Eliminating the Rhetoric

An Evaluation of the Halt-Phase Strategy

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Abstract

The purpose of this study is to identify criteria that will provide objective analysis of a halt-phase strategy. This study identifies the key criteria by examining air combat in three operations: the Battle of Bismarck Sea, the 1973 Golan Heights battles of the Yom Kippur War, and the Iraqi Republican Guard escape from Basra. This examination focuses on air operations looking for tactics, tactical innovations, and operational circumstances that inhibit or enhance air operations designed to halt the advance or retreat of significant ground formations. This study evaluates each case in three major phases: prehostility preparation, conduct of combat operations, and the results and analysis of the operation. Prehostility preparation specifically examines the doctrine, organization, equipment and technology, and the training of friendly forces. The conduct of operations phase explores the contextual elements, including a summary of the operation, and investigates intelligence, command and control (C^2), and logistical factors. The results of each case are analyzed to discover factors that contribute positively, negatively, or not significantly to the outcome of the operation. Each case study's unique circumstances shaped the result; however, the criteria of organization and training appear dominant with C^2, doctrine, and technology being recurrent in allowing air forces to halt an enemy surface force. The specific context of the battle, the intelligence preparation, and logistics of each conflict cannot be ignored but were not determined as recurrent factors in all three case studies, although intelligence was significant in the Bismarck Sea. This study concludes with three major lessons. First, people make the Air Force successful. Second, the halt strategy is appropriate for certain circumstances; but some sister-service critiques of the strategy are valid. Third, the Air Force should acknowledge the limitations of airpower; but it should also develop methods to minimize the limits in the application of airpower in order to make "halt" strategy even more effective in the future than it has been in the past.

About the Author

Maj Mark C. Nowland (BSEE; United States Air Force Academy [USAFA]; MAS, Embry–Riddle University) was assigned to Headquarters United States Air Force Europe in July 1999. He is a senior pilot with more than 2,000 flying hours. He was commissioned in 1985 through USAFA and spent the next year in undergraduate pilot training (UPT). After graduation from UPT in 1986, he flew T-37s as an instructor pilot at Williams Air Force Base (AFB), Arizona, and Randolph AFB, Texas. In 1990 Major Nowland transitioned to the F-15C at Langley AFB, Virginia, where he served as an instructor pilot, flight examiner, and flight commander. In 1995 he was assigned as the fighter flight commander at Naval Air Station Keflavik, Iceland, responsible for the rotational fighter alert commitment to the Icelandic Defense Force. Major Nowland is a 1999 graduate of the School of Advanced Airpower Studies, Maxwell AFB, Alabama.

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Chapter 1

Introduction

On 3 March 1943, Fifth Air Force aircraft engaged, sank, and halted a critical reinforcement convoy en route to Lae, New Guinea, in the Battle of Bismarck Sea.[1] In October 1973, the Israeli Air Force (IAF) acting in conjunction with defensive efforts of the Israeli army halted a Syrian assault on the Golan Heights.[2] At the end of February 1991, the United States Air Force (USAF) and the US Army (USA) failed to halt the escape of several Iraqi Republican Guard (RG) divisions from the Kuwaiti theater of operations (KTO). This study examines these three efforts by airpower to halt either the advance or retreat of significant ground formations in order to establish analytical criteria with which to evaluate the USAF's articulated halt strategy.

This study also seeks to correct certain misperceptions regarding the halt strategy. Since the Persian Gulf War, the halt strategy and the Battle of Khafji have been closely linked in the Air Force consciousness.[3] This paradigm results in an incomplete understanding of the halt strategy. The USAF has defined halt and the tasks required to implement it. However, the USAF's explanation of the strategy is still subject to critique because no criteria exist to evaluate it. By developing analytical criteria to evaluate the halt strategy, this study should clarify misperceptions, break the Khafji halt paradigm, and facilitate an accurate assessment of the strategy.

Correcting misperceptions and helping create an informed understanding of the halt-phase strategy are important because the strategy is now woven into the fabric of our national security strategy. *A National Security Strategy for a New Century* notes, "we must maintain the ability to rapidly defeat initial enemy advances short of enemy objectives in two theaters, in close succession."[4] However, the Air Force strategy has critics. Many disparage it as "the Air Force's so called 'halt strategy.'"[5] In light of this controversy, as the Air Force considers the utility of the halt phase as an operational concept for future air combat, it will be useful to determine factors that either inhibit or enhance its effective implementation.

This study begins by examining the articulation of the halt-phase strategy as put forth by Air Force strategists. For the purposes of this study, halt will be limited to combat operations and will disregard the peaceful uses of airpower to halt suffering through relief efforts. This study examines sister-service critiques of the halt strategy. This evaluation includes issues of organization, equipment/technology, training, context, intelligence, command and control (C^2), and logistics. This study then examines air action in three operations: the Battle of Bismarck Sea, the Golan Heights battles of the Yom Kippur War, and the Iraqi RG escape from Basra. Each study consists of three sections: assessment of prehostility preparation, examination of actual combat operations, and analysis of the results.

These sections of each case focus on particular issues. The prehostility analysis examines the doctrine, organization, and equipment of each force. Analysis of the conduct of operations includes contextual factors, an operational summary, and specific assessment of intelligence, C^2, and logistics. The analytical portion of each case attempts to determine which of the foregoing factors contributed most significantly to the outcome.

This study then synthesizes the results of the three cases in order to determine cause-and-effect relationships between specific factors involved in the planning and conduct of air operations and the success or failure of halt operations. It then offers some thoughts concerning the implications of these findings.

The evidence for this study comes from a wide variety of sources. Most significantly, primary source accounts ranging from archival holdings, interviews with key participants, published doctrine, and contemporary briefings will form the bedrock of the evidentiary base. Those primary materials will be supplemented by a variety of secondary books and articles. This breadth of evidence should enhance the study's objectivity.

The case studies were selected because of the diverse nature of the operations. The Battle of Bismarck Sea was chosen to explore how land-based airpower was able to interdict a maritime invasion force. The Golan Heights battles of the Yom Kippur War were selected to determine critical factors involved in halting a land invasion. The case of the RG escape through Basra was selected to explore an apparent failure of a halt strategy.

The case studies selected provide a wide variety of circumstances from which to evaluate airpower's effects on halting the movement of forces. The variations of factors from a maritime to a desert environment, from US to Israeli forces, and from World War II to the Gulf War should provide interesting contrasts in developing criteria to evaluate the halt-phase strategy. However, these case studies also have limitations. The Battle of Bismarck Sea case is limited because it is the oldest event studied, and many of the primary participants are no longer available for interviews. The Golan Heights study is limited by the researcher's inability to access a wide variety of primary sources. The Gulf War case is limited because some relevant data remains classified. In spite of these limitations, sufficient evidence should be available to support a relatively thorough analysis and produce generally valid conclusions.

Those conclusions are derived through synthesis. The synthesis consists of comparing the results of each study to determine which factors had the most significant influence on the operational results. The result is a loosely rank-ordered hierarchy of factors that the strategist would have available to assist in the design of prospective halt operations. This empirically derived framework has several benefits. First, it provides a mechanism to test the validity of sister-service critiques of the halt-phase strategy. Second, it provides a basis for Air Force actions to enhance the effectiveness of future halt operations. Third, it may help determine conditions under which halt operations may not be feasible.

Notes

1. Timothy D. Gann, *Fifth Air Force Light and Medium Bomber Operations during 1942 and 1943: Building the Doctrine and Forces that Triumphed in the Battle of the Bismarck Sea and Wewak Raid* (Maxwell Air Force Base [AFB], Ala.: Air University Press, November 1993), 17.

2. Thomas D. Entwistle, *Lessons from Israeli Battlefield Air Interdiction during the Battle for Golan, October 1973* (Fort Leavenworth, Kans.: Army Command and General Staff College, 1988), 1.

3. Rebecca Grant, "The Epic Little Battle of Khafji," *Air Force Magazine*, February 1998, 28–36. Also note that at Air University in 1998 there were several papers—one School of Advanced Airpower Studies, two Air War College, and two Air Command and Staff College—using Khafji to evaluate the halt strategy.

4. *A National Security Strategy for a New Century* (Washington, D.C.: Government Printing Office, May 1998), 22.

5. Peter Faber, "Background Paper on Halt Phase Strategy," Headquarters USAF/XPXQ, 21 August 1998.

Chapter 2

Explanation of the Halt-Phase Strategy

Because it is in essence a particular form of interdiction, the halt phase has deep historical roots. Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines interdiction as "an action to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used effectively against friendly forces."[1] History is replete with examples of airpower being used directly or indirectly to interdict an army's ability to concentrate and maneuver. Gen Dwight D. Eisenhower highlighted this capability: "Our powerful air force ranged far and wide and attacked important targets en masse, almost paralyzing the German power to maneuver and destroying quantities of vital supplies and equipment."[2] Since World War II, airpower has evolved and improved its ability to interdict ground formations and supplies. From the Allied air support provided in the Normandy invasion, to Korea, Vietnam, the Gulf War, and finally Bosnia, airpower has increased its effectiveness and efficiency. Modern airpower's use of precision-guided munitions (PGM) provides massed effects without the need to mass force. The capability for one pass or mission to destroy multiple targets not only provides efficiency but also frees up assets to cover more targets simultaneously, thus enabling parallel attacks on the enemy. Overall, the power of a precision strike campaign is exploiting the maximum capability of airpower to support operational and campaign objectives.[3]

Genesis of Halt

Maj Gen Charles Link was responsible for formulating and articulating the Air Force's halt strategy. He developed the concept partially in response to the *National Security Strategy for a New Century* (1997) requirement "to rapidly defeat initial enemy advances short of enemy objectives."[4] The 1997 *Report of the Quadrennial Defense Review* (*QDR*) emphasized this requirement stating that "maintaining this capability is absolutely critical to the United States' ability to seize the initiative in both theaters and to minimize the amount of territory we and our allies must regain from the enemies. Failure to halt an enemy invasion rapidly can make the subsequent campaign to evict enemy forces from captured territory much more difficult, lengthy, and costly."[5]

The catalyst in formulating the strategy occurred when two events in the summer of 1998 demonstrated to him that airpower was misunderstood. In June the first misconception concerning airpower surfaced in the Senate Armed Services Committee's questions to the nominees for the secretaries of the Air Force and Army. One question addressed the idea of airpower primacy. The nominee was asked if he believed that "air power alone can dishearten, disrupt, and destroy enemy ground forces to the extent that only minimal 'mopping up' by ground forces would be neces-

sary."[6] General Link wondered if disheartening, disrupting, and destroying enemy ground forces to the extent that only minimal mopping up by ground forces "is in itself, a bad idea?"[7] Or was the concept of disheartening, disrupting, and destroying enemy ground forces to the extent that only minimal mopping up by ground forces is acceptable, but is the assertion that airpower alone could create these effects bad? In July the second airpower misconception resulted from a briefing on the Deep Attack Weapons Mix Study (DAWMS).

The Joint Staff J-8 was briefing the "TACWAR" model results from a simulated conflict with North Korea in 2006. The model, shown in figure 1, displays three phases of the conflict. In the first phase, predominant airpower acting in conjunction with in-place ground forces halts the enemy advance. In the second phase, known as buildup and lodgment, follow-on forces arrive from the states. In the third, or counteroffensive phase, decisive surface combat takes place and the enemy is defeated. In Link's analysis, the TACWAR model is deficient because it "prohibits modeling of an intelligent air campaign (effects-based warfare; nodal attack; hourly adjustment)."[8] Overall, the TACWAR model incorrectly portrays airpower effects; consequently, according to Link, the conclusions drawn from the model are flawed.[9]

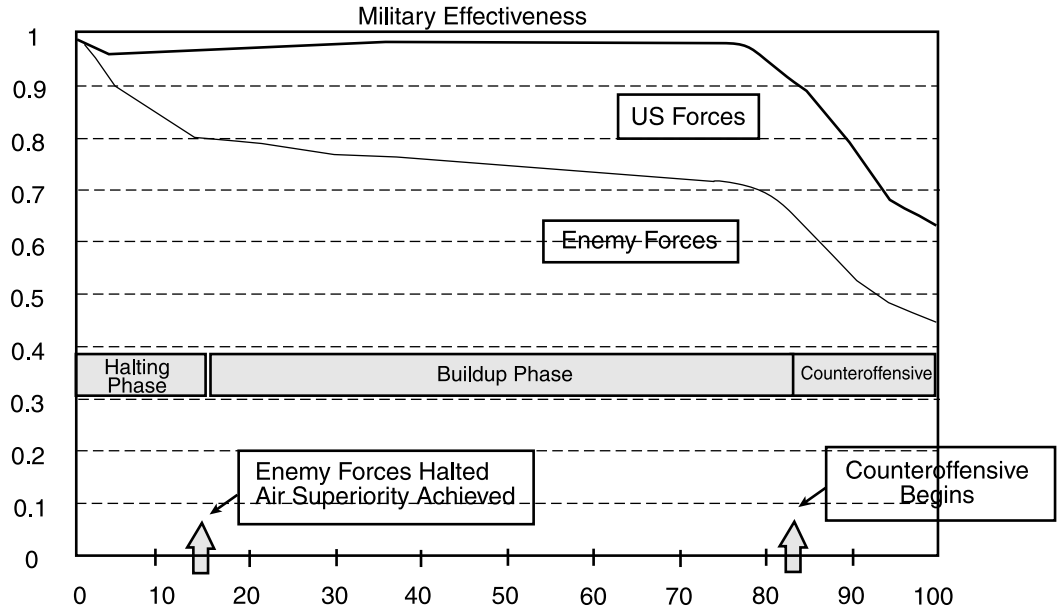


Figure 1. TACWAR Model

There are four major anomalies associated with the TACWAR model. First, the modelers do not understand airpower effects. During the halt phase of the operation, approximately 3,000 sorties are flown per day. However, during the lodgment phase, the sorties are reduced to 1,500 per

day. The reason the model's programmers cut the sortie rate in half was to "save sorties and munitions for the counteroffensive."[10] "Air Force analysts monitoring this result realized that it represented decisions that would be plausible only if the theater commander and air component commander were indifferent to casualties."[11] If the sortie rates were maintained at 3,000 per day, the decline of the enemy's military effectiveness in the buildup phase would continue at similar rates experienced during the halt phase.[12] This would result in a much lower enemy effectiveness at the start of the counteroffensive than the TACWAR model displays by reducing the rate of enemy decline. The second problem with the TACWAR model was that the influence of adverse weather was more than double real-world experience. Third, the TACWAR model inaccurately portrayed munitions not expended due to aborted strikes as having been expended. The final problem was the model's kill requirements. It took an average of "16 sorties to kill one armored personnel carrier."[13] Figure 2 graphically displays the previous anomalies, but especially highlights the change in the rate of attrition of enemy forces in the slopes of the lines.[14]

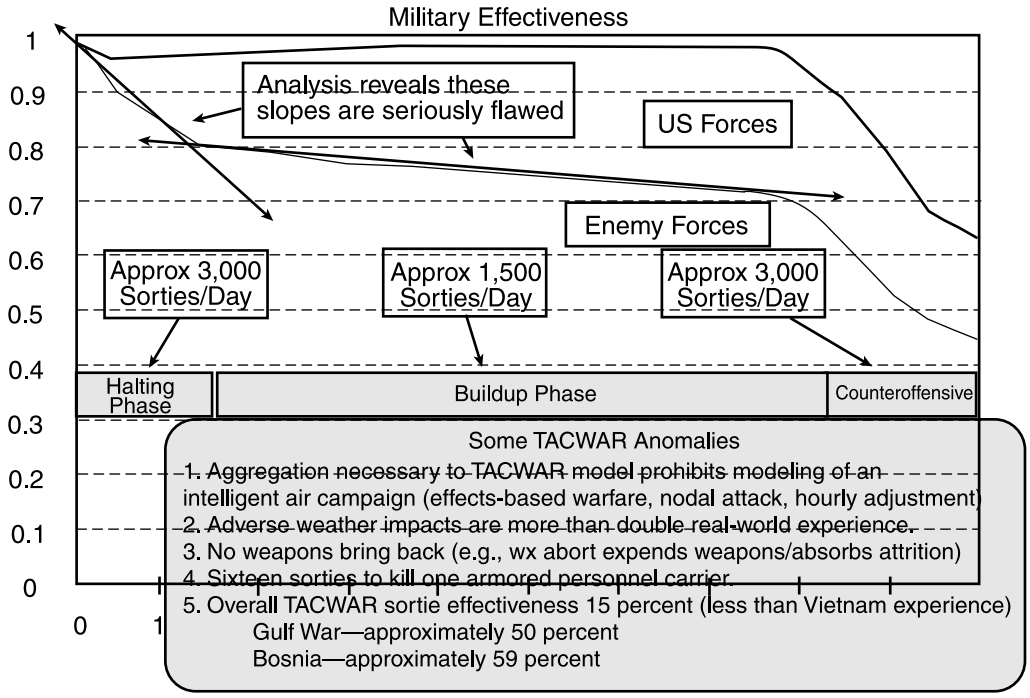


Figure 2. TACWAR Anomalies

The result of this flawed model of airpower was a costly counteroffensive. The TACWAR model was based on the three-phase paradigm (fig. 3). The "halt the invading force" and "buildup combat power" phases were "merely steps en route to the counteroffensive."[15] This idea that a land counteroffensive was the logical culmination of the campaign was labeled by General Link as "the legacy construct."[16]

