequently, coalition air planners devised a twofold strategy for achieving air superiority. First, coalition aircraft would destroy Iraq's ground-based air defenses. Second, they would decrease the will of the Iraqi pilots to such an extent that none would take off at all.<sup>41</sup>

To achieve the former, the coalition sought to destroy Iraq's KARI system—which provided C<sup>2</sup> throughout its air defense network—and its robust radar-guided SAM capability.<sup>42</sup> The coalition initially sought to achieve this objective by conducting precision-guided, hard-target penetrating bomb attacks by F-117s against hardened targets such as the KARI sector operations centers and interceptor operations centers. A-10s also strafed numerous reporting posts in remote areas of Iraq during the first few days of the war. However, more strikes followed against KARI using a combination of guided and unguided bombs such as the GBU-10 and GBU-24 A/B (2,000 lb warhead). Thus, as *GWAPS* suggests, "A-10s and F-117s were used to blind and paralyze the system; thereafter, bombing, predominantly with nonprecision weapons, was used to keep the system ineffective in coordinating the defense of Iraqi airspace."<sup>43</sup> The objective of this effort was to degrade Iraq's capabilities to coordinate the defense of its airspace with its

fighter-interceptors and radar-guided SAMs. This was achieved after just a couple of days of coalition air attacks.

In suppressing Iraq's radar-guided SAMs, the coalition's intent was to convince Iraqi SAM operators on the first day of the war that they would be attacked if they activated their fire-control radars sufficiently long to guide their missiles into coalition aircraft. To achieve this, the coalition employed complex attacks. In particular, F-117s first struck Iraqi SAM sites using precision-guided munitions. These attacks were followed soon afterward by Tomahawk land attack missile strikes. Next, large numbers of BQM-74 drones entered Iraqi airspace simulating the speeds, profiles, and radar signatures of attacking fighter-bombers. Falsely associating these drones with actual aircraft, Iraqi air defenses activated their radars in an effort to acquire, target, and engage the drones. This enabled large packages of fighter-bombers, supported by standoff jammers, to follow the drones and fire HARMs against the unsuspecting Iraqi SAM sites. Meanwhile, F-4Gs targeted individual enemy emitters. While these tactics did not result in the destruction of all of Iraq's SAM threats, they did cause Iraqi SAM crews to become increasingly disinclined to employ their weapons. Even when they did, they typically launched their missiles ballistically with no guidance from their radars.<sup>44</sup>

The second aspect of the coalition's air-superiority strategy was to neutralize Iraq's air-to-air capability. The coalition sought to achieve this objective by defeating Iraqi aircrews in the air and by destroying Iraqi airfields. Coalition aircrews shot down 14 Iraqi aircraft between 17 and 19 January 1991. These results almost single-handedly grounded the Iraqi air force for the remainder of the war. The overwhelming advantage of USAF pilot proficiency over that of Iraqi pilots contributed to the coalition's air-to-air success during the first three days of the war. The Iraqi pilots shot down during that time usually did not react to radar lock-ons by coalition fighters and performed almost no effective maneuvering.<sup>45</sup> Another key to the coalition's air-to-air success was the ROE enabling an AWACS to authorize coalition pilots to fire beyond visual range once a target was known to be hostile and no friendly aircraft were at risk.<sup>46</sup>

Neutralizing Iraq's air-to-air capability also included isolating Iraq's aircraft at their airfields. The coalition conducted this effort during the first five days of the war by striking the runways. After this time, the focus of the coalition effort shifted to the hardened aircraft bunkers and shelters. This was done largely because Iraqi flight activity was already declining precipitously by the end of the first week of the war. Thus, on the night of 22 January 1991, this campaign began with F-111s employing laser-guided GBU-10s and GBU-24s. F-117s also played a large role in this effort due to their precision-guided, hard-target kill capability.

By achieving this objective, coalition forces encountered several unforeseen difficulties. First, Iraq was able to play a shell game by moving aircraft in and out of shelters. This prevented coalition aircraft from destroying both an aircraft and a shelter with a single laser-guided bomb. Second, F-111s, with their forward-looking infrared sensor, rarely were able to detect an aircraft in the open during their night sorties. Third, Iraq flew many of its aircraft to Iran. Trying to intercept these aircraft before they traveled the short distance to the Iranian border was an extremely difficult task.

### **Close Air Support**

According to Air Force Doctrine Document 1, "CAS consists of air operations against hostile targets in close proximity to friendly forces."<sup>47</sup> In the case of Desert Storm, Iraqi troops were not in close proximity to coalition ground forces until the ground war began on 24 February 1991. Consequently, with the possible exception of the Al Khafji battle in late January 1991, CAS was not employed during the initial period of operations (17 January–16 February) of Desert Storm.