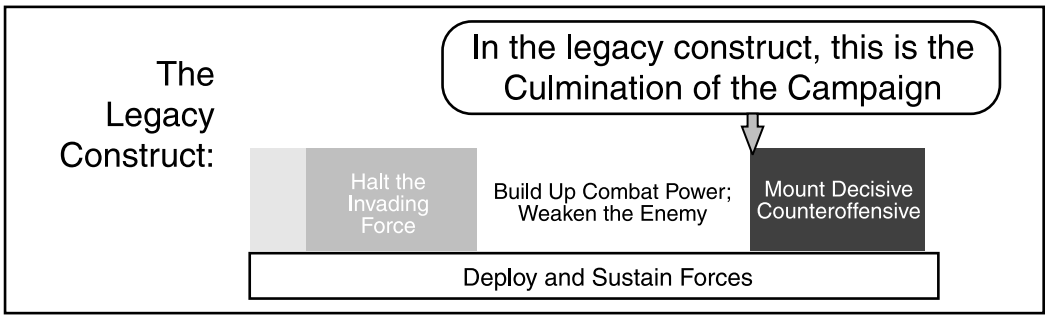


Figure 3. The Legacy Construct

This legacy construct has many effects.[17] First, war plans are shaped by commanders in chief's (CINC) tendencies to arrange the plan around the three phases of halt, buildup, and counteroffensive. "These war plans exert a direct and unavoidable impact on resource priorities."[18] The combination of planning for and building of force structure to implement the decisive land combat resulted in the counteroffensive becoming "the end of our strategy, as opposed to just one of the means."[19] Further evidence of this emphasis in our thinking is reflected in our joint doctrine. Link's analysis of joint doctrine argued that 35 publications are dedicated to the counteroffensive stage, four volumes are dedicated to the buildup phase, and none is dedicated to the halting phase. General Link's question upon realizing the focus of joint doctrine was on the counteroffensive: "Is this where joint war-fighting doctrine should be focused?"[20]

General Link brought an airman's perspective to the TACWAR model and called for a new US war paradigm. His concept—which eventually was dubbed the halt-phase strategy—attempted to shift the emphasis of campaign planning from the counteroffensive stage to the halt phase. The theory rests upon the assumption that America's military tasks are primarily defensive in nature. The assignments will either be the defense of the homeland, a response to a large-scale aggression, or a response to a small-scale contingency. In each of these scenarios, America's "problem is almost universally characterized by the need to respond in ways that deny success to red's [the enemy's] initiative."[21] By moving the operational emphasis forward in time, the halt strategy seeks to seize the initiative earlier in the campaign.

According to General Link, moving the emphasis forward snatches the initiative from the enemy in three major ways. First, "when the enemy is halted short of his objective, the enemy is no longer on the offensive, the enemy is leaving or dying—fortifications are not portable, the enemy has lost air sovereignty over his nation, and he has lost the initiative—time is not on his side."[22] Second, halting the enemy invasion means that American national security objectives are largely satisfied. Third, halting the enemy short of his objective provides the National Command Authorities (NCA) time to assess options. The NCA may decide to apply sanctions or to dismantle the aggressor's force with airpower while continuing the ground force buildup. Ultimately, moving the emphasis forward creates a

modified military strategy with more branches and sequels.[23] Figure 4 provides a graphic depiction of the new options created by the halt strategy.[24]

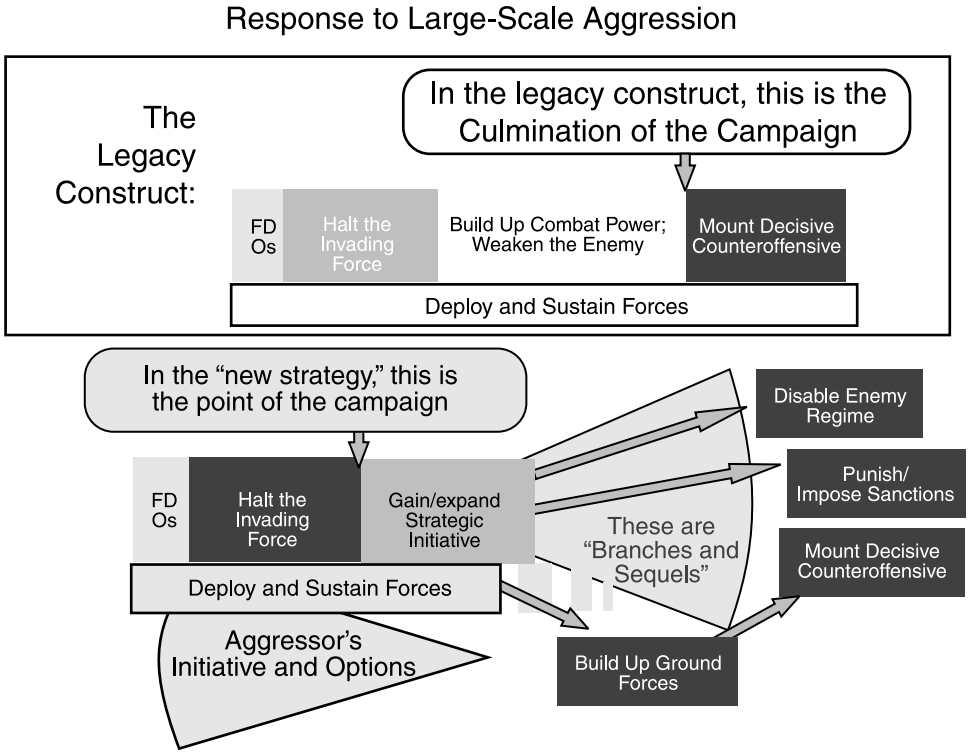


Figure 4. Branches and Sequels

General Link's formulation of a strategy for changing the nature of operations shifting the paradigm rests upon his beliefs about airpower. His halt-phase strategy assumes that airpower can deny land forces freedom of action and that modern aerospace power forces can destroy moving enemy land forces faster than they can bring combat power to bear on their objective.[25] General Link argues that embracing this new methodology results in potential savings for American taxpayers because not as many conventional forces may be necessary and, more importantly, may result in saving American lives. The soldiers' lives may be saved because the traumatic force-on-force counteroffensive may not be necessary; or if it is, the military effectiveness of the enemy may be degraded to the extent that adverse exchange ratios may be reduced.[26] Figure 5 displays this concept.[27]

In 1997 as General Link's ideas started to spread within the Washington beltway, they were immediately attacked. The *QDR* made force structure a hot topic of debate. In particular, "the issues of Total Army manpower costs and the role of manpower intensive forces in the defense

strategy generated spirited debate."[28] Because the halt-phase strategy argued that airpower could produce greater effectiveness at a lower cost, it directly threatened the surface force's budgets. This threat to budgets created a highly charged atmosphere of argumentation about the strategy's basic assumptions. This discussion caused the Air Force to define and model the strategy in greater detail in order to explain its advantages and disadvantages.

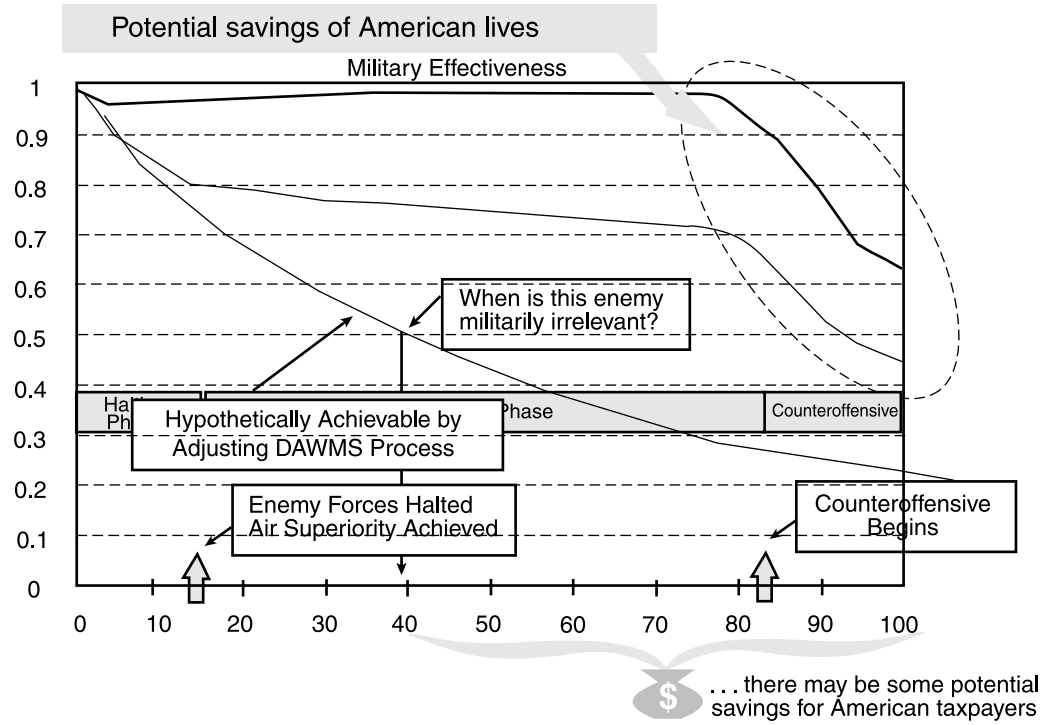


Figure 5. Potential Savings

Quantifying and Modeling Halt

In refining the strategy, the Air Force concluded that the halt phase was a portion of a more comprehensive USAF concept of global engagement operations. It is not, however, an Air Force-only approach. The USAF definition of the strategy is "to provide an operational strategy that exploits joint aerospace power in the Halt Phase and is tailorable to theater Commander in Chief (CINC) needs."[29] It is an airpower-centric concept that exploits all joint means of creating airpower effects, to include aircraft, helicopters, and missiles. Within the major theater war (MTW) scenario there are two objectives of the halt strategy. The first is to act as a visible deterrent. If deterrence fails the second objective is to stop an invading army's advance. Ideally, the enemy will be stopped as close to the border as possible to avoid significant losses of territory and damage to the defending nation.[30]

The strategy is based on three assumptions. First, it assumes that all theater air assets will be employed. Second, it is based on constant sortie generation rather than surges and pauses as the campaign develops. Third and most controversially, it presumes airpower's ability to constrain the movement and resupply of enemy ground forces as well as the capability to destroy or disable the forces themselves.[31] This last presumption generates heated debate because destroy and disable are ill defined. This lack of precision led the Air Force to search for means of quantifying the term *halt*.

In assessing the halt strategy, material destruction appeared to offer the most quantifiable factor. The Air Force therefore attempted to determine how much material destruction was required to halt an invading armored force. The Air Force Studies and Analysis Agency produced a report titled *Effects of Air Interdiction Attacks on Advancing Armored and Mechanized Ground Forces*.[32] The report used historical case studies, doctrinal analysis, and modeling to determine the level of destruction necessary to halt advancing forces. The analysis cites the Combat History Analysis Study Effort, a US Army Concept Analysis Agency study, and a Trevor Dupuy lead study for the US Army Training and Doctrine Command that investigated the relationship between halting forward momentum, casualties, and tank loss rates.[33] The synthesis of this investigation concluded that to halt a force, one must achieve 35 percent attrition.[34]

RAND, Air Combat Command (ACC), and Headquarters USAF each produced studies in attempts to model effects for the halt phase. The RAND study created its own model to evaluate the halt strategy. An unusual feature of the model was its variable resolution design, which facilitated exploratory analysis across many dimensions of uncertainty. Headquarters USAF and the ACC studies used the Combat Forces Assessment Model (CFAM), which is a linear optimization model designed for theater-level air operations.[35] The RAND and ACC studies measured time (i.e., success was based on how quickly the invading army was stopped).[36] The Headquarters USAF study used the forward line of troops (FLOT) movement, force ratio, aircraft attrition, and transportation throughput as the major categories of effectiveness.[37]

Each study concluded that several factors directly influenced the halting of an invading force. Early availability of airpower was found to be critical in each study. The optimal creation of airpower effects requires strategic warning or prepositioning of forces to enhance airpower's chance of halting the invasion early. The RAND study says, "successful defense is feasible . . . providing numerous (e.g., 100–150) precision-fire systems are available in-theater on D-Day."[38] The Headquarters USAF study states, "The effective use of aerospace power early and aggressively yields faster results with fewer losses."[39] The ACC study found that a limiting factor was rapid strategic lift. Increasing strategic lift's capability to deploy weapons and supplies to the theater resulted in significantly improved modeling results.[40]

Another factor affecting the modeling is the type of enemy patterned. All of the studies are designed against the scenario of an invasion led by armored forces. Advance by infiltration type or people's war insurgencies are inappropriate for the concept because airpower demonstrated in Vietnam

that interdicting these types of lean logistical infantry-dependent operations is problematic at best.

The presence of ground forces in contact with the enemy also affected the simulations. In implementing the halt strategy, several possibilities are viable with regard to supporting or being supported by surface forces. The RAND study explored both possibilities and determined that the best situation entailed air-supported surface forces engaging the enemy. However, RAND found that a successful halt does not require surface forces to be in contact.[41] Both the Air Force and ACC studies modeled Southwest Asia and Northeast Asia cases in which surface forces were in contact with the enemy. However, in the Southwest Asian case, surface forces were much smaller than the opposition forces. This smaller force was more dependent upon airpower for interdiction support.

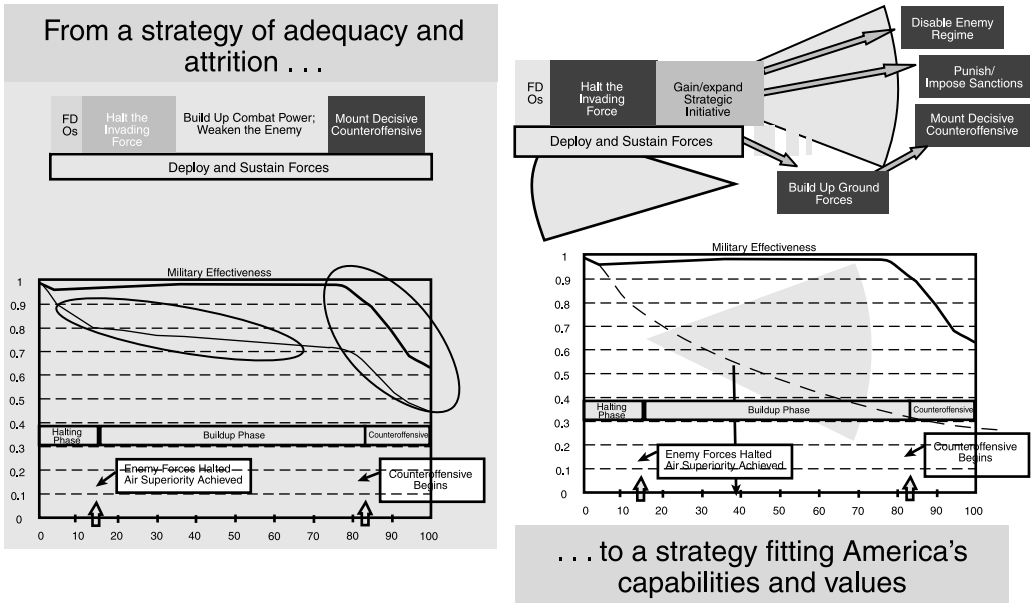
The studies found that the mix of aircraft is less important than the type of weapons the aircraft employ. The RAND and ACC study both highlighted that "successful forward defense would probably require the lethalities of advanced munitions and a 'heavy reliance on advanced munitions.'"[42] However, both studies observed that the requirement for advanced weapons surpassed the expected planned munitions procurement. The Headquarters USAF study also relied on advanced munitions but found certain targets "are more appropriately serviced with unguided iron bombs; therefore, we still find a considerable number of unguided weapons are required."[43] Unlike the other two studies, the Headquarters USAF study did not exceed the advanced weapons planned munitions procurement.