GWAPS concluded, "The lack of determined Iraqi resistance made close air support a rather peripheral aspect of [the entire] war."<sup>48</sup> This was caused by the bombing operations against Iraqi troops. The survey also stated that another reason for the limited number of fixed-wing CAS sorties was that artillery, rockets, or helicopters struck the regions close-in to the ground forces, while fixed-wing CAS was employed at extended range from the forward troops.<sup>49</sup> For these reasons,

FACs often turned back CAS-dedicated aircraft with their ordnance. As a result, primary CAS aircraft, such as A-10s and AV-8Bs, flew far fewer CAS missions than expected. A-10s did not drop their bombs in 316 of 909 (35 percent) missions, while AV-8Bs had fewer missions with drops (131) than without them (143).<sup>50</sup>

Several fixed-wing CAS operations took place between 25 and 27 February 1991. The first involved support of the 1st Armored Division of the VII Corps, which came in contact with Iraqi forces during its advance north on the morning of 25 February. According to *The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm*, the 1st Division called in fixed-wing CAS strikes when it was about 35 to 40 miles away from its objective.<sup>51</sup> These strikes were followed by attack helicopter strikes. When the division is close to within 10 to 15 miles, artillery, rocket launchers, and tactical missile batteries then delivered preparatory fires. Operations then proceeded as follows: “psychological operations teams broadcast surrender appeals. If the Iraqis fired on the approaching Americans, the attackers repeated artillery, rocket, and missile strikes . . . that sequence was enough to gain the surrender of most Iraqi Army units in a given objective.”<sup>52</sup> The 1st Division also directed fixed-wing CAS and attack helicopter sorties on an Iraqi brigade position prior to a subsequent attack on the afternoon of 25 February. These attacks destroyed artillery pieces, several vehicles, and resulted in the 1st Division taking almost 300 prisoners.

GWAPS also states, “A-10s were called to strike the positions of the Iraqi Tawakalna Division on 26 February, prior to what came to be called the Battle of 73 Easting.”<sup>53</sup> While these sorties served to prepare the battle area, *The Whirlwind War*, which GWAPS cites in this instance, states that fixed-wing aircraft did not provide CAS during the battle itself. Rather, it indicates that for four hours on that day the 2d Armored Cavalry Regiment of the VII Corps “killed tanks and armored personnel carriers while attack helicopters knocked out artillery batteries.”<sup>54</sup> Despite these successes, the CAS that USAF aircrews performed in support of the VII Corps was not mistake free. One friendly fire incident occurred in the afternoon of 27 February.

USAF A-10 aircraft that were supporting the British advance mistakenly fired on two infantry vehicles, killing nine British soldiers.<sup>55</sup>

Fixed-wing CAS was also provided to the 24th Mechanized Infantry Division of the XVIII Airborne Corps on 26 and 27 February.<sup>56</sup> The 24th Division was tasked to seal the Iraqis' escape route along the Euphrates River. One of its objectives was to secure Tallil airfield, which was located about 20 miles south of the town of An Nasiriyah. While advancing toward this objective on 26 February, the 24th Division orchestrated six USAF fixed-wing CAS sorties against two enemy mechanized battalions and one enemy artillery battalion. Subsequently, at midday on 27 February, the division directed heavy artillery and rocket launcher preparations, followed by 28 fixed-wing CAS sorties, against Tallil airfield. According to Maj Jason K. Kamiya, the deputy G-3 of the 24th Mechanized Infantry Division, the division destroyed six MiG aircraft, three helicopters, four ZSU 23-4 artillery pieces, and two T-55 tanks after advancing across the newly cratered runway at Tallil.<sup>57</sup> After the seizure of this airfield, the 24th Division oriented east, and a new series of phase lines was drawn between the Tallil airfield and the Ar Rumaylah oil fields.

The coalition air planners made several discoveries regarding CAS employment during the four-day ground offensive. First, these planners utilized kill boxes, which were specific areas within which aircrews were to attack Republican Guard. This methodology became known as Push CAS because it repositioned CAS aircraft over enemy ground forces. Second, coalition aircrews discovered that general-purpose bombs dropped from medium altitude (15,000 ft) were not capable of destroying armor targets. Bombing accuracy varied from 320 ft for the F-15E to 1,040 ft for the A-10, and this did not account for sighting error.<sup>58</sup> In an effort to improve these results, Horner authorized A-10s to decrease their attack altitudes from 15,000 to 4,000–7,000 ft, and the weapon of choice against Iraqi armor was changed from general-purpose to laser-guided bombs.<sup>59</sup> Third, as a result of testing during the first week of February, F-111s determined that their infrared sensors could differentiate the hot skin of tanks at night from

the cooler sand of the desert. Due to this discovery, coalition planners tasked most of the F-111 sorties, about one-half of the F-15E sorties, and some of the A-6 sorties against Iraqi armor, particularly tanks.<sup>60</sup> These actions substantially increased the number of Iraqi armor and artillery kills by coalition aircrews.

Air attacks had degraded the resistance of Iraqi ground troops tremendously by the time of the ground offensive. For this reason, coalition forces did not often require CAS. However, in those cases when fixed-wing CAS was tasked, coalition aircrews performed effectively. Such was the case in support of the 1st Armored Division on 25 February and the 24th Mechanized Infantry Division on 26 and 27 February. In the process of performing CAS, Horner and the coalition aircrews also demonstrated creativity and flexibility in modifying their altitude and tactics to improve their mission performance.

### **Interdiction**

“Our strategy to go after this enemy is very, very simple. First, we’re going to cut it off, and then we’re going to kill it.”<sup>61</sup> These words by Gen Colin L. Powell during a news briefing on 23 January 1991 clearly indicate that an important part of the coalition strategy during Desert Storm was to isolate the Iraqi army. To achieve this, Central Command developed plans “to sever Iraqi supply lines throughout all phases of Operation Desert Storm.”<sup>62</sup> Coalition air interdiction operations against Iraqi supply routes, bridges, and railroad yards were an important part of those plans. Air interdiction was expected to weaken the enemy’s defense against the coalition’s ground offensive by depriving the Iraqi army of ammunition, petroleum, oils, and lubricants, food, water, and other essential supplies.

The coalition also wanted to prevent Iraqi forces from departing Kuwait intact.<sup>63</sup> The principal LOCs between Baghdad, the main military supply center, and the Kuwaiti theater usually followed and often crossed rivers. For this reason, coalition air planners viewed bridges as the key targets for isolating the theater. This section addresses both types of these interdiction operations—those directed toward supply (or logistics) and those directed toward force (or mobility).<sup>64</sup>

Coalition air planners tasked numerous types of aircraft for interdiction operations, including F-16s, F-111s, F-117s, and GR-1s. While these aircraft employed both free-fall bombs and precision-guided munitions (PGM), the F-111s, F-117s, and GR-1s collectively accounted for more than 80 percent of the PGM strikes during the war.<sup>65</sup> Through these efforts, coalition aircrews destroyed or heavily damaged 46 highway and railway bridges, which accounted for more than one-half of those placed on the Master Target List.<sup>66</sup> Of these bridges, about two-thirds were located along the LOCs from Baghdad to the theater. The Iraqis attempted to overcome destruction on their highway bridges with temporary bridges, causeways, and ferry vehicles. In mid-February, F-16s, F-15Es, and F-111s flew armed reconnaissance missions along key river areas to thwart Iraqi efforts to maintain river crossings on the main LOCs. They destroyed 31 pontoon bridges during these operations.<sup>67</sup>

While Iraq made attempts to overcome coalition interdiction strikes against its highway bridges, it was unable to do so with the strikes against its single-track railway bridges. In fact, the damage from strikes against several key rail bridges precluded traffic between Baghdad and the Kuwaiti theater.<sup>68</sup> The loss of the railroad system was very significant. According to a 1990 Army intelligence report, the rail net had been the principal means for transporting armor and self-propelled artillery from central Iraq to the theater before the air offensive.<sup>69</sup> Consequently, together with the damage of the highway bridges, the destruction of the rail system severely impacted Iraq's ability to move additional heavy ground equipment into the Kuwaiti theater.

Another key aspect of the coalition interdiction effort was air attacks against Iraq's supply vehicles. Iraqi convoys backed up at damaged and destroyed bridges were vulnerable targets. During much of February, coalition attack aircraft, especially F-16s, flew armed reconnaissance missions along sections of the key highways leading into the Kuwaiti theater.<sup>70</sup> These missions not only destroyed supply trucks but also placed all Iraqi military traffic on the highways at risk. Even when Iraq tried to overcome these strikes by moving to nighttime resupply operations, these efforts proved fruitless against the coalition

aircraft's night capability.<sup>71</sup> Iraq's shift from convoys to single truck resupply efforts was also counterproductive because it dramatically reduced the amount of supplies reaching the theater each day.<sup>72</sup>

Prisoners of war (POW) stated during interrogations after the war that their units had suffered from significant supply shortages. They especially cited distribution problems within the Kuwaiti theater that resulted in a lack of food and water.<sup>73</sup> The troops began experiencing these food shortages shortly after 17 January—the start of the coalition's air offensive. Many of the POWs who complained of these shortages were from frontline infantry units and cited lack of food as a key reason for their surrender.<sup>74</sup> Consequently, while coalition air strikes may not have been the only factor in Iraq's distribution problems, they were without question a very significant one.