Summary

In its ideal form the halt strategy provides five advantages to the CINC. It seizes the initiative, denies enemy bargaining, instills a perceived inevitability of defeat, demonstrates that continued aggression results in great risk, and exploits America's airpower strength. By seizing the initiative from the enemy, the strategy provides the CINC with more strategic options. After the enemy force is halted, the adversary is in no position for bargaining. It may also instill a perceived certainty and inevitability of defeat because after halting and gaining air superiority, a strategic bombing campaign or battlefield preparation phase may be initiated. Halt operations can demonstrate to the enemy leadership that continued aggression equals unacceptable risk because air superiority can be exploited to escalate the war to a wider variety of enemy targets.[44]

Despite the allure of these positive attributes, the halt strategy has four potential problems. First, it does not substitute for ground forces in those situations where a ground presence is necessary, such as postconflict stability, enforcing peacekeeping operations, and so forth. Second, it does not substitute for a naval presence where naval forces are necessary, such as boarding vessels, sea rescue, or submarine attack.[45] Third, the strategy is dependent on strategic warning because without warning airpower assets may not arrive in-theater in time to deter or halt enemy operations. Fourth, the strategy is airlift limited. Strategic airlift has limited capacity.

The ACC study of the halt strategy concluded that increasing strategic airlift capacity by 1,000 tons per day provided a much better result in both the Southwest and Northwest Asia scenarios. However, the additional aircraft required to provide this additional lift create new problems for air refueling aircraft and en route support structure.[46] Therefore, strategic warning is critical because it allows current strategic lift to deploy the required forces to the area of operations within acceptable time limits.



The foundation of US ascendancy is our ability to operate forces where and when the president chooses with acceptable risk— sufficient technical superiority and force size to support strategic preeminence.

Figure 6. New Thinking

In spite of these limitations, the USAF argues that the halt strategy "underwrites a national security strategy that conforms with American interest and values."[47] The Air Force halt strategy has limitations but moves from an outdated construct to a new strategy for a new century (fig. 6). General Link calls this a "breakthrough concept that stems primarily from a thorough understanding of military possibilities updated to encompass the actual capabilities."[48]

Notes

1. Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 1987, 187.

2. Dwight D. Eisenhower, *Crusade in Europe* (Garden City, N.Y.: Doubleday & Co., 1948), 261.

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6. Charles A. Link, *Thoughts on the Nature of Future War* (Washington, D.C.: Headquarters USAF, November 1998), CD-ROM, 7.
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18. Ibid., 51.
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34. Ibid., 18.
35. Plans and Programs Directorate, Air Combat Command, Evaluating the Decisive Halt Strategy, staff study, 15 April 1997, 4; and David Ochmanek, *To Find and Not to Yield* (Santa Monica, Calif.: RAND, 1998).
36. Plans and Programs Directorate, 1.
37. *The Halt Phase—Seizing the Initiative* (Washington, D.C.: Air Force Studies and Analysis Agency, 24 September 1998), CD-ROM, 5.
38. Ibid., 6.
39. Ibid.
40. Plans and Programs Directorate, 4.
41. Paul K. Davis and Manuel J. Carillo, *Exploratory Analysis of "The Halt Problem"* (Santa Monica, Calif.: RAND, 1997), 6.
42. Ibid., 7; and Plans and Programs Directorate, 6.
43. *The Halt Phase,* 5.
44. Ibid.; and Grant.
45. Link, *Thoughts on the Nature of Future War,* 2.
46. Plans and Programs Directorate, 7.
47. Link, *Ascendancy of Air and Space Power,* 51.
48. Ibid.

Chapter 3

Critiques of the Halt-Phase Strategy

The sister-service critiques of the halt-phase strategy are varied and very rarely direct. Most of the direct critiques come from a series of debates between Army Maj Gen Robert H. Scales, Marine Corps Lt Gen Paul Van Riper, and Air Force Maj Gen Charles Link. Dr. Earl H. Tilford Jr.'s monograph *Halt Phase Strategy: New Wine in Old Skins . . . with PowerPoint* also criticizes the strategy. This chapter compiles these criticisms into two categories: critiques based on the nature of war and critiques based on scenario-specific contingencies. Within the nature of war critique subissues of friction, technological determinism and the requirement of physical occupation will be examined. The subissues examined within the scenario-specific critique are the availability of strategic warning and basing, the nature of the terrain, the nature of the invading force, and finally enemy options.

Nature of War

Dr. Tilford, an analyst at the US Army Strategic Studies Institute, wrote a monograph critiquing *The Halt Phase* in July 1998. At the core of Tilford's argument is a basic disagreement over the nature of airpower. He disagrees with what he claims is one of the basic premises of the halt strategy that "airpower can win a decisive victory in a matter of weeks."[1] Tilford argues that airpower has yet to be the decisive element in war. He says in World War II, airpower was used effectively; however, the ability to control the sea lines of communication and to control terrain was what proved decisive. Airpower advocates often confuse tactical and operational success with strategic decisiveness. "The ability to destroy targets does not necessarily translate into strategic success."[2] The historical record shows that combined arms operations, in which airpower can play a pivotal role, have been the most successful. "But the historical record does not indicate that airpower alone has ever been decisive in war."[3]

This difference on the decisive nature of warfare reflects an inherent incompatible view on the nature of war. Generals Van Riper and Scales in their article, "Preparing for War in the 21st Century," interpret the Air Force viewpoint as,

> War is a predictable, if disorderly, phenomenon, defeating a matter of simple cost/benefit analysis, in the effectiveness of any military capability the finite calculus of targets destroyed and casualties inflicted. History paints a very different picture. Real war is an inherently uncertain enterprise in which chance, friction, and the limitations of the human mind under stress profoundly limit our ability to predict outcomes; in which defeat to have any meaning must be inflicted above all in the minds of the defeated; and in which the ultimate purpose of military power is to assure that a trial of arms, should it occur, delivers an unambiguous political verdict.[4]

To achieve an unambiguous verdict, surface force proponents argue the need for engaged land forces. However, Generals Scales and Van Riper state that in all probability, in future conflict the United States will confront the enemy as a member of an alliance. From all our experience with coalitions, one lesson can be drawn. The presence of ground forces demonstrates commitment and leadership. Powerful ground combat forces represent the strongest evidence of foreign commitments, and their presence conveys an intention to remain engaged for the duration of the conflict.[5] "War is a contest of human wills, not machines, in which means must be subordinated to the ends if the results are to justify the cost. In the world we confront, those ends are likely to be more complicated, and the circumstances in which they must be pursued less predictable, than ever before in our history. A military posture that evades rather than accommodates that reality is doomed to expensive irrelevance."[6]

The Presence of Friction

General Scales develops another aspect of the nature of war—which he contends the halt strategy fails to address adequately—the characteristic of friction. He claims that Carl von Clausewitz's understanding of friction is omnipresent. "Everything in war is very simple, but that the simplest thing is difficult. The difficulties accumulate and end by producing a kind of friction that is inconceivable unless one has experienced war."[7] General Scales takes issue with the latest Washington consultants who state that the revolution in military affairs promises "to imbue the information loop with near-perfect clarity."[8] He believes this idea of dominant battle space knowledge is unachievable.[9] "Twenty-five hundred years of history confirm that ambiguity, miscalculation, incompetence, and above all chance will continue to dominate the conduct of war. In the end, the calculables of determination, morale, fighting skill, and leadership far more than technology will determine who wins and who loses."[10]

The Fallacy of Technological Determinism

Another main theme in critiques of the halt strategy addresses the Air Force's tendency to embrace technology and to believe that technology will provide solutions to military problems. Tilford contends that the Air Force has historically always overstated the capability of its technology. He says, "Halt, in its current iteration, is based upon a claim that, with the air and spaced based sensors, anything on the battlefield can be located and then destroyed with precision guided munitions."[11] He doubts whether this is possible, arguing that the ability to find, fix, track, target, and engage with precision is fundamental to the viability of the halt concept. Tilford holds that this capability parallels a claim made by the Air Force since the 1950s. He says,

> Although since the 1950s the Air Force has been able to find and destroy fixed targets—even deep ones—what is new is the precision with which they can do so. The capability to hit the target with great precision, like atomic and nuclear weapons a half century ago allows airpower enthusiasts to claim—once again—

> that technology has at last caught up with doctrine. In this, claims made by halt advocates are not all that different from those made by air force airpower advocates of the 1950's, if one substitutes "precision" for "atomic."[12]

Generals Van Riper and Scales also argue that the Air Force has an organizational preference for relying on technology. Specifically addressing the Eisenhower administration's reliance on airpower in his New Look policies of the 1950s, they said, "optimists insisted that technological change had rendered conventional warfare obsolete. Events in Southeast Asia and elsewhere soon disabused them. But the resulting damage to conventional military capabilities persisted long after the United States had abandoned the New Look."[13] History proves technology doesn't win wars, "America's defeat in Vietnam, the Soviet Union's defeat in Afghanistan, or Russia's more recent defeat in Chechnya. All these episodes confirm that technological superiority does not automatically guarantee victory on the battlefield, still less at the negotiating table."[14] This view that the Air Force is organizationally biased in favoring technology also reflects a basic land force belief. Generals Van Riper and Scales said "success in war requires the rejection of over reliance on any single capability. America's next war, like those that have preceded it almost certainly will be won or lost on land."[15]

These critics specifically take issue with the Air Force's faith in technology. To a certain extent the Air Force faith in technology is a cultural phenomenon because the service is based on a technological capability. Tilford claims that airpower advocates have often turned to technology for solutions. Once developed they then overstate the potential the technology provides airpower. He cites Air Force sources that in the 1950s claim the three phases of war—the holding, buildup, and exploitation phase—had been made unnecessary because of nuclear weapons. Tilford argues that history proved these predictions wrong and warns that similar Air Force faith in technology may be proved wrong again in the halt strategy.

Another problem with the Air Force's reliance on technology was demonstrated in the Vietnam War. Tilford says that the Air Force during the Vietnam War "was ever in search of technologically inspired Silver Bullets that would deliver quick victory with a low-cost in lives and resources. Cluster bombs, napalm, herbicide defoliants, the electro-optical and laser-guided bombs all promised much. While they were often used effectively, it also seemed to many that a cruel and unusual technology had been what he unleashed on a 'peaceful and peace-loving people.'"[16]

As a result of the Vietnam War, the belief in technology as a panacea for all military aims seemed to disappear. However, Generals Van Riper and Scales say the belief in the possibility that technology will act as a fix for the challenges of war shows astonishing persistence.

> In an important sense, therefore, U.S. military policy remains imprisoned in an unresolved dialectic between history and technology, between those for whom the past is prologue than those for whom it is irrelevant. Today's debate about the preferred structure of American military forces thus in the end is a debate about the future of war itself. There are fundamentally incompatible views about the nature of war, about what conditions produce victory and defeat—indeed, how one should define these concepts—and ultimately, about the purpose for which we maintain military forces in the first place.[17]

The Requirement for Physical Occupation

One main reason surface advocates feel that wars will be won or lost on the land is the need to dominate the enemy physically. Generals Van Riper and Scales say, "The conquest of land remains a legitimate ambition, and given their own economic and strategic interest, the developed democracies cannot remain unaffected."[18] They argue that demographic trends and the difference in the economic development between the rich and poor nations will drive developing nations to seize geography. "Populous states will launch calculated invasions of less crowded neighbors. Hordes of refugees will spill across borders provoking violence."[19] They continue saying that as the world population grows, the cities will grow larger and larger. To deal with these urban centers, land forces and smaller unit tactics will be necessary to operate in these heavy population centers. "In third-world episodes, it is likely to be about the control of populations. And suppressing terrorist and other nongovernmental challengers will require depriving them of political, psychological, and material support. In none of these cases is technology alone likely to be decisive and in many cases the very nature of the contest will restrict its use."[20]

General Scales observes that war has an enduring characteristic of its own. He says, "To be useful, military theory must be grounded in the known realities of the past, not because the past repeats itself in specific ways, but rather because it reveals aspects of war which are timeless. War in practice is hostage to political concerns that routinely preclude the unconstrained employment of military means. Such concerns tend to be highly situational, hence unpredictable. For that reason alone, the mere possession of advanced technology is no guarantee of its practical utility."[21]

To the critics, the Air Force's history of overstating its capabilities reflects a misunderstanding of how well-trained ground forces will behave. Generals Scales and Van Riper have no objection to technology itself but rather to the claims that technology will permit "the achievement of victory by distant punishment with no need to exert direct and continuing influence on the land, people, and resources, which are war's ultimate stakes."[22] The generals contend that distant punishment unexploited by physical domination of troops on the ground is wasting assets. They say that history is replete with examples such as "Verdun, Cassino, the Iron Triangle, and Al Busayyah" where firepower alone was used and proved incapable of ejecting determined well-trained troops from the ground they occupied.[23] They cite the Gulf War as an example. Even the ideal month-long air campaign could not eject the demoralized Iraqi army.[24]

Another problem—with an extended bombing strategy according to Scales and Van Riper—rests in the realities of the modern media. Politicians must be concerned with maintaining popular will. The reactions of our own citizens watching modern weapons inflicting severe punishment to apparently defenseless populations will not be allowed. This problem is likely to intensify "as the developing states, which represent the most probable loci in the future of high-intensity conflict, continue to urbanize."[25]

Another doubt about an airpower-centric strategy is that it ignores the psychology of an opponent's will to resist. "There is an enormous difference between enduring a distant attack, which however unpleasant must eventually end, and enduring the physical presence of a conquering army with all its political and sociological implications."[26] This fact is a significant difference between air and ground forces. A fundamental limitation of the air-centric strategy is that it commits without resolving. Ground forces offer the CINC the most versatile option available. "Ground forces remain the indispensable foundation of that strategic versatility. Air and naval capabilities complement but can never replace the ability to deploy ground forces tailored to the particular conditions and objectives of a given conflict."[27]

The nature of war critiques consists of four basic disagreements. The first and most fundamental is the assumption regarding whether airpower can be decisive in war. Critics argue that warfare is more than a cost-benefit analysis consisting of destroying targets. Second, the critics reason that chance and friction are ever present and that technology will not provide dominant battle space knowledge. Third, they think the Air Force has an organizational tendency to look to technology to provide solutions to military problems and then places so much faith in the technology that they oversell its capability. Fourth, the critics think that the airpower used in halting an enemy will not provide the necessary physical domination of an enemy, which provides an unambiguous conclusion to any conflict. They also hold that in the face of technologically superior forces, the enemy will counter the technology with spoofs, decoys, or simply moving into an urban environment where airpower is less effective.

Scenario-Specific Contingencies

The next group of critiques takes issue with the mechanics of the strategy. The arguments find fault with specific issues in attempting to implement the halt strategy with respect to the type of conflict, US airpower limitations, or how a thinking enemy may possibly react.

For the past 50 years, American forces have deterred our cold war enemies. We know a key requirement of deterrence is making a credible threat. In the post-cold-war era, the halt-denial strategy offers the present CINCs a low-risk option for deterrence. However, Van Riper doubts that airpower alone will deter. He thinks the greater the stakes of a situation, the less likely that distant attack with airpower will produce a favorable strategic result. It follows that the greater the stakes, the less likely the threat of such a distant attack alone will deter. "Deterrence is most likely to succeed when complementary capabilities reinforce each other, and when all contribute in a credible way to the assurance of victory should deterrence fail. That emerging precision attack systems promise more effectively to kill people and break things is not an issue. The challenge will be to translate those essentially tactical effects into strategic results. And the principal mechanism of the translation will remain an unrivaled land combat capability."[28]

Availability of Strategic Warning and Basing

The first of the execution arguments against the halt strategy attacks limitations on US capability. Dr. Tilford sees problems with the halt principle that "airpower can arrive on the scene quickly."[29] The speed with which airpower can deploy to a given place is dependent upon several factors. The first is strategic warning. If an enemy initiates action that is undetected by the United States, it may achieve its objectives before airpower can arrive. The second necessity for airpower to arrive in-theater is basing. Without bases in-theater, land-based air cannot effectively employ sustained airpower pressure against the enemy. Aircraft carriers offer a solution, but they also require strategic warning and have limitations in sortie generation and long-term sustained operations. Airpower proponents argue that long-range global operations can make up for lack of basing; however, Tilford argues that this may drive future enemies to strike the United States.[30]

Weather and Terrain

Next, Dr. Tilford offers a pragmatic argument against the USAF's ability to dominate surface forces. He says, "Historically, Air Forces have not done well with forces moving at night, in mountainous terrain, and bad weather or under the cover of foliage. The jungles and forests of Indochina presented their very special problems."[31] He goes on to say that air supremacy does not ensure or create victory. "While the historical evidence that airpower alone can dominate the battlefield is not compelling, ground forces have, in fact, won wars in which the opposing side had complete air supremacy over the battlefield. The communist victories in two Indochina wars, the stalemate in the Korean War, and the Mujahadeen victory in Afghanistan simply cannot be ignored."[32] In all of these cases the terrain or weather inhibited airpower's air-to-ground effectiveness.