## Conclusion

As James A. Winnefeld and Dana J. Johnson conclude in *Joint Air Operations: Pursuit of Unity in Command and Control, 1942-1991*, the Air Force was fully prepared for the Persian Gulf War in doctrinal and organizational terms. Additionally, unlike its entry into the Korean and Vietnam Wars, the Air Force was equipped with a state-of-the-art and well-trained conventional force structure upon its entry into Desert Storm. However, improved C<sup>2</sup> was perhaps the greatest factor that aided air operations in Desert Storm. The establishment of a JFACC, the development of the ATO process, and the implementation of TACS went a long way in eliminating many of the problems that had hampered the coordination and integration of air operations in Korea and Vietnam.

As for the air operations themselves, coalition air forces rapidly achieved air superiority—even securing air supremacy after two weeks of the air offensive. Consequently, air interdiction operations could then be conducted with impunity against Iraqi LOCs and military forces. This, in turn, resulted in the coalition ground forces requiring few CAS sorties in support of the four-day ground offensive. Therefore, while coalition air forces were able to effectively adapt during Desert Storm's initial period of operations, they were not required to

do so to the same degree as their counterparts did one and two generations earlier in Korea and Vietnam. The reason for this is that the strategy, doctrine, C<sup>2</sup>, training, and equipment of USAF was far better tailored in 1991 for Desert Storm than they were in 1950 and 1965 for Korea and Vietnam, respectively.

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16. Winnefeld and Johnson, 125.
17. *Ibid.*, 126.
18. *Ibid.*, 121.
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20. GWAPS, 262.
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23. Ibid., 128.
24. Eliot A. Cohen and Thomas A. Keaney, *Revolution in Warfare? Air Power in the Persian Gulf* (Annapolis, Md.: Naval Institute Press, 1995), 160-62.
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27. Gerald Volloy, "Red Flag in Perspective," *USAF Fighter Weapons Review*, spring 1979, 1-5.
28. Timothy J. Brennan, "TAC's New Flag," *USAF Fighter Weapons Review*, summer 1985, 21-24.
29. Barry D. Watts, "Fire, Movement and Tactics," *Topgun Journal*, fall/winter 1979, 4-24; and idem., "A Comparison of 'Team' and 'Single-Ship' Approaches to Aerial Combat," *Bulletin of the ANG Fighter Weapons School*, spring/summer 1980, 6-69.
30. Lambeth, 77.
31. Clyde Phillips, "Air-to-Surface: Target Destruction with Force Survival," *USAF Fighter Weapons Review*, spring 1977, 53.
32. GWAPS, 105.
33. Ibid., 105.
34. Ibid., 47.
35. Ibid.
36. Ibid., 153.
37. Cohen and Keaney, 153.
38. Ibid., 153-55.
39. Lambeth, 77.
40. GWAPS, 127.
41. Ibid., 127, 128.
42. KARI (Iraq spelled backwards in French) was the air-defense command and control system that Iraq used to track airborne threats and allocate particular tracks to fighters or radar-guided SAM batteries. It was designed, built, and installed by the French firm Thompson CSF. On 17 January 1991, KARI consisted of early-warning and low-altitude radars, more than two dozen operations centers, more than 100 reporting and control posts, computers and software, line-of-sight microwave and troposcatter communication links, and hardware interfaces.
43. GWAPS, 137.
44. Ibid., 141.
45. Ibid., 122.
46. Ibid.
47. Air Force Doctrine Document 1, *Air Force Basic Doctrine*, 1997, 49.
48. GWAPS, 245.
49. Ibid., 247.
50. Ibid., 245-46.

CADRE PAPER

51. Frank N. Schubert and Theresa L. Kraus, eds., *The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm* (Washington, D.C.: Center of Military History, 1995), 186.

52. *Ibid.*

53. *GWAPS*, 249.

54. Schubert and Kraus, 192.

55. *Ibid.*, 197.

56. Jason K. Kamiya, *A History of the 24th Mechanized Infantry Division Combat Team during Operation Desert Storm* (Washington, D.C.: Library of Congress, 1991), 29; and *GWAPS*, 239.

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62. *Ibid.*, 170.

63. *Ibid.*, 171.

64. *Air Interdiction: Lessons from Past Campaigns* (Santa Monica, Calif.: RAND Corporation, 1981).

65. *Ibid.*, 178.

66. *Ibid.*, 174.

67. *Ibid.*, 186.

68. *Ibid.*, 187.

69. *Ibid.*, 190.

70. *Ibid.*, 192.

71. Briefing, Joint Chiefs of Staff, J-2, subject: Daily Bomb Damage Assessment for Operation Desert Storm, 19–24 February 1991.

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## Chapter 5

### **Analysis**

*To be prepared for war is one of the most effectual means of preserving peace. In jet-atomic warfare, there will be no room for gross errors of judgment. There will be no time, should hostilities start, to correct mistakes in the types of forces that we have provided, the manner in which they have been organized and trained, or the way we fight.*

—Lt Gen Laurence S. Kuter

Lessons from the initial period of operating in the Korean War, Vietnam War, and Desert Storm hopefully provide doctrine and strategy makers with insights—as opposed to tools—they can use to assist the Air Force in better preparing for and adapting to future conflicts.

National security strategy influences national military strategy. National military strategy influences Air Force strategy. Air Force strategy influences Air Force doctrine. Air Force doctrine influences training. And training determines the Air Force's preparation for conflict. Consequently, if one assumes these relationships are valid, national security strategy ultimately has a tremendous influence on the Air Force's preparation for conflict. It follows that Air Force strategy is likely to be well suited for a given conflict if national security strategy forecasts a conflict of that nature. Such was the case in Desert Storm. For a decade prior to that conflict, the Reagan administration emphasized both nuclear and conventional military capabilities.<sup>1</sup> In following suit, USAF devised a well-trained and equipped force capable of waging nuclear or conventional warfare effectively. Consequently, the Air Force performed very effectively during the initial period of operations in Desert Storm's conventional environment.

In contrast, Air Force strategy is likely to be poorly suited for a particular type of conflict if national strategy fails to foresee a conflict of that nature. In the case of Korea, President Truman's massive retaliation policy led to the Air Force's development of

a nuclear-focused strategy.<sup>2</sup> Thus, the Air Force entered the initial period of operations in Korea unprepared for a conventional environment. The Air Force's situation prior to Vietnam was different from that of either Desert Storm or Korea. Prior to Vietnam, national strategy changed from Eisenhower's nuclear-oriented containment policy to Kennedy's flexible response policy, which emphasized unconventional warfare.<sup>3</sup> USAF, mired in debate on how to adjust to flexible response, stuck with the status quo—nuclear deterrence. As a result, the Air Force initially performed very poorly in Vietnam's unconventional warfare environment.

### **Doctrine**

Of the three conflicts, doctrine had the most positive influence on the initial period of operations in Desert Storm. Air Force doctrine makers did not want to repeat the mistakes of Vietnam in a future conflict, so they modified Air Force doctrine accordingly. The Air Force incorporated this doctrine into its training in the early 1980s, thereby allowing nearly a decade of such training before Desert Storm. AirLand Battle and joint doctrine also enabled the Air Force to become more familiar with its sister services. Although General Horner deviated from the AirLand Battle doctrine, the net result of these doctrinal changes was a positive one on Air Force performance in Desert Storm.

In Korea, on the other hand, the Air Force had the right doctrine by September 1950, but by that time—three months into the war—it was difficult to incorporate it into air operations because of a lack of trained personnel and communications systems. The reason is attributed to the Air Force's nuclear focus, which has been addressed previously. Consequently, the Air Force—particularly FEAF—did not practice the tactical air operations that were specified in its post-World War II doctrine. It was only as a result of Generals Partridge and Timberlake's personal initiative that FEAF was able to begin executing its doctrine by the end of the initial period of operations.

As for Vietnam, the Air Force completely disregarded lessons from Korea and kept its doctrine intact. Unlike Korea, no senior Air Force leaders in-theater took actions to overcome this. In

defense of these leaders, their challenge was greater. They needed an entirely new doctrine, while their predecessors in Korea only needed to implement existing doctrine. Nonetheless, this does not change the fact that the Air Force made no attempt to modify its doctrine either prior to or during the initial period of operations.

Desert Storm demonstrated that appropriate doctrine facilitates effective training, which translates into successful preparation for and adaptation to combat. Meanwhile, in Korea, Air Force commanders and aircrews alike learned the hard way that appropriate doctrine without effective implementation is of limited value in preparing for combat. Consequently, these leaders adjusted their operations to correspond to—as opposed to deviate from—existing doctrine. Vietnam revealed the negative impact of inappropriate doctrine. While Air Force leaders were able to make some adjustments, such doctrine handicapped their ability to do so on a larger scale.