Nature of the Invading Force

Another critique regarding the execution of the halt is the type of force the strategy is designed to destroy. Tilford thinks the strategy is designed against the mechanized attack across relatively open terrain, which constitutes a relatively small part of the threat spectrum. He also thinks that the strategy will not work against infantry forces or insurgencies like in Vietnam. He believes tailoring US strategy to the mechanized invasion force is flawed. "Halt is totally reactive and therefore cedes the strategic initiative to the adversary. It cannot accomplish or even contribute to the vast majority of peacetime engagement activities that can help avoid major conflict."[33] To Tilford, the strategy is also dangerous because a thinking enemy will develop counters to technology. "If a foe with asymmetric capabilities emerges in the 21st century, they will attack our technological capabilities and probably degrade them."[34] He cites that in 1969 low-technology counters to PGMs appeared almost as soon as they were used in Laos. "If our National Defense is focused entirely on high technology,

we invite technological trump's, spoofing, and alternative tactics. Halt invites asymmetrical approaches. The most probable adversaries for the foreseeable future are much more likely to be transnational or sub-national groups like criminal syndicates, drug cartels, and various kinds of political or religious terrorist groups."[35]

Against these types of threats high-technology weapons systems will be virtually useless. "In the final analysis, it is land forces that exercise direct control over people and resources. This will not change as a result of increased technological capabilities."[36]

Enemy Options

Tilford's next disagreement stems from halt advocates' claim that, "airpower can force an enemy to culminate in days."[37] The whole strategy puts the culminating point early in the conflict when airpower stops the invading force. Tilford argues that this may create benefits for the enemy because now its forces "have time to disperse, dig-in, or withdraw to a more tenable position. Indeed, time can be a gift for the enemy."[38] If the enemy is halted and disperses, he may still maneuver—particularly if his force is infantry. "Attacking dismounted infantry with precision guided munitions will not only be expensive and time-consuming; it also is likely to be ineffective."[39] If the enemy digs in then, they may set up an air defense system that may eliminate airpower effects as the Egyptians did in the 1973 Sinai action.

Finally, Dr. Tilford argues against the proposition that "reliance on airpower is morally right and economically efficient."[40] "One of the consequences of relying on a halt strategy would be that in the absence of land forces to fix the aggressor, the enemy would move rapidly into urban areas as a way of negating the technological advantages inherent in precision strike."[41] Historically, many have looked to technology for ways to make warfare less brutal, bloody, and more economically efficient. However, most advances in weapons technology have resulted in greater carnage. Tilford argues "German civilians bombed out of their houses by the Royal Air Force and nearly a million dead Japanese civilians, burned, blasted, and then irradiated by American airpower might find the idea of humane death from above a strange notion as well."[42] If the enemy did counter the halt strategy by moving into the cities, the United States would be faced with urban warfare—something to which airpower and precision weapons are not well suited. "Bombing in the cities would be very destructive; the only alternative to this carnage would be to employ American ground forces, predominantly light infantry supported by armor."[43]

"The historical record shows that neither military technology nor airpower has lessened the human and economic cost of war."[44] In Vietnam, Air Force leaders urged a strategic bombing campaign to bring Hanoi's leadership to its collective knees quickly. This campaign was thought to be low risk and low cost. Unfortunately, the bombing did not compel North Vietnam to desist its aggression. This misunderstanding of warfare "cost 48,000 Americans killed in combat, of which 43,000 were soldiers and Marines."[45]

The scenario-specific critiques consist of five arguments. First, the critics declare the strategy is flawed because the threat of airpower in isolation is not sufficiently credible to deter potential adversaries without the threat of land combat capability in place. Second, they contend the strategy is broken because it requires strategic warning and basing rights in-theater to bring land-based airpower to bear on the enemy. Third, they argue that if the United States receives strategic warning, halt is still flawed because the strategy is designed for only the small portion of the threat spectrum (i.e., mechanized forces in open terrain). Fourth, they argue that air supremacy does not ensure victory because weather and terrain make a difference in war. Fifth, once the enemy is halted, the enemy may negate airpower effects by digging in or moving into urban areas.

Ultimately, the root of disagreement between airmen and surface warriors is centered on the belief in how wars are won. Surface advocates believe wars are won by establishing defeat in the enemy's mind, and that historically only physical domination provides victory. Physical domination certainly was required in the island-hopping campaign across the Pacific in World War II, but the Battle of Bismarck Sea provides an interesting case study where victory was achieved by controlling but not seizing or physically dominating an area.

Notes

1. Earl H. Tilford Jr., *Halt Phase Strategy: New Wine in Old Skins . . . with PowerPoint* (Carlisle Barracks, Pa.: Strategic Studies Institute, 23 July 1998), 24.
2. Ibid.
3. Ibid., 25.
4. Robert Scales and Paul Van Riper, "Preparing for War in the 21st Century," *Strategic Review*, Summer 1997, 15.
5. Ibid., 20.
6. Ibid.
7. Ibid., 17.
8. Ibid.
9. Ibid.
10. Ibid., 18.
11. Tilford, 4.
12. Ibid., 9.
13. Scales and Van Riper, 14.
14. Ibid., 15.
15. Ibid., 14.
16. Tilford, 24. Dr. Tilford argues that this reliance on technology resulted in a propaganda advantage for the North Vietnamese. He says "the North Vietnamese made the most of this perception and used it to help fuel the anti-war movement in this country, thereby weakening our resolve." Therefore, his quote about a peaceful and peace-loving people is made sarcastically.
17. Scales and Van Riper, 15.
18. Ibid., 16.
19. Ibid.
20. Ibid.
21. Ibid., 17.
22. Ibid., 18.
23. Ibid.
24. Ibid.
25. Ibid.

26. Ibid., 19.
27. Ibid.
28. Tilford, 19.
29. Ibid., 20.
30. Ibid.
31. Ibid., 16.
32. Ibid., 19.
33. Ibid.
34. Ibid., 30.
35. Ibid., 31.
36. Ibid., 32.
37. Ibid., 21.
38. Ibid.
39. Ibid., 23.
40. Ibid., 25.
41. Ibid.
42. Ibid., 26.
43. Ibid.
44. Ibid., 27.
45. Ibid.; and H. R. McMaster, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam* (New York: HarperCollins, 1997). This is obviously an inflammatory argument. Explanations or accusations of culpability for the US Vietnam experience are wide ranging. However, this author recommends the McMaster's book for an in-depth analysis that sheds new light on the series of developments and secret decisions made in Washington that led to the ultimate tragedy in Vietnam.

Chapter 4

The Battle of the Bismarck Sea

The Battle of the Bismarck Sea was part of a larger strategy to halt the Japanese advance in the Southwest Pacific Area (SWPA). The results of the actions taken on 1–4 March 1943 owe a great deal to the actions taken in the previous seven months. Those actions would result in what Gen Douglas MacArthur would later call "the decisive aerial engagement" in his theater of the war.[1]

Prehostilities

In the months prior to and including March 1943, the Allied forces in the Pacific were battling to wrest control of the Solomon Islands and Guadalcanal from the Japanese naval forces. They were fighting the Papuan campaign to regain control of New Guinea from the Japanese army forces.[2] For General MacArthur, the defense of Port Moresby was critical.[3] Seizure of Port Moresby by the Japanese would allow them to launch operations against Australia itself. MacArthur knew he could not let this happen. In August 1942 he replaced his Air Force commander in hopes of bolstering the performance of his aerial forces in the Papuan campaign.

Doctrine

The Air Force doctrine in August of 1942 was based upon the Air Corps Tactical School's (ACTS) ideas of high-altitude bombardment. Upon his appointment as Allied Air Force commander in the Southwest Pacific, Gen George C. Kenney began to explore the feasibility of an alternative low-altitude technique known as skip bombing. General Kenney said that high-altitude bombing "was an excellent method for a big target like an aerodrome or a town but not so good against a turning, twisting target like a moving vessel on the open sea." In addition, Fifth Air Force's logistical problems resulted in its seldom having as many as nine planes in commission, this being the minimum number generally considered necessary in a flight to carry through the pattern of bombing called for by Army Air Forces (AAF) doctrine. Weather, especially low cloud ceilings, also hampered the bomber's performance.[4] Ultimately, the poor results of high-altitude bombing caused General Kenney to attack at low altitude, which suited his tactical background.

General Kenney was a strong advocate of attack aviation. He had been an instructor at ACTS in charge of the attack section.[5] While at ACTS he developed innovations to promote attack aviation. In 1926, "Seeking a way to enhance the capability of low-level aircraft, he helped develop the parafrag bomb. Kenney was truly an attack-aviation enthusiast and pre-

sided over its zenith at ACTS."[6] General Kenney turned this enthusiasm into action by abandoning high-altitude bombing and changing the doctrine for Fifth Air Force into low-level attack. In October 1942, General Kenney ordered Maj William G. Benn, commander of the 63d B-17 Squadron, to test the practicality of low-altitude skip bombing.[7] Eventually, the testing would prove successful, and skip bombing became critical to the success of Fifth Air Force.

Organization

When General Kenney took over in August 1942, the chain of command was confused and the staff too large.[8] "Under the existing organization, so many people were putting out instructions, with or without the knowledge of the Commanding General, that no one could tell what the score was."[9] General Kenney immediately corrected this situation. He made it clear that he was in charge. He unified his command arrangements by separating the Australians and Americans. He appointed several separate deputy commanders: Deputy Fifth Air Force Commander Brig Gen Ennis C. Whitehead, who was stationed forward at Port Moresby; Services Command under Maj Gen Rush B. Lincoln; and the V Bomber Command under Brig Gen Kenneth N. Walker.

This command arrangement with General Kenney in charge of all the Allied air in the SWPA is the modern-day equivalent of the combined forces air component commander. In separating the Allied Air Forces, he streamlined problems in mixing forces but still provided a unity of command. "I decided to separate the Americans and the Australians and form the Americans into a numbered Air Force of their own which I would command, in addition to commanding the Allied show. The Australians would be organized into a command of their own and I'd put Bostock at the head of it. My Allied Air Force headquarters would remain a mixed organization."[10] This mixed headquarters enhanced coalition effectiveness.

General Kenney also quickly took control of the management of air assets that were coming from SWPA general headquarters (GHQ). In Kenney's opinion, GHQ was overstepping its bounds by not only telling the air force what to do but how to do it. The first mission detailed after General Kenney assumed command demonstrated this overreach. GHQ had dictated to the Air Force what missions to fly to include designating the numbers and types of aircraft to fly. General Kenney stopped this practice immediately by confronting Gen Richard Sutherland, who was General MacArthur's chief of staff. He told Sutherland, "I was running the Air Force because I was the most competent airman in the Pacific and that, if that statement was not true, I recommended that he find somebody that was more competent and put him in charge."[11]

General Kenney's organization reflected the airpower tenet of "Air power's unique characteristics necessitate that it be centrally controlled by airmen."[12] This organization let General Kenney think in terms of theater operations and use the flexibility of airpower to achieve maximum effects. Kenney believed in developing personal relationships with his peer and subordinate commanders. He accomplished this with his peers by de-

livering on his promises and developing the trust of these commanders. With his subordinates he developed this trust by delegating responsibility, providing his intent, and then allowing them to execute the mission. Kenney's style of delegating responsibility and providing guidance on the intent of the mission resonated throughout his command. General Whitehead similarly pushed operational planning down to the lowest possible level, thus allowing unit commanders to determine the best method of accomplishing the mission.[13]

Equipment and Technology

General Kenney and Fifth Air Force were low priority in the distribution of war materials because the war in Europe received the top priority. General MacArthur admitted that his own mission was a holding operation; however, he "warned the Joint Chiefs of Staff at the close of August (1942) that holding forces must be actually strong enough to hold and that their needs, so long as the enemy held the initiative, must be subject to constant reappraisal."[14] This reality meant that SWPA forces fought with limited new equipment and that resupply was slow. This limitation led to a requirement to innovate.

Fortunately, General Kenney was "both by character and training peculiarly equipped for directing the battle of maintenance that in the Pacific was little if any less important than combat operations."[15] His experience at the Air Service Engineering School and as the chief of the production engineering section of the Air Corps Materiel Division made him adept at finding engineering solutions to problems. This knack for engineering solutions appeared in the modifications to his existing aircraft fleet.

The first major innovation with the existing equipment in the SWPA started with the A-20. To increase range, mechanics installed two 450-gallon fuel tanks in the forward bomb bay. Inserting four 50-caliber fixed, forward-firing machine guns in the nose in place of the bombardier station offset the resultant loss of bomb load. "This package installation was a masterpiece of design and was eventually adopted throughout the Pacific, European, and China–Burma–India theaters. . . . the A-20A became a potent strafing weapon."[16]

After the success of the A-20 and the change in tactics to low-altitude skip bombing, General Kenney had to improve the forward firepower of his B-25 fleet. Therefore, he

> sent word to Major Pappy Gunn at Brisbane to pull the bombardier and everything else out of the nose of a B-25 medium bomber and fill it full of fifty-caliber guns, with 500 rounds of ammunition per gun. I told him I wanted him then to strap some more on the sides of the fuselage to give all the forward firepower possible. I suggested four guns in the nose, two on each side of the fuselage, and three underneath. If, when he had made the installation, the airplane still flew and the guns would shoot, I figured I'd have a skip-bomber that could overwhelm the deck defenses of a Jap vessel as the plane came in for the kill with its bombs. With the commerce destroyer as effective as I believed this would be, I'd be able to maintain an air blockade on the Japs anywhere within the radius of the action of the airplane.[17]

The change in tactics to low-level attack also required a new type of bomb. Fortunately, before Kenney's departure from the United States, he discovered 3,000 parafrag bombs stored in war reserve and requested their transfer to Australia. These were the same bombs he had helped develop in 1928. The bomb was designed for low-altitude attack. A parachute was attached to a 23-pound bomb equipped with the extremely sensitive instantaneous fuse. The parachute stopped the bomb's forward momentum allowing the low-flying attack aircraft the chance to depart the fragmentation pattern. Upon explosion, "the bomb burst into 1,600 fragments the size of a man's little finger. At a hundred yards from the point of impact these fragments would go through a 2-inch plank."[18] This weapon was effective against airplanes, small open boats, searchlights, trucks, artillery, and personnel—perfect for the jungles of New Guinea.[19]

The continuous aircraft modifications and experimentation that occurred in the SWPA theater occurred by necessity and isolation. These first aircraft modifications were the first step in transforming the A-20 and B-25 bombers into efficient low-altitude attack aircraft. These modifications were adopted out of a spirit of practicality, since low altitude offered the best chance to destroy Japanese shipping. Second, the isolation of the theater enabled innovation: "Because they bypassed the normal USAAF bureaucracy and conducted test in combat, design personnel had the aircraft ready in weeks instead of months or years."[20]

Of course, not every innovation was a success, and some proved problematic. General Whitehead often complained that the changes were taking too long or were not well thought through. He said, "I am convinced that there is too much experimental work being done and not enough thought given to production . . . we do not want an installation which causes us a lot of grief later on."[21] Kenney took the critiques philosophically, feeling that there had been many more successes than failures. To be sure, Kenney did not invent every innovation in his command, but he set the climate and actively supported change that offered the ability to inflict more damage on the Japanese.[22]

Training

After ensuring that the skip-bombing procedure would work, Kenney created specialist squadrons in low-altitude attack. He wanted his commanders to convince skeptics that the tactic would work by setting aside time for the squadrons to train. "I told [Ed] Larner [the squadron commander of the 90th Squadron of the 3d Attack Group] I wanted him to sell the airplane and the strafing tactics to the squadron. I wanted him to like the airplane, make his squadron like it, and to practice shooting and skip bombing on the old wreck on the reef outside Port Moresby until he did not miss."[23]

During December, 90th Bomb Squadron crews skip bombed the Moresby wreck with their B-25 C-1s. The time off for practice was worth it since they developed a more effective method of delivering the bomb. In their practice they developed a new technique called masthead-height bombing. This innovation eliminated the need to calculate the ricochet distance of

the bomb. Instead, crews learned to time their release to hit the side of the ships.[24] The pilots became so confident of the new technique that the command proclaimed, "A well-trained pilot should hit the ship nearly every time using the masthead technique."[25]

The masthead technique, although effective, exposed the crews to the lethal defenses of the Japanese ships. To counter this threat, tactics were developed that took advantage of the new forward firing power.

> B-25 crews were trained to attack in pairs simultaneously. One plane strafed the vessel from stern to stem and from stem to stern, while the other strafed the vessel as it came in on its beam and bombed it. As the result of prolonged practice, pairs of the B-25s learned to attack the vessel at a gliding speed of 250 to 275 miles per hour, and knew the firepower of one B-25 would be raking the side of the vessel during the split-second that the other strafed and bombed the beam.[26]

Contextual Factors

The theater of operations for General Kenney's SWPA air forces was quite large, stretching from approximately 30 degrees south longitude in the south to 20 degrees north longitude in the north. As Allied or American commander, it was essential that he keep his headquarters near GHQ at Brisbane, a thousand miles south of the main operations in New Guinea. He also could not risk stationing bombers in New Guinea until February 1943. This meant his bombers operated out of Townsville, Australia, 600 miles south of the main area of operations. These long distances required staging bases in New Guinea that were subject to enemy attacks.[27] This situation was not comforting to Kenney, particularly when he compared the Japanese lines of communication. He said, "The Jap is two days from the factory to the combat zone, and he may swarm all over me."[28]

The other factor that neither MacArthur nor Kenney could change was the decision by the president to put first priority on Europe. To make matters worse within the Pacific, MacArthur was competing with Adm William Halsey for resources that had to flow through Halsey's area of responsibility to get to MacArthur. So in August 1942, according to General Kenney, "MacArthur felt that Washington had let him down and he was afraid that it would continue to do so. He had two American infantry divisions, the 32nd and 41st, but they still needed training. His allied air force of Australian and American squadrons was not only small but what there was had not impressed him very favorably to date. No wonder he looked a little depressed."[29]

Conduct of Operations

The American objective in the Bismarck Sea action was to prevent the Japanese from reinforcing their ground forces at Lae. Upon discovering Japanese plans to land an invasion force at Lae, MacArthur told Kenney, "be sure to conserve my strength for this effort, as the landing of a fresh Japanese division in New Guinea at that time would be a very serious

matter."[30] The seriousness MacArthur alluded to stemmed from the fact that a sizable ground force at Lae could quite possibly drive across the Owen Stanley Mountains and seize Port Moresby, putting Japanese land-based airplanes in the position to attack the northern coast of Australia. To the Japanese, New Guinea was critical. They had just lost Guadalcanal but still retained the preponderant air, naval, and ground strength in the Southwest Pacific. Lt Gen Imamura Hitoshi, commander of Eighth Area Army at Rabaul, planned to carve out a defensive perimeter in eastern New Guinea behind which he could build up bases in western New Guinea. To establish this perimeter, he needed to defeat the Australian forces and capture Wau. He dispatched the 51st Infantry Division from Rabaul to Lae to help accomplish this mission.[31]

The Japanese were determined to reinforce the troops in the Lae area at all cost. The Japanese planners were aware of the risks they were taking. They knew the Allies would strongly oppose the reinforcement convoy, so they made extensive plans to defend the convoy. The reinforcements would consist "principally of the 51st Infantry Division, which would be transported in a convoy of seven merchant vessels and eight destroyers . . . Air cover was to be furnished by some forty naval and sixty army planes operating on a definite schedule."[32] This schedule would provide air cover from dawn to dusk. To provide this air cover, the Japanese brought in the 6th Air Division to Rabaul. The Japanese pilots from the division would each fly two sorties a day. Each sortie involved four hours transit time and four hours escort for an extremely fatiguing 16-hour day. To enhance chances of success, the Japanese navy promised to bomb Allied bases at Port Moresby before the convoy departed; but because of maintenance problems, the promised attacks never occurred.[33] However, even with all this protection, the Japanese staff thought half of the convoy would be lost to Allied attacks before reaching Lae.[34]

General Kenney decided to hit the Japanese convoy with a large, coordinated attack. Because of the range involved, the area just off Finschaven inside the Vitiaz/Dampier Straits was selected as the target area. The heavy bombers would attack and harass the convoy until it cleared the straits and then the entire air armada of heavy and medium bombers covered by fighter escort would sink it.[35] The coordinated attack was risky and difficult to execute. In order to reduce the chance of error, General Whitehead ordered two dress rehearsals of the coordinated attack on 28 February and 3 March.[36] After the second dress rehearsal, all that was left was to locate the convoy.

The Papuan campaign had taken its toll on the Allied Air Force. "On 1 March Fifth Air Force had only one light and one under-strength medium bomb group available for action."[37] However, the pilots had been training for six weeks before 1 March, with each pilot having dropped 30–40 bombs on the Moresby wreck.[38] Although Kenney would not have overwhelming strength, the combination of surprise and good training were on his side.

The Japanese convoy was sighted on 1 March, but the major combat operations occurred on 3 March. The first coordinated attack occurred at 0930. The Beaufighters went in first, flying at 500 feet until they came within range of the antiaircraft fire, then they

> lost height rapidly and using rated power attacked in line abreast at a speed of 220 knots. Thirteen B-17's had come into position above to drop their bombs just as the Beaufighters began their sweep. Thirteen B-25's followed the Beaufighters in for a standard bombing attack from medium altitude. And then came twelve of the 90th's B-25C-1's in probably the most successful attack of all. Coming down to 500 feet above the now widely dispersed and rapidly maneuvering vessels, the new strafers broke formation as each pilot sought his own targets. The forward-firing .50's beat down opposing AA, and 500-pound bombs struck ship after ship. Out of the thirty-seven bombs dropped, seventeen were claimed as direct hits. . . . Twelve U.S. A-20's had joined the attack to claim eleven direct hits, and six more B-25's coming in toward the end reported four additional hits.[39]

Spurred on by the success of the morning attacks, afternoon attacks were ordered. However, these attacks were not executed in a completely synchronized manner because of the weather. Despite the weather limitations, which eliminated the Beaufighters and A-20s from the attack, the remaining air armada decimated the convoy.

> The first attack, by B-17's, occurred at 1512, one of the planes claiming two direct hits on a large destroyer which "stopped and burned." Then eight B-25C-1's of the 90th Squadron struck in low-level sweep. Within five minutes they had left a destroyer "definitely sinking" after four direct hits, another "probably sinking" after an equal number of hits, and two merchant vessels badly damaged. In the next ten minutes, fifteen additional B-25's, some attacking from 200 feet but most of them from medium altitude, had completed their runs . . . Almost simultaneously with this attack, five RAAF Bostons concentrated on a destroyer, while B-17's bombed from medium height through both the B-25's and Bostons.[40]

These two attacks would account for the majority of damage to the convoy, but the aerial attacks would continue for days and be assisted by naval motor torpedo boats in finishing off one damaged ship. However, after this afternoon attack, the convoy was finished.

The Battle of Bismarck Sea was an obvious tactical success for the Allies, but the tactical victory also had strategic results. The exact number of Japanese casualties is unclear, but the "Japanese admit an over-all loss of some 3,000 men."[41] Eight transports and four destroyers along with the entire 51st Infantry Division's equipment were lost. In the air, the Allies claimed some 60 kills with another 25–39 probably lost.[42] As for the Allies, four aircraft were lost with only 14 airmen killed.[43] Three factors contributed to the poor Japanese airpower performance. First, the change in tactics caught the Japanese totally off guard. Japanese airmen were hovering overhead the convoy at 7,000 feet expecting another high-altitude attack. Second, Japanese naval and army air units had incompatible radios, so they could not coordinate their defensive efforts. Third, the range of operations required extremely long sorties and created problems in massing sufficient airpower over the convoy continuously. To illustrate this, Eleventh Air Fleet naval pilots arrived to defend the convoy just in time to witness its destruction.[44]

More significant than the individual unit destruction was the Japanese lesson that convoy resupply of units within range of Allied airpower was impractical. The Japanese forces in the Lae–Salamaua area were left dependent for supply and reinforcement from submarines, air transport, or barges cutting across the Vitiaz Straits from Cape Gloucester.[45] It would

not be until Leyte Gulf that the Japanese would again attempt to reinforce ground troops with a large convoy in range of Allied medium bombardment.[46] In effect, Kenney's forces had established in days what it had taken months to accomplish in the Papuan campaign at Buna, an effective air blockade of all major shipping.[47]

Intelligence

The role of intelligence in the success of the Bismarck Sea action cannot be understated. General MacArthur had established an effective organization that collected and analyzed information from intercepted signals, prisoners of war, photographic reconnaissance, and daily after action reports.[48] Piecing all of the information together, the SWPA G-2 had found enough evidence to predict a possible enemy employment against New Guinea. The key to confirming the enemy course of action was the signals analysis sources.

The breaking of the German and Japanese secret code known as ULTRA was one of the most highly classified aspects of the Allied war effort. The ability to exploit this information was critical to commanders. Bismarck Sea is an excellent example of exploiting this resource. On 19 February intelligence officers "presented MacArthur with ULTRA traffic that confidently stated 'the Japanese planned to land at Lae in early March.'"[49] This information provided air planners with the origin of the convoy, the number of vessels, and their departure and arrival dates. However, they did not know the convoy's route.

Air planners went to work to predict that route. They developed three courses of action to cover each possible enemy convoy route. Reconnaissance flights were added to cover the three possible routes searching for more clues. They also analyzed the weather forecast and determined that the bad weather in the north of New Britain would provide cover for the convoy. From all this evidence, they deduced that the northern route would probably be the most likely Japanese choice. Finally, the cryptanalysts confirmed their judgment by providing another decoded ULTRA message that pinpointed the convoy headed for Lae that would arrive on 5 March. Intelligence had provided Kenney the perfect target and time to practice for his new commerce destroying fleet.

Command and Control

In the SWPA campaign, decentralized execution was required. Squadron commanders coordinated and practiced the attacks against the convoy in the action of Bismarck Sea. But only the first attack on the morning of 3 March was really coordinated. In the afternoon attack, the weather degraded coordination. However, this is typical of the fog and friction of combat, particularly in the SWPA where the distances, terrain, and weather within the theater created unique tactical problems.

In the operational aspect of centralized command, General Kenney and General MacArthur's relationship maximized airpower's effectiveness. General MacArthur told Kenney what to do, not how to do it. General Ken-

ney appreciated the trust placed by MacArthur in his competence. He related a story about a MacArthur news conference on 20 January 1943. The reporter asked General MacArthur what the Air Force is doing today and MacArthur replied, "'Oh, I don't know. Go ask General Kenney.' The newspaperman said, 'General, do you mean to say you don't know where the bombs are falling?' MacArthur turned to him, grinned, and said, 'Of course, I know where they are falling. They are falling in the right place. Go ask George Kenney where it is.'"[50] This level of trust enhanced the effectiveness of all commanders.

Logistics

The "Europe-First-Policy" and the long lines of communication severely influenced the logistics flow to the SWPA. When General Kenney took over in August 1942, the logistics flow to and within the theater was inefficient and unresponsive. "An average time of one month lapsed from the time the requisition started until it was returned, generally with the notation 'not available' or 'improperly filled out.'"[51]

Besides bureaucratic problems, sheer distance and infrastructure also created problems. "The organization for getting supplies moving around the various gauges of the Australian railroad system and moving them up to the fronts at Darwin and New Guinea was evidently so complicated that nothing moved. The whole service of supply was centered at Melbourne, which was 2,500 miles away from the war in New Guinea."[52]

The slow response of the logistics system created more problems, which required innovation to solve. Spare parts had been a stumbling block for the maintenance centers. Kenney said,

> There were very few spare instruments, so the kids salvaged them from wrecks and repaired them. There was no aluminum-sheet stock for repair of shot-up or damaged airplanes, so they beat flat the engine cowlings of wrecked fighter planes to make ribs for a B-17 or patch up holes in the wings of a B-25 where a Jap 20-mm. shell had exploded. In the case of small bullet holes, they said, they couldn't afford to waste their good "sheet-stock" of flattened pieces of aluminum from the wrecks, so they were patching little holes with scraps cut from tin cans. The salvage pile was their supply source for stock, instruments, spark plugs—anything that could be used by any stretch of the imagination.[53]

Ultimately though, the combination of reorganizing the supply system within the SWPA and the building of a major air depot in Townsville, Australia, that "was unmatched in size and production potential anywhere outside of the United States and England" overcame these logistics limitations.[54] Certainly, in the Bismarck Sea action, logistics did not limit the effectiveness of the air operations.

Analysis

Several key factors brought success in the Bismarck Sea action. Leadership was probably the most important. "Kenney's operational competence, willingness to assume responsibility, and the close personal relationship he cultivated with MacArthur resulted in a harmonious bond of

trust between the theater commander and his senior airman. Kenney also earned the trust of his fellow component commanders by delivering on his promises of air superiority and ground support."[55] He empowered his air commanders to the lowest practical level, providing his intent and main focus and then letting his subordinates execute. This allowed the airmen closest to the operational problems to help determine the detailed air-power solutions. However, even though he delegated authority, he never divorced himself from an operational focus. His pragmatic approach provided the doctrinal flexibility to change tactics from high-altitude bombing to low-level attack. He encouraged innovation in modifying aircraft to increase their forward firing power and developing skip-bombing techniques. In addition, he provided the opportunity for his crews to train and perfect their techniques before initiating combat operations.

Intelligence (i.e., ULTRA) provided a key ingredient for success at Bismarck Sea. Without the intelligence indicators of the upcoming Japanese invasion, the Allied forces would not have had the opportunity to thoroughly plan and practice their coordinated attacks. "ULTRA had uncovered Japanese intentions to convoy the 51st Division to Lae, New Guinea, and this intelligence allowed General Kenney to mastermind a gigantic aerial ambush that smashed the hapless clutch of Japanese transports and destroyers. Destruction was so complete that the strategic initiative in New Guinea passed forever from Japanese hands. Henceforth the Japanese found themselves condemned to defend coastal enclaves against a growing Allied counteroffensive capability in the Southwest Pacific."[56]

The one element that may have inhibited overall mission accomplishment was logistics. Had the Japanese continued their attempt to reinforce Lae, they may have broken General Kenney's air blockade. To accomplish the success in the Bismarck Sea, General Kenney had to mass nearly all of his air strength against the one convoy. It might have been difficult to repeat such performances had the Japanese dispersed their forces.

Overall, the key factors in the success of the Battle of Bismarck Sea were the organization established by General Kenney that provided for unity of effort; the technology or equipment used in the innovative practices that increased weapons lethality; the training of the airmen in skip bombing and rehearsing the Japanese convoy attack profiles; intelligence use of ULTRA to provide the warning to enable planning and training; and finally C^2 in decentralizing authority to the lowest level that enhanced accomplishment of the commander's intent.

Notes

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Chapter 5

1973 Yom Kippur War, Golan Heights Action

The Yom Kippur War was the fourth modern Arab–Israeli war. Despite its having started differently from the three previous wars, it ended with Israeli victory. On 6 October 1973, the Egyptians and Syrians launched surprise offensive operations on the Sinai Peninsula and the Golan Heights. This two-front effort caught the Israelis unprepared. The Israeli ground forces were outnumbered but fought bravely, putting up a stiff defense. Nevertheless, they needed immediate help. Israel Defense Force (IDF) chief of staff, Lt Gen David Elazar had given clear orders around midnight on 6 October. "Try and block, stifle and stop with everything we have the onslaught of the Syrian armor onto the Heights that overlook Tiberias and Mishmar Hayarden [Golan]."[1] This chapter analyzes how Israel halted the massive Syrian armored invasion.