### **Command and Control**

The C<sup>2</sup> of airpower demonstrated in Desert Storm stands out from that in Korea and Vietnam. Joint doctrine specifying the role of the JFACC made this possible. In his role as the JFACC, General Horner had a level of command far superior to that of his predecessors in Korea and Vietnam. This included operational control of the SAC bombers tasked for Desert Storm as well as tactical control over Navy and Marine Corps air assets.

The ATO was another key improvement in C<sup>2</sup> of airpower that was employed in Desert Storm but not in Korea or Vietnam. The ATO contained all the sorties the JFACC wanted flown. As such, it guided the actions of all air assets under his control. Because they lacked such a targeting process, Horner's predecessors in Korea and Vietnam were unable to dictate the operations of Navy and Marine Corps air assets.

A commonality between all three conflicts was that each Air Force leader relied upon TACS. TACS served as a conceptual architecture through which the JFACC executed centralized control and decentralized execution over air assets. General Stratemeyer worked tirelessly to achieve this capability in

Korea; and in Vietnam, the Air Force restructured TACS in early 1965 to improve its capability. While such improvements did take place and benefited Air Force-only operations, centralized control of all air operations remained an elusive goal in Korea and Vietnam.

## **Training**

All three of the case studies reveal that the nature and effectiveness of Air Force training is related to the strategy and doctrine on which that training is based. As was discussed earlier, the national and Air Force strategy leading into both Korea and Vietnam was deterrence against a Soviet nuclear attack. Air Force doctrine reflected this same mind-set. Based on such doctrine, Air Force training was heavily focused on SAC and the nuclear mission. As a result, aircrews were poorly prepared for the conventional nature of air operations in those two wars.

On the other hand, following Vietnam, national and Air Force strategy paid equal attention to both nuclear and conventional warfare. Prior to Desert Storm, TAC had trained to the point that it was as proficient in conventional war fighting as SAC was in nuclear war fighting. The advent of an aggressor squadron, combat simulation exercises, and increased specialization all contributed to the improvement in TAC's training. The coalition also had the benefit of continuing its training once in-theater for Desert Storm. This enabled USAF aircrews to become familiar with aircrews of other components and nations as well as with the Iraqi terrain and airspace. Such a luxury was unavailable to aircrews in Korea and Vietnam because they began flying combat missions as soon as they arrived in-theater.

## **Equipment**

While training—or lack thereof—was an important factor in determining how well the Air Force performed during the initial period of operations in each of the case studies, equipment played a significant role also. Based on its effort to deploy the latest and most sophisticated aircraft to theater in Korea (F-80C),

Vietnam (F-4C), and Iraq (F-117), the Air Force believed its technologically advanced aircraft provided it with an advantage. The performance of these and other aircraft and weapons supported the Air Force's belief. However, this was far more evident in Desert Storm than in the two earlier conflicts. The primary reason for this is that in 1990, USAF was a far more sophisticated and technologically advanced Air Force in comparison to the Iraqi air force than was USAF in comparison to the North Korean air force (NKAF) in 1950 and especially the North Vietnamese air force in 1965.

### **Air Superiority**

Because air superiority was one of the few missions for which FEAFF was well suited, it is not surprising that it performed this mission well during the initial period of operations in Korea. FEAFF likely would have achieved air superiority even sooner by striking NKAF airfields. However, General Stratemeyer's requests to do so were denied by General MacArthur who, understandably, wanted all available aircraft tasked against the worsening situation in the forward battle.

In Vietnam, meanwhile, USAF aircraft were restricted from striking air bases in North Vietnam until 1968 and from employing their missiles from beyond visual range throughout the war. Additionally, North Vietnam built up a formidable SAM and AAA network that was unprecedented at that time. Because of this combination of America's restrictive ROE and North Vietnamese expansive air defense, USAF struggled to achieve air superiority not only at the beginning of the war but also throughout the entire conflict. While these restrictions were out of its control, the Air Force could blame no one else for having trained poorly prior to Vietnam.

In Desert Storm, the problems that had limited air operations in Korea and Vietnam were removed. Coalition aircrews were able to begin attacking air defense sites (SAMs, AAA, and airfields) from the onset of the air offensive. Due in part to this carte blanche authorization, coalition aircrews rapidly achieved air superiority over Iraq and soon thereafter acquired air supremacy.

## **Close Air Support**

The Air Force CAS system was in disarray prior to Korea and Vietnam. However, in both cases, the Air Force quickly began to overcome this through close coordination between FACs and ground controllers in the forward area. In both conflicts, the Air Force displayed an ability to adapt in a timely manner. This ability undoubtedly saved South Korea by halting the North Korean ground advance. The results were less favorable during the initial period of operations in Vietnam because of jungle terrain, which served as a sanctuary from USAF attacks. However, USAF's CAS performance improved as larger battles developed beginning in late 1965.

Desert Storm was unique, since USAF was able to conduct an air offensive against Iraq's infrastructure and military for more than a month before the ground offensive began. This air offensive was very successful in degrading the morale and fighting ability of Iraqi ground units. So much so that coalition forces encountered little resistance from those units during the ground offensive. For this reason, coalition forces required very little CAS.

## **Interdiction**

The nature and outcome of interdiction operations were different during each of the three case studies. In Korea, focus on frontline forces and a chaotic C<sup>2</sup> infrastructure resulted in the delay of a coherent interdiction plan for almost 30 days. Despite this, FEAF was adaptive in devising and employing new aircraft and tactics for interdiction. While the impact of these efforts was not realized during the initial period of operations, those efforts would later prove to be very valuable contributions to halting the North Korean advance.

In Vietnam, Air Force leaders contended that political decisions restricting target selection prevented them from performing air interdiction operations effectively. However, the logistics support that China and the USSR provided North Vietnam, the sanctuaries North Vietnam had in Laos and Cambodia, the concealment of the Ho Chi Minh Trail, and the small supply requirements for insurgent warfare combined to make interdiction

operations difficult regardless of which targets were struck. Further, debate about target selection could not discount USAF's poor bombing performance during the initial period of operations. While the Air Force improved its bombing accuracy over time, its impact on North Vietnamese operations was minimal.

Unquestionably, interdiction operations were most successful during the initial period of operations in Desert Storm. The coalition's twofold approach was responsible for this outcome. First, the coalition isolated Iraq's forward deployed troops by destroying highway and railway bridges between Kuwait and Iraq. Second, the coalition also targeted Iraqi resupply vehicles in Kuwait, which tremendously disrupted Iraq's distribution capabilities. According to POWs, this significantly decreased morale and was a primary cause for their surrender. Unlike Vietnam where the Vietcong were dedicated completely to Ho Chi Minh's cause, most Iraqi soldiers (with the exception of the Republican Guard) were ambivalent about Saddam's quest for Kuwaiti territory. Thus, their will to fight was far more susceptible to interdiction than was that of the Vietcong.

### **Factors Influencing USAF's Ability to Adjust to Conflict**

While numerous factors influence the Air Force's ability to adjust to conflict, the findings from this study identify five factors that are particularly significant. They include familiarity with the nature of the conflict, parity with the adversary,  $C^2$  over available air assets, terrain, doctrine, and training. Air Force leaders should be cognizant of these factors as they seek to identify and implement adjustments in future combat environments.

Based on this analysis of the initial period of operations in the Korean War, Vietnam War, and Desert Storm, one can discern numerous factors that influence the Air Force's ability to adjust to conflict. Of these, five stand out.

The first factor is the Air Force's familiarity with the nature of the conflict. In Korea, FEAF aircrews quickly adapted air superiority, CAS, and interdiction operations even though they had trained extensively only for air superiority (in defense of Japan). The reason for this is that CAS was flown against troops along a linear front, and interdiction was executed

against clearly defined LOCs and fixed targets. As for Desert Storm, USAF had practiced these missions for nearly a decade prior to the start of this conflict; thus, aircrews easily made minor adjustments in performing them. In Vietnam, however, aircrews struggled to adapt air superiority and interdiction missions against the unconventional warfare waged by the Vietcong.

The military parity of the adversary is a second factor influencing the Air Force's ability to adjust to conflict. In Vietnam, USAF's capability did not exceed the enemy's to the extent it did in Korea and Iraq. The primary reason for this is that the USSR provided Vietnam with modern equipment. As a result, USAF aircrews in Vietnam faced a greater challenge in outperforming enemy aircrews. In Korea, USAF aircrews were not tested seriously in the air until Chinese MiG-15s entered the conflict in November 1950. Meanwhile, in Desert Storm, USAF faced an Iraqi air force whose equipment and technology were very inferior. This was perhaps most evident in the intelligence arena, in which the coalition's unparalleled battle-space awareness enabled USAF to make the adjustments it deemed necessary.

The third factor is the level of C<sup>2</sup> the Air Force commander has over air operations when serving as the JFACC. Even though Air Force combatant commanders do not determine their span of C<sup>2</sup> authority, their operations are impacted tremendously by that decision. The limited C<sup>2</sup> granted to the Air Force commander in Korea resulted in a compromise agreement of "coordination control" with the Navy. Likewise, route packages were instituted in Vietnam as a result of the Air Force commander's lack of C<sup>2</sup>. Both of these practices resulted in marginal effectiveness. In Desert Storm, on the other hand, General Horner was authorized centralized control over all air assets in-theater. His span of control was enhanced also by the close relationship he developed with the JFC (General Schwarzkopf). This authority, combined with an effective communications capability, enabled him to consider and institute more adjustments than his predecessors.