Prehostilities

The IAF enjoyed great respect in both Israel and the Arab world in 1973. The IAF had demonstrated its superiority in the 1967 Six-Day War and continued its dominance over its Arab neighbors in the War of Attrition.[2] During this conflict the IAF had developed a respect for surface-to-air missiles (SAM) that produced a new IAF doctrine on obtaining air superiority. Gaining air superiority now involved mounting a counterair and a suppression of enemy air defenses (SEAD) campaign. The counterair campaign would eliminate enemy interceptors by killing them either in the air or, preferably, on the ground as the Israelis had accomplished in the 1967 Six-Day War.[3] General Elazar, at a symposium on the Yom Kippur War in 1975, reinforced the primacy of air superiority saying, "The primary goal of the air force is to secure the skies throughout the country and above the combat forces. This need not be an airtight defense, but it must prevent systematic and effective destruction."[4] The SEAD campaign involved destroying or degrading SAMs through attacks on the missile sites or through the use of electronic countermeasures (ECM). After disabling Arab air defenses, sorties would be devoted to interdiction and close air support (CAS).[5]

Doctrine

The IAF doctrine for supporting the ground forces favored interdiction. General Elazar said, "I see the Air Force's main role in the support of ground forces in interdiction—to achieve destruction of the enemy's military infrastructure, cause havoc among troop movements and, in one word, to paralyze the enemy forces."[6] The general thus identified destruc-

tion, disruption, and delay as the three main functions the IAF could provide in interdiction missions.

This preference for interdiction led the IAF to deemphasize the role of CAS. General Elazar said of CAS, "Even before 1973, I considered the subject of close air support the last priority task of the air force."[7] The reason the Israelis dismissed CAS was because of its high risk. General Elazar said, "The October War reconfirmed my belief that close air support is costly in casualties, and that there is no positive ratio between relatively great losses and limited results."[8] Maj Gen Benjamin Peled, IAF chief of staff, reflected this same sentiment saying of CAS,

> There may be at certain times of very high priority, but when you come right down to it, they do not deal with masses of enemy. They deal with a local situation, where the enemy is already dispersed. And if you look at any air photograph of dispersed forces, as they are deployed while they engage each other, for an air force to pick off single black dots is a long task. It may be easy, but it will take long—and the results will be small gains in small items. The place to get them is where they are concentrated. Where they want to get to engagement with your forces.[9]

General Peled also argued that the new conditions caused by the SAMs made CAS very difficult. He said, "the missile has actually denied the capability of the pilot to float around the battlefield safe from normal antiaircraft artillery, looking down very nonchalantly on the ground, to find his target, report it or attack at will."[10] For these reasons the doctrine of the IAF going into the Yom Kippur War called for gaining air superiority first; then interdicting the enemy positions where he massed; and finally, if needed, providing CAS to the ground forces.

Organization

The fact that Israel was surrounded by hostile states resulted in a defense organization that stressed quality over quantity. General Elazar said this about Israeli organization, "Our preparations for war were always based on the assumption that we had to be ready to fight our battles on the basis of a 3:1 ratio in the enemy's favor . . . The maintenance of high quality of our forces remains a vital factor."[11]

The IAF maintained about 480 combat aircraft consisting of American-manufactured F-4 Phantoms, A-4 Skyhawks, French-built Mirage F-3s, Super Mysteres, and Israeli-made Barak fighters.[12] The mainstays of the interdiction mission were the F-4s and A-4s. The F-4s because of their greater range would perform the deep attack mission, while the A-4s conducted interdiction in closer proximity to the ground troops. The Mirages and Baraks were employed exclusively in the air superiority role.[13]

The Israelis depended on reserve troops for sustained operations. Israel's defense concept was based on "three elements: intelligence which should give sufficient warning to mobilize reserves; a standing army, which would fight the holding phase of an enemy attack; and an air force, which had a large regular component. These three elements were designed to win time and hold the line until the reserves moved in and took over."[14]

The air force consisted of approximately 10,000 regular personnel with another 10,000 in training. Upon mobilization, the recalled reservists would double this number. The reservists provided mainly technical and ground support.[15] Within this force the Israelis maintained about three pilots per aircraft. "The Israelis grouped their most skillful and experienced pilots into special squadrons known as Hunter squadrons. They always went into action first, as Israeli policy was based on quick, short but decisive strike."[16]

Equipment and Technology

Technology played a large role in the Yom Kippur War. Because the Israelis and Arabs received aid from the United States and the Soviet Union respectively, this war became an encounter of Western versus Eastern technology. In effect the air war evolved into a clash of the IAF versus the Syrian integrated air defense system (IADS). "The Russians proposed such an alternative. The Israeli Air Force was to be dealt with by a mixture of various types of Soviet ground-to-air missiles SAM-2, SAM-3, and SAM-6, in addition to conventional anti-aircraft weapons, which would provide an effective umbrella over the planned area of operations."[17]

The Syrians would build this IADS, hoping that on the first day of the war the Israeli pilots would run into "the first integrated missile system ever seen in combat. From ground level to more than 70,000 feet, the Syrian armor was covered."[18]

To deal with this air defense system, the Israeli aircraft had several common defensive systems. Both the F-4 and A-4 aircraft had ECM pods, radar warning receivers (RWR), flare dispensers, and some chaff capability.[19] The ECM pods were designed to interfere with the electromagnetic signals used by the SAMs. The RWRs alerted the pilot that a SAM site was tracking and possibly shooting at him. The flare dispensers were used to decoy missiles that tracked the aircraft's engine exhaust plume. Finally, the chaff dispensers dropped bundles of chaff in attempts to decoy or create clutter for the radar by causing a return signal larger than the aircraft.

Israel's main problem with the Syrian IADS was the SAM-6 (SA-6). The missile was mobile, and the Syrians were very proficient at changing positions after firing and camouflaging the new site to avoid counterattacks. The biggest problem for the Israeli pilots was that the new SAM-6 was not programmed into their RWR or ECM. This meant that the first sign of danger was the missile's smoke trail as it climbed to intercept the aircraft. In addition, the aircraft's ECM did nothing to degrade the tracking of the missile; and even if it had, the SAM-6 had a new terminal guidance system capable of tracking the aircraft's heat signature.[20] To counter the SAM-6, Israeli pilots reverted to low-level tactics to avoid the missile's minimum effective engagement range. Unfortunately, aircraft flying at low altitude put the jets in the heart of the antiaircraft artillery (AAA) threat. At these altitudes the Soviet ZSU-23-4 antiaircraft gun was highly effective. As one analyst observed, "The SA-6 scored some kills during the Golan battle, but its main contribution was sending the Israeli attack planes into their standard high-g split-S evasive dive to the deck where the

ZSU-23's chewed them up."[21] Over half of all IAF losses in the Golan were to AAA.[22] Eventually, the Israelis would win this showdown between aircraft and missile. To win the SEAD campaign, they changed tactics and "sprayed the SAM batteries with rockets, bombs and cannon fire during a bitter four-day battle that destroyed half the Syrian SAMs in two days."[23]

Training

As mentioned earlier, the IDF relied on quality over quantity. General Elazar stated "the soldiers' will to fight, their motivation and readiness for sacrifice . . . their sense of national identity, and their cultural and technological sophistication"[24] were reasons the IDF was able to maintain the qualitative edge. He went on to say, "The operative level of our pilots . . . was immeasurably superior to that of the enemy forces."[25] He validated this point by noting the comparative ratios of aircraft were 2:1 in the Arabs' favor, but the kill ratio was 5:1 in Israel's favor.[26]

The Israelis obtained these kill ratios through excellent training. "Pilot training was intensive, the pilots flying many more hours than was normal in other national air forces, and so the standard was high. For example, Arab MiG pilots seemed to average about forty hours per month, less than half the time flown by Israelis pilots."[27] The combination of high proficiency and familiarity with the terrain gave Israeli pilots a significant advantage over their Syrian counterparts.

Contextual Factors

The features of the Golan area create special circumstances. The Golan area is 45 miles long but only 17 miles wide. It is bounded to the north by Lebanon, to the east by Syria, and to the south by Jordan.[28] The Israeli cultural centers of Galilee and the Jordan River are immediately to the west of the Golan Plateau. The Mediterranean Sea is 40 miles to the west. The Golan terrain is essentially all open country, though largely rocky. The steep western escarpment gives a commanding view of the Jordan River Valley, the Israeli settlements, and limited lines of communication below. This terrain is significant for two reasons. First, the ground is open enough to deny natural cover but too rugged to traverse quickly, which provides an advantage for fighters looking to interdict armor. Second, the area is small and does not provide a great deal of room for a fighter to work with while traveling at tactical speeds. A fighter traveling at a combat speed of 500 miles per hour could cross the width of the Golan in less than two minutes. Four minutes later, the plane would be over Damascus.[29]

There were two other unique ingredients in the Yom Kippur War. The first was the fact that Egypt and Syria coordinated their attack on Israel. This simultaneous strike was "the equivalent of the total forces of NATO in Europe being flung against Israel's borders."[30] This two-front war posed a formidable threat to Israel. The other factor to keep in mind, but beyond the scope of this study, was the East–West cold war. Both the Soviets and Americans were supplying weapons to their respective client states and

attempting to keep the conflict controlled so as not to destabilize the world situation.

Summary of Operations

The initial Israeli objective in the Golan Heights action was to halt the advance of the Syrian armored forces until the Israeli reserves could be mobilized and put into action. General Peled says of the Syrian advance, "That was a thrust which could have impaired the integrity of Israel."[31] Once the advance had been halted, the IDF was to counterattack and retake any lost territory. The final Israeli objective was to punish Syria. It was as General Elazar said, "breaking the bones" of the Arab army for the offensive actions it pursued against Israel.[32] The punishment would have three effects. First, a strategic bombing campaign against Syria would punish the citizens. "If Syrian citizens could feel the repercussions of the war initiated by their leaders, there was reason to believe that some reasonable and responsible considerations might be given by the incumbent or a future ruling clique when it next was confronted with its cyclical urge to destroy the Jewish state."[33] Second, the IAF action in Syria was intended to deter or neutralize Jordan and Iraq by demonstrating the vulnerability of the Syrian infrastructure.[34] Third, the attacks would cause Syria to redistribute its defenses away from the Golan in order to protect Damascus.[35]

The Syrians had three major objectives. First, upon attacking Israel, they would regain the Golan Heights quickly before the Israelis could mobilize their reserves. Second, once Golan was secure, they would fight a war of attrition "until Israel, through sheer exhaustion of money and lives, had to settle."[36] Finally, in doing this the Syrians and Egyptians would break the Israeli myth of invincibility and win the respect of the Arab world.[37]

The nonmobilized Israeli ground defenses were insufficient to defend against a massive Syrian offensive. Along the 1967 cease-fire line, dubbed the Purple line, the Israelis constructed a defensive belt that included an antitank ditch, minefields, concrete observation posts, and tank-firing positions. Two Israeli armored brigades were in position, the 7th in the northern section of the Golan and the 188th in the southern section, consisting of a total of 170 M-60 Centurion and World War II Sherman tanks.[38] In each of the 17 well-defended observation posts, there were approximately 20 men supported by a platoon of three tanks.[39]

In contrast to the land component lack of preparation, the IAF was at full alert. The Syrian buildup of forces had not gone unnoticed. General Elazar was concerned but was being reassured from the chief of intelligence that the Syrians and Egyptians were not going to attack. Elazar, still conscious of the $10 million wasted in the incorrect full IDF mobilization that occurred earlier in the year, took the precaution of putting the air force on full alert.[40] In addition, Elazar gave orders to the air force to be prepared to conduct a preemptive strike against Arab air forces. Ultimately, the strike was not executed for political reasons.[41]

The attacking Syrian forces were composed of the 7th Infantry Division in the north and 5th and 9th Infantry Divisions in the south. Each was organized along Soviet lines with 150–200 tanks. Behind the infantry divisions were the 1st and 3d Armored Divisions, each with approximately 250 tanks. The Syrian tanks consisted of Soviet-built T-55s and the latest model, the T-62. The total force available to the Syrian commander consisted of 1,500 tanks and approximately 1,000 artillery pieces with a mobile air defense system.[42]

The Syrian plan was to break their attack into two main efforts, divided by the hill known as Booster.[43] While the armored divisions stood in reserve—one each for the south and north—two mechanized infantry divisions were to attack in the south and one in the north. The breakthrough in the south would be concentrated against the Israeli 188th Brigade, which fielded 57 tanks.[44] Once the defenses were breached, the reserves would flow in. On each of the two sectors, one division was to drive straight down the slopes of Golan to the River Jordan bridges. One, the 9th, was to stay in place and hold the Israelis. The two remaining divisions were to wheel inward on the heights, thus building a pocket to trap the Israelis.[45]

At 1400 hours on Saturday, 6 October, the Syrians launched a coordinated attack on the Golan. A significant and historically important fact of the Yom Kippur War was the success that both the Egyptians and Syrians achieved in launching their attack without the Israelis mobilizing their reserves. The lack of Israeli reserves enabled the Syrians to dominate the first 36 hours of combat. The ferocity and heroism of the small number of Israeli ground defenders was truly epic but also very costly. The original IDF war plan called for the Suez Canal effort to get priority. However, according to General Peled, "In spite of the difficult position of the Canal zone, the situation on the Golan Heights was much more serious."[46] Therefore, the IAF was ordered to support the IDF ground troops and halt the Syrian advance.

The seriousness of the thrust to the Golan forced the IAF to abandon its doctrine of conducting SEAD operations before initiating significant interdiction efforts. In addition, the rate of the Syrian advance compelled the IAF to perform its lowest priority mission of CAS. As the *Sunday London Times* Insight Team noted, "but inevitably, from the early minutes of the battle, the real edge of the Syrian attack was blunted by Israel's classic weapon, the air strike . . . The Israelis' targeting was so precise that tank commanders could call down air strikes only a few yards from their positions. But the losses were heavy."[47] In less than two hours, the Israelis lost 25 A-4s and five F-4s and—more significantly—a proportion of their best pilots, the cream of the Hunter squadrons.[48]

These heavy losses could not be sustained. Although Elazar knew that the Golan could not be held without air support, he stopped all air strikes over the Golan until new tactics could be devised. Once the IAF developed the tactic of low-level flank approaches using terrain masking to evade the Syrian IADS, General Elazar reinitiated air strikes.[49] The new tactic decreased the loss rate, but the Syrian IADS still posed a problem. The distance and time elements simply did not allow the Israeli mobilization to reinforce the Golan defenders before the overwhelming Syrians could reach

the Jordan River and consolidate their hold on Golan. Therefore, the IAF was committed to direct confrontation.

Distance did, however, have advantages for the IAF. The proximity of the fighting made for short duration flights and lower fuel requirements. “This provided for faster speeds, heavier weapons loads, diverse routes and deeper penetration.”[50] Unfortunately, in the first days of combat, the battlefield conditions made CAS extremely difficult. The Syrians had overrun many Israeli positions, thus creating an environment in which the enemy and friendly forces were intermingled. This intermingling of forces meant pilots had difficulty in identifying the enemy armor that was dispersed on the battlefield that was littered with hundreds of defeated tanks and other vehicles.[51] These conditions combined with the heavy surface-to-air threat made identifying, targeting, and destroying the correct target difficult and diluted the effectiveness of airpower. Another approach was required.

The IAF returned to the certainty of its doctrinal roots. It could not afford to launch a massive SEAD campaign; but it could delay, disrupt, and destroy the most vulnerable Syrian targets—that is the follow-on forces massed on the lines of communication into the Golan. Sunday, 7 October, was a critical day in the Golan battle. The ground forces were engaging the Syrians with ambushes and flanking attacks. The Israeli ground forces effectively used maneuver to impede the Syrians.[52] By 1700 Sunday, the Syrians sensed an opportunity to commit their main reserve force commanded by Rifad Assad, brother of the Syrian president. In the next two hours, the weight of the Syrian assault was unstoppable. By 1900 the Syrians were a mere five miles from the Jordan River and the strategic Benot Yacov Bridge in the northern Golan. The Israeli 7th Armored Brigade had suffered heavy casualties. As fast as reserves arrived, they were thrown into hastily created defenses. It seemed that the Syrians would reach their objective, but they did not. “There is evidence that the Syrian advance just ran out of steam. The few UN observers, still trapped in their bunkers on the cease-fire line, for instance, saw little fuel or ammunition coming up behind the armor. The Israeli Air Force had destroyed it.”[53] The interdiction effort prevented the Syrians from bringing up the ammunition and tanker trucks by day; consequently, the roads became traffic jams waiting for nightfall. These supply columns became vulnerable targets for the IAF.

For the IAF, attacking the supply columns made sense. The A-4 loss rate after changing tactics was averaging one lost aircraft for every 12 sorties. Because the Israelis could not afford this type of attrition, they looked for vulnerable targets. Starting Saturday night, the Israeli A-4s used magnesium flares to illuminate the convoys and destroy the logistics necessary to continue the armored advance. The Israelis suffered a high price from SAMs and AAA, but “found later that a quarter of all the Syrian tanks abandoned on Golan had simply run out of fuel.”[54] There is no accounting of how many tanks may have run out of ammunition and been subsequently destroyed.

The IAF also continued attacking follow-on tank formations as they flowed forward. One observer saw an entire file of Syrian tanks obliterated by an Israeli raid using the 30-millimeter DEFA cannon and napalm.[55] Another Israeli commentator wrote afterward, “It was the supreme effort of our Air Force.”[56] The Sunday afternoon battle was the turning point. By

Sunday night the Syrian army was halted. Their supplies had been delayed or destroyed and their plans thwarted because the Israeli reserves were now flowing into the Golan.

In trying to measure the effectiveness of the IAF and the interdiction effort on the Golan, General Peled said of the Golan Heights: "Air Power was undoubtedly not to be measured by the number of tanks that we destroyed on the battlefield, but by the fact that . . . the Syrian forces turned back from two key points on the Golan Heights . . . They turned back—and did not advance in that direction any more."[57]

Martin van Creveld has offered an alternative reason as to why the Syrian advance was halted. Van Creveld argues that on the evening of 8 October, the Israeli leadership—feeling that the battle was being lost—threatened Syria with nuclear weapons.[58] No Israeli official has ever confirmed this report; therefore, it is difficult to determine a causal relationship with Syrian actions. However, even if the story is true, it does not invalidate the contribution of airpower in the defense of the Golan but certainly alters the perceived success of interdiction.

Intelligence

A breakdown in the leadership of the Israeli intelligence contributed significantly to Syrian initial success. The Syrian plan relied on surprise and capturing the Golan before the Israeli reserves could be mobilized. Amazingly, the Israelis knew of the Syrian buildup. On 21 September the massive buildup along the border was detected. By 23 September the Central Intelligence Agency produced an intelligence estimate that spotted "something seriously suspicious about the nature of the Syrian deployment."[59] This Syrian deployment worried the northern Golan commander who sounded the alarm. However, the Israeli chief of Military Intelligence, Maj Gen Eiahu Zeira dismissed the invasion force building on the border because it did not meet the necessary conditions that the Israelis believed must be met before Syria could invade.[60] Zeira's opinions were well respected because earlier in the year, the IDF fully mobilized for an invasion that he discounted as unlikely. This $10 million mistake enabled Zeira's opinions to prevail.[61]

The Israeli assumptions regarding what conditions were necessary for an Arab invasion of Israel were a powerful schema known as "the concept." The assumptions were Syria would not attack except in concert with Egypt; and Egypt would not attack until it could neutralize the IAF, which would take another five years. The faith in the correctness of this analysis ran deep in the Israeli intelligence and also within the government of Golda Meir, who felt the nature of the territory taken in the 1967 war made for a natural deterrent because of the difficult terrain the Arabs would have to cover.[62]

The Arab execution of a masterful deception plan cannot be discounted in the Israeli intelligence failure. The Arabs' ability to keep the plan secret from Israeli intelligence was unprecedented. The deception plan was executed over months and consisted of two major areas. First, the Egyptians executed continuous Sinai exercises to lull the Israelis into complacency.

Second, the Syrians created a cover story that their troop movements were a result of détente with Jordan. Both deception plans were brilliantly executed.[63]

In this case the Israeli intelligence received information that provided the indications of an impending invasion. However, strong personalities combined with a preconceived notion of what was required for an Arab invasion led General Zeira to dismiss the probability and not provide the promised 48-hour preinvasion warning as called for in Israeli mobilization plans.[64] However, Israeli intelligence did eventually warn the Israeli leadership of an impending attack. Unfortunately, the warning came only six hours before the attack. At 0800 the Israeli leadership met to discuss the warning of an impending attack, full mobilization was ordered, and the preemptive air force strike ruled out to avoid damaging US–Israeli relations.[65]

The last intelligence failure was the inability of Israeli military intelligence to detect the Syrian adaptations to their IADS. On the first day of the war, the IAF flew into the teeth of the Syrian air defenses unprepared and suffered heavily. Overall, the uncharacteristic intelligence failures in the strategic and operational levels of war ceded the initiative to the Arab forces.

Command and Control

Israeli C^2 was excellent. The flexibility of the system was displayed in the change of direction required when the commanders realized the most significant threat to Israel was not across the Suez Canal but in the Golan. The IAF quickly redirected air assets from the Sinai to the Golan.[66] Once the Golan mission was given priority, General Elazar quickly assessed the devastating losses the IAF was absorbing. Within minimum time the IAF changed tactics and resumed combat operations. These actions demonstrate that the IDF leadership was able to pierce the fog of war and direct its limited assets in the opening hours of the war when such adaptations are critical to success or failure. One reason IAF commanders could maintain this situational awareness was the command post that controlled operations through an excellent, highly technical communications network.[67] Leaders were kept informed, and target information was quickly accessible through the use of drones.[68]

The small size of the IAF and the diverse nature of the threat required that the IAF be centrally controlled to provide the greatest flexibility. The requirement to conduct 24-hour operations consisting of many different types of missions from air superiority, interdiction, and SEAD to CAS demanded this flexibility. General Peled said, “the basic assets of the air force must be centrally controlled, because they are used during a 24-hour period for all these roles, from the same squadron.”[69]

Logistics

Israeli support of the flying forces contributed significantly to operational success. The IAF boasted an 80 percent fully mission capable rate

and the ability to return aircraft rapidly to the air.[70] This ability to land, refuel, rearm, and get the aircraft airborne again enhanced the IAF's effectiveness. "In quantifiable terms, the Israeli Air Force maintenance was able to provide 500 sorties a day over Golan alone at the time they were most needed."[71]

In the long run, the Yom Kippur War demonstrated one Israeli weakness in logistics—attrition. The Israelis could not sustain the rate of loss and consumption of high-technology weapons required during the Yom Kippur War. To solve this problem, they relied on the United States, which delivered approximately 22,400 tons of supplies and equipment to the Israelis. The United States also delivered more than 50 F-4 and A-4 fighter aircraft to replace Israeli losses.[72] This resupply cannot be discounted. However, it is important to note that the Soviets were also resupplying the Syrians and Egyptians.

Analysis

Five key factors allowed the IDF to halt the Syrian advance on the Golan Heights, but none appeared to be dominant. The synergistic effect of several conditions created the unique reasons for Israeli success. The first factor favoring the Israelis was the air force's doctrinal flexibility. The air force was able to recognize the need to deviate from dogma and forego a SEAD campaign and to change emphasis from CAS to their doctrinal roots of interdicting the follow-on forces and supply convoys. This flexibility helped the air force choke the Syrian advance. Second, the Israeli pilots' proficiency and expertise played a large part in the success of the interdiction campaign. The excellent training pilots received paid off in the execution of the air interdiction. Third, interdiction was made possible because of the valiant and heroic efforts of the Israeli ground defense. These warriors' ability to slow, delay, and hold the Syrian advance made the follow-on forces and convoys more vulnerable to Israeli air. Fourth, terrain aided the Israelis. The nature of the Golan, as a result of the man-made and natural obstacles, makes travel by armor forces naturally slow. This decrease in the speed of advance assisted both the ground and air forces in the defense of the Golan. The final factor aiding in the success of the Israeli defense was C^2. The ability to direct limited assets on both the ground and in the air called for good leadership and situational awareness. Fortunately for the Israelis, they had both. A modern C^2 center allowed the air commanders to pierce the fog of war and redirect their air assets to the greatest threat, assess the threat, and change tactics to ensure success in the Golan.

Intelligence and technology inhibited the success of the Israeli defense. The inability to perceive the impending invasion was a strategic intelligence error. In addition, the inability to detect the new threat posed by integration of the SA-6 into a mobile IADS was an operational intelligence failure. The SA-6 was a technology factor that was eventually countered with tactics and help from the United States with ECM. However, the failure to account for the SA-6 early in the conflict resulted in the destruction of significant quantities of Israeli aircraft.

Overall, the Yom Kippur War's ramifications would influence the shape of modern warfare for years to come. The USAF and USA digested the lessons of this war in an attempt to reshape their forces to deal with the realities of modern technology. The analysis of this war shaped the force structure and doctrine that the Iraqis would face 18 years later.

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Chapter 6

The Iraqi Republican Guard Basra Escape

By most accounts, the Gulf War was a tremendous success for the coalition forces. Upon their return to the United States, US troops were treated as heroes and enjoyed a welcome home celebration that appeared to exorcise memories of Vietnam from the American psyche. Recent analysis of the Gulf War has been more critical of the conflict's ending, particularly of the apparent partial escape of the RG from the KTO. Critics cite this escape of the RG as a coalition failure, faulting both the USA and the USAF for failing to destroy the RG. Michael Gordon, appearing on the CBS television show "CBS Reports: The Gulf War + 5," said "they said they were going to destroy the Republican Guard. And this was not a subsidiary goal, and it was not a minor goal. It was a central goal. And yet half of the Republican Guard managed to escape."[1] He continued his critique by stating that three years after the Gulf War the escaped RG Hammurabi Division returned to threaten Kuwait.[2] This chapter explores the validity of the escape argument. Did the Army and Air Force allow the RG to escape the KTO? Was airpower unable to halt a retreating army? Or is there another explanation as to why critics argue that the RG escaped?

Prehostilities

The Air Force's ability to conduct operations against the RG was shaped by prewar doctrine. By 1991 the USAF had articulated doctrine for action at the strategic, operational, and tactical levels. Of course, this doctrine had been established in Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force*. This manual called for air operations to "attack the enemy in depth."[3] It established air interdiction (AI) as a primary air force mission. Interdiction was intended to "delay, disrupt, divert, or destroy an enemy's military potential before it could be brought to bear broadly against friendly forces."[4] The manual went on to state that AI was best used against lines of communication while the enemy is maneuvering and vulnerable to attack. This vulnerability was planned for advancing forces as their lines of communication lengthened and the flow of personnel, supplies, and equipment required to sustain the war effort became more exposed.

The official doctrine explaining how air forces would support the land component was greatly influenced by the concepts of AirLand Battle and the North Atlantic Treaty Organization (NATO) follow-on forces attack (FOFA). This doctrine emphasized air attack against Soviet second echelon forces. The goal of the attacks was to slow an attempted rapid Soviet advance. If the Soviet forces took defensive precautions, they would be unable to maintain the momentum and speed of advance. "Maximizing the

advantages of synchronized air and ground efforts, deep air attack principles resonated with many airmen."[5]

CAS within this European construct was an important portion of the theater planning. The NATO alliance relied on A-10 aircraft to slow the advance of Soviet forces. However, CAS was seen as reactive support for the ground forces and not as effective in shaping the overall battle space.

During the majority of the air campaign, USAF doctrine did not really fit attacking the RG because of the unique nature of the war. FOFA assumed attacking advancing armies; in the Gulf War the majority of attacks against RG forces took place while they were in defensive positions. This unique situation created the need to modify the doctrine from attacking mobile troops to attacking troops in defensive positions, from maneuver warfare to siege warfare. In their defensive positions, the Iraqis did not present lucrative target concentrations. Destroying the static, dispersed, and fortified RG forces acquired the characteristics of an air-to-ground siege.[6] When the ground operations began and the RG started maneuvering, the developed doctrine did apply. However, the overwhelming success of the coalition ground forces meant that the doctrine would have to be employed against retreating forces, not advancing forces. This meant that the enemy lines of communication shortened; and the flow of personnel, supplies, and equipment required to sustain the war effort became less exposed. Interdiction to delay, destroy, and disrupt might still be accomplished against key transportation, logistics, and command nodes. The measures of effectiveness—first, monitoring the enemy's progress across the map and second, the level of communications—remained valid but in a reverse direction.

The last impact of doctrine was in the weapons used in the war. The doctrine of attacking Soviet second echelon forces resulted in the requirement for deep attack aircraft that could deliver precision munitions and the sensors that could detect the movement of the second echelon forces and relay the information to the shooters. This marriage of precision strike with information would greatly influence the effectiveness of the air campaign.

Organization

The coalition air forces were organized under a single commander, Lt Gen Charles A. Horner, who served as the joint force air component commander (JFACC). General Horner "used that authority with sufficient discretion to get his job done while maintaining good relations with the other services and allies."[7] Although the JFACC concept was accepted in joint doctrine, old tensions over control of airpower were not resolved. General Horner worked directly for the US commander in chief Central Command (USCINCCENT), Gen H. Norman Schwarzkopf. Ultimately General Schwarzkopf apportioned the airpower for particular missions or geographic areas. In reality, General Horner made the recommendation to General Schwarzkopf who would then apportion the airpower based on Horner's plan.[8] This organization gave General Horner effective control

over an exceedingly crowded airspace and allowed him to formulate a coherent unified air campaign plan.[9]

This command arrangement did not mean an absence of problems between the JFACC and component commanders. Between 20–24 February, the corps commanders were upset because they were not getting enough air allocated to the frontline divisions.[10] Unfortunately, the corps commanders did not realize that General Schwarzkopf was concerned with RG forces and had directed General Horner to target these RG forces. In an interview, General Horner said of General Schwarzkopf's concerns prior to the start of the ground war: "He was always terrified that the Republican Guard was going to escape and that they were going to get up into Iraq."[11]

One other aspect that affected the organization was General Horner's leadership. He clearly expected his staff to look for better ways to operate. At the beginning of the war, he said, "If you have a good idea about tactics or target selection or things of that nature they are always welcome . . . no bad ideas in here . . . Everybody has experience in one form or another in tactical aviation and we need to talk to one another about it."[12] This willingness to look for new ideas would result in several innovations during the air campaign that would have a major impact on the destruction of the RG.

Equipment and Technology

Equipment and technology played an important role in the air campaign against the RG. The USAF fielded several aircraft that enabled deep attack, including the F-15E and the F-16C equipped with low-altitude navigation targeting and infrared pods for night attack. Weapons fielded included the AGM-65D imaging infrared Maverick missile, the CBU-87 advanced cluster bomb, the combined effects munition, and the CBU-89 antitank and antipersonnel mine.[13]

One of the most important sensors deployed in the Gulf War that enhanced attacks against the RG was the joint surveillance, targeting and reconnaissance system (JSTARS). The JSTARS moving target indicator "shows you where your enemy is and what he's doing now."[14] It provided US commanders visibility of the Iraqi army. "The system detected the 'mother of all retreats' from Kuwait City on 25 February and directed (with East ABCCC) the air interdiction attacks on the traffic fleeing from the city."[15]

Training

Realistic and demanding training allowed US aircrews to accomplish unanticipated tasks in a flexible manner. Day-to-day training before the war emphasized tactical employment of realistic scenarios developed by flight leaders. Special multiunit exercises such as Red Flag and Green Flag at Nellis Air Force Base, Nevada, prepared aircrews to solve difficult tactical problems.[16] "Red Flag taught a whole generation of Air Force pilots and commanders how to deal with enemy defensive systems from fighters, to SAMs, and AAA, as well as how to get bombs on target."[17] The *Gulf War Air Power Survey* cites one pilot remarking on training as saying

"they train us a lot better than you can imagine . . . We've seen it before, we know exactly what to do when we get it . . . The reason we are all doing so well in this war is the fact that we are all well trained."[18]

The final factor in training that affected the destruction of the RG was proficiency. By the time the ground war started, most of the aircrews had sharpened their weapons employment considerably. Five weeks of flying combat operations meant that the strike aircraft were comfortable delivering the precision types of munitions necessary to delay, disrupt, and destroy troops on the move. Enemy prisoner of war accounts affirm this proficiency. "Iraqis long to recognize that Coalition aircraft were targeting equipment . . . moved away from the danger area . . . 'The love affair between tanks and tankers ended.'"[19]

Contextual Factors

In assessing the RG escape from the KTO, several contextual factors influenced the possible outcome. The contextual factor that enhanced the destruction of the RG was innovation. Innovation by the operators maximized superior US equipment effects in the air siege against the RG before their maneuvering in the ground war. In a 10-day period between 27 January and 5 February, US Air Force Central Command (CENTAF) implemented at least six innovations in an attempt to maximize RG destruction. Of the six innovations, the three that deserve attention are the use of the A-10 for deep attack, the development of F-16 killer scouts, and—most importantly—using laser-guided bombs to destroy armor by "tank plinking."[20]

Using A-10s in the deep attack role was innovative because the A-10 was the Air Force's premier CAS aircraft. It was against the culture of the A-10 to attack from high altitude deep in enemy territory, but the A-10 was a very effective tank killer. The F-16 and B-52 attacks against the RG units had produced disappointing results. Consequently, in an effort to destroy the RG, the A-10s were dispatched deep.[21] Operating out of their normal environment, the A-10s created new tactics to maximize destruction and minimize risk. They used large packages of eight A-10s to attack the Tawakalna Division. The eight aircraft formations hit the division in six waves of 10-minute intervals. However, after three days of large attacks, the A-10s returned to their former tactics since large attack formations wasted the A-10s' ability to loiter over targets and created a serious midair potential.[22] The A-10 deep attack missions had a powerful effect. The division started relying on tactical deception and digging in deeper; however, after two losses of A-10 aircraft deep, General Horner restricted the A-10s to their traditional close mission.[23]

The next innovation involved the creation of fast forward air controllers (FAC). The difficulties in target recognition in the faceless desert created the need for a FAC. The mission of these GPS-equipped F-16s was to work geographic areas over time and become familiar with the targets. Once striker aircraft arrived, the FAC (called killer scouts) would check in, and the FAC would direct the strikers onto the targets. This innovation helped

with the accuracy of strikes[24] and "increased the effectiveness of the F-16 force . . . three or fourfold."[25]

The third, and by far most important, innovation concerned using precision munitions to destroy armor. On 29 January, General Horner shifted the full weight of the air campaign to the RG. He said, "We're well into our attack on the Republican Guards. It is not going to be spectacular. It's going to be a lot of work . . . keep the pressure on the Republican Guards. It's the target. When we have the Republican Guards in the bag, then we'll turn our attention to the [other] ground forces."[26]

A week later in looking for better ways to destroy fortified armor, the first F-111Fs dropped eight GBU-12s on revetted positions and claimed four tanks killed. On reviewing the tape, Horner said, "Just returned from watching video of F-111F/PaveTack/500 laser-guided bombs blowing up tanks in Kuwait . . . classic of how to do the job right."[27] From that date on, almost the entire F-111F fleet was used to attack enemy armor and artillery.[28] This commitment reflected the importance General Horner placed on destroying the RG.

Two major factors inhibited the destruction of the RG. The first was the weather. General Horner said of the weather during the ground offensive. "It was the worst weather for the entire war. It was blowing mud. It was half a mile visibility . . . it was horrible! The other thing is, in air operations you have to take weather as it comes."[29] General Horner expressed this attitude regarding the weather in accepting no excuses in not supporting the ground troops. After ground operations began, Horner insisted that CAS sorties be flown in marginal weather, but he was less insistent concerning interdiction sorties. In daily direction to the tactical air control center (TACC) he said, on 24 February, G+1: "I want close air support to be flown. I'm not particularly concerned about the weather. The interdiction targets should be flown as possible. Keeping pressure on them even though F-16s, and B-52s have to drop through the weather . . . So make sure air is there, where they need it, when they need it—that's your job. No excuses."[30]

On 26 February he continued to exhort his forces saying, "The weather cannot be a factor. You people are going to have to hang it out a little bit tonight. We've got him where we want him, we cannot let him get away."[31]

In spite of General Horner's encouragement, the weather was a factor; sorties were flown, but many returned to base with unexpended ordnance. In his book, *Certain Victory,* General Scales says of the weather. "The weather played a hand by interfering with air interdiction against bridges . . . Given the poor weather and inability to see them with overhead systems, the bridges were probably in service during the night of the 27th."[32]

The second factor that inhibited the destruction of the RG was the war's ending. The termination decision made by President George Bush was made within the fog of war regarding the amount of destruction of RG forces and the factual location of coalition ground forces. President Bush's realization that Kuwait had been freed and a great respect for casualties on either side resulted in terminating offensive action against Iraq. However, to completely understand the military ramifications of political decisions, an understanding of the military situation is required.

Summary of Operations

The US Central Command (CENTCOM) operational order for Desert Storm listed six military objectives. They were to attack Iraqi political/military leadership and C^2; gain and maintain air superiority; sever Iraqi supply lines; destroy chemical, biological, and nuclear capability; destroy RG forces; and liberate Kuwait City. The CENTAF-identified Iraqi centers of gravity were the national command authorities; their chemical, biological, and nuclear capability; and the RG forces command (RGFC).[33] The campaign plan was divided into four phases. Each phase targeted the RG forces and had a measure of effectiveness to assess phase completion. In phase three one of the objectives was to reduce Iraqi combat effectiveness in the KTO by at least 50 percent. In phase four a major objective was "the bridges, roads and rail line immediately south of Basra will be cut to block withdrawal of RGFC and to form a kill zone north of Kuwait."[34]

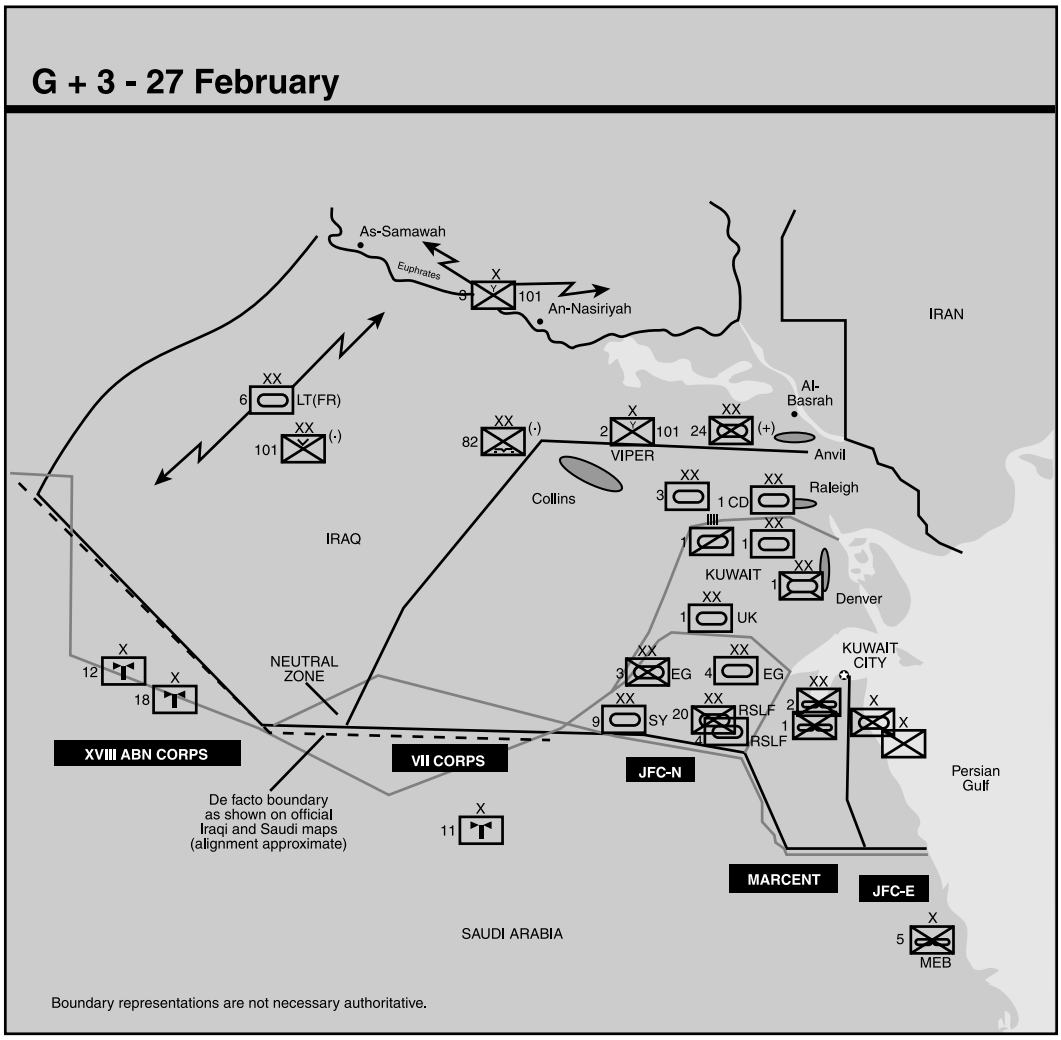
Initial Iraqi objectives must be inferred from Iraqi force dispositions and prisoner of war accounts. After the second day of ground operations, however, the objective became clear: to extricate as many forces out of the KTO as possible. The Department of Defense Final Report to Congress says of G+2, "During this period, the massive exodus of Iraqi forces from the eastern part of the theater began . . . during the early morning of 26 February, military and commandeered civilian vehicles of every description, loaded with Iraqi soldiers and goods looted from Kuwait, clogged the main four-lane highway north from Kuwait City."[35]

The order for the full-scale retreat of the RG forces came on 27 February "when al-Rawi realized the magnitude of his defeat at the battle of Wadi al-Batin and ordered an immediate withdrawal of the remnants of the RG out of the KTO to positions designated for the defense of Iraq."[36]

The RG had been pounded for five weeks before launching the ground attack. Assessing the effects of air operations against the Iraqi army and RG forces was important for determining priorities within the air campaign plan. Several agencies were calculating battle damage assessment (BDA), with nonstandardized criteria and methods to assess the effectiveness of the air campaign. On 29 January General Schwarzkopf, frustrated with various agencies' estimates of combat effectiveness, commented that vehicles must be on their back like a dead cockroach before J-2 would assess a kill.[37] Ultimately, Schwarzkopf played a crucial role in the assessment process. He used his judgment to determine the effectiveness of each Iraqi unit.[38] In the end though, the air campaign supported the ground offensive. General Scales says,

> The coalition bombing of the Iraqi army, prosecuted with great tenacity and professionalism, was terribly destructive. Iraqi losses from the air may never be truly known but, while less than the CINC's 50-percent objective, were sufficient to demoralize and disrupt all but the best of the Iraqi ground forces. Lower-quality, recently drafted frontline troops were so demoralized from the unrelenting day-and-night bombardment that as many as half of some units fled before the ground attack began. Interdiction of road resupply was so effective that supply to frontline troops was drastically curtailed. Coalition air forces so dominated the air that enemy ground units were largely prohibited from maneuvering and only dared to reposition at night or in bad weather. Yet the air operation, even though it lasted 41 days, failed to break the will of the RG.[39]

So as the ground campaign unfolded, the RG forces would fight the coalition ground forces. On 27 February, or G+3, the RG forces engaged the VII Corps and were defeated and in full retreat by the morning of 28 February. Figure 7 displays the disposition of troops on G+3. "By the end of G+3, 33 Iraqi Divisions were assessed by DIA as combat ineffective. Only isolated pockets of Iraqi forces remained in Kuwait. Most Iraqi Army units had surrendered, been destroyed, or were retreating. Many retreating units abandoned their equipment as they fled toward Al-Basrah."[40]



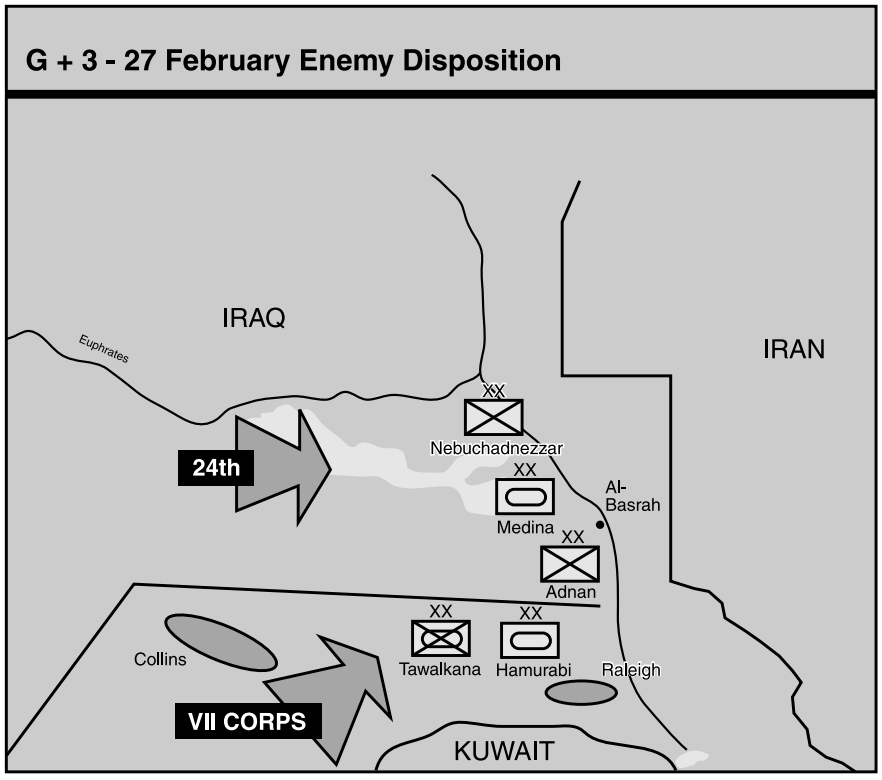
Source: Department of Defense, *Final Report to Congress, Conduct of the Persian Gulf War* (Washington, D.C.: Government Printing Office, April 1992), 285.

Figure 7. Ground Force Disposition on G+3

This included RG forces because VII Corps had synchronized a combined arms and joint operation against the Tawakalna, the Al-Madinah,

and Hammurabi mechanized RG divisions. By 2100 of G+3, VII Corps deployed five divisions and an armored cavalry regiment against the RG forces. Ultimately, the synergistic effects of CAS, deep Apache attacks, and the weight of the five-division punch routed the RG forces.[41]

As the Iraqi army and RG forces retreated, they were being forced into a trap. It appeared that the Allies were executing their phase four objective, "the rail line immediately south of Basra will be cut to block withdrawal of RGFC and to form a kill zone north of Kuwait."[42] Figure 8 indicates that the Euphrates River forms a natural barrier for retreating armored or mechanized forces, so the forces funneled into Basra and attempted to escape via the bridges that crossed the Euphrates. General Schwarzkopf in his biography said, "We were driving the enemy into the pocket across the Euphrates from Basra, which our Air Force had begun referring to matter-of-factly as the 'kill box.' We bombed the he-- out of every convoy we could find."[43]



Source: DOD, *Final Report to Congress*, 285.

Figure 8. Enemy Situation on G+3

General Schwarzkopf realized from map study that the war was not going to last much longer. On the afternoon of G+3 in a conversation with Gen Colin L. Powell, the chairman of the Joint Chiefs of Staff, Schwarzkopf outlined his plan to eliminate the RG as a threat to Iraq's neighbors and

destroy some of the equipment moving into the Basra pocket. He said, "I want the Air Force to keep bombing those convoys backed up at the Euphrates where the bridges are blown. I want to continue the ground attack tomorrow, drive to the sea, and totally destroy everything in our path. That's the way I wrote the plan for Desert Storm, and in one more day we'll be done."[44] This was the plan the Army corps commanders and the JFACC were attempting to execute. There were, however, problems in the execution of the plan.

The interdiction against the retreating enemy forces was not as successful as commanders expected. Several factors induced the inevitable friction. One factor already discussed was the weather. The low ceilings and poor visibility reduced the effectiveness of air interdiction sorties. There were two major choke points to interdict fleeing Iraqi forces. First, the north of Kuwait was vulnerable to coalition airpower. On 26 February as the Iraqis attempted to flee Kuwait, the flood of fleeing military and civilian vehicles was destroyed by coalition air. Most Iraqis were wise enough to abandon their vehicles and walk out, but the press obtained pictures of the scene and dubbed it "the highway of death."[45] The second choke point was west of Basra. General Schwarzkopf, concerned about a political incident with Iran, made some airspace off-limits. This combined with the army pushing in from the west and the weather constrained the available airspace.[46] General Horner noted on G+3, "It appears that we have run out of space. There's a very narrow corridor between Basrah Canal and the Fish Lake area."[47]

Another problem affecting the success of interdiction was the placement of an important ground air coordination device, the fire support coordination line (FSCL). Airpower operating on the side of the FSCL closest to US forces must be in contact and under positive control with a FAC. Airpower operating on the far side of the FSCL is not obligated to coordinate activities with the ground commander. A dispute over the placement of the FSCL in the waning hours of the war directly influenced the escape of the retreating forces. The dispute also created heated debate. General Scales said "restriction imposed by CENTCOM air planners kept 11th Aviation Brigade helicopters from preventing the escape of Iraqi armor."[48] The Army moved the FSCL because the main body of Iraqis was escaping well to the north and east of the ground forces, and Air Force restrictions limited the eastward movement of Apache helicopters from attacking the fleeing forces.[49] From the Air Force perspective, moving the FSCL created additional coordination requirements that could not be met. For pilots to attack inside the line, coordination with a FAC is required. Unfortunately, most of the FACs were supporting operations in western Kuwait. Second, putting the FACs north where there were no US troops exposed the FACs to high-risk operations in bad weather, which would require flying low into the Iraqi AAA threat.[50]

Regardless of positions, the placement of the FSCL on 27 February appears to have created a seam for Iraqis to escape