The fourth key factor that influences the Air Force's ability to adjust to conflict is terrain. In Vietnam, heavy vegetation and jungle-like terrain severely complicated USAF's ability to

perform CAS and interdiction missions. Vietcong troops and resupply efforts could seek refuge under the canopy of this terrain. In Korea, terrain degraded USAF efforts less so than in Vietnam. And in Iraq, terrain served as an advantage to USAF aircrews, because it offered virtually no sanctuaries for Iraqi air and ground forces.

The fifth key factor is a combination of doctrine and training. Training is based largely on doctrine. For this reason, it is difficult to consider one of these as a factor without the other. Although these two factors primarily influence the Air Force's preparation for conflict, they also influence the Air Force's adjustment to conflict. This was plainly evident in Vietnam, for which Air Force doctrine and training were poorly suited. Consequently, although numerous factors contributed to the Air Force's poor performance, a lack of useful doctrine and training made it more difficult for the Air Force to adjust operations in Vietnam than in Korea and Desert Storm.

#### Notes

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3. John J. Sbrega, "Southeast Asia," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington, D.C.: Office of Air Force History, 1990), 411; and Robert Frank Futrell, *The United States Air Force in Southeast Asia: The Advisory Years to 1965* (Washington, D.C.: Office of Air Force History, 1981), 63.

## Chapter 6

### Conclusion

*The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish . . . the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature.*

—Carl von Clausewitz  
*On War*

History typically reveres the victor for having the right strategy and criticizes the vanquished for having the wrong one. The effectiveness of doctrine is normally judged in the same manner. However, this is a superficial way to judge strategy and doctrine because it only considers a combatant's preparation for conflict; it does not address the combatant's adjustment to what Carl von Clausewitz called the friction of war. He described the friction of war as "the force that makes the apparently easy so difficult."<sup>1</sup> "Countless minor incidents—the kind you can never really foresee—combine to lower the general level of performance, so that one always falls far short of the intended goal."<sup>2</sup> Thus, a successful combatant must not only prepare sufficiently for conflict but he must also adapt effectively to that conflict.

Based on the findings of this study, Michael Howard is only partially correct in his assertion that the armed forces normally produce the wrong doctrine. In the three conflicts analyzed, the Air Force poorly implemented the right doctrine in the first, had the wrong doctrine in the second, and effectively implemented the right doctrine in the third. Thus, this study concludes that predicting the right type of war (or strategy) on which to base doctrine is perhaps more difficult than developing the doctrine itself. As Clausewitz stated, "The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish . . . the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature."<sup>3</sup>

While such a statement seems easy to appreciate, it is far from easy—as this study revealed—to accomplish.

This study concurs with the importance that Professor Howard places on the armed forces' capacity to "get it [doctrine] right quickly when the moment arrives." However, he appears to discount the benefit that existing doctrine has on the armed forces' ability to do so when he declares, "It does not matter that they have got it [doctrine] wrong." As was evident in the three case studies, the Air Force was able to make adjustments more readily and easily when its doctrine was closely related to the nature of the given conflict. While the Air Force has shown that it can achieve success in spite of—rather than because of—its doctrine, the case studies also show that proper doctrine benefits the Air Force's performance.

Professor Howard grasped this point as well, for later in his 1973 Chesney Memorial Gold Medal acceptance speech, he also stated, "Still it is the task of military science in an age of peace to prevent the doctrines from being too badly wrong."<sup>4</sup> In order to avoid creating doctrine that is "too badly wrong" for a given contingency, the Air Force must develop doctrine that has wide application. This suggests that future Air Force doctrine should not only address airpower's missions. Rather, it should also broaden airmen's understanding of the flexible applications of those missions across a spectrum of warfare environments. With this approach, doctrine would serve to educate aircrews on the primary missions of airpower, provide direction on which to develop training to ensure aircrews become proficient in these missions, and allow for these missions to be employed in a variety of combat scenarios. Because future adversaries may range from jungle-based insurgents in the Philippines to horse-mounted fighters in Afghanistan to conventional forces in Iraq, such doctrine has never been more critical to the Air Force.

#### Notes

1. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 121.

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4. Michael Howard, "Military Science in an Age of Peace," *Royal United Services Institute Journal*, March 1974, 7.

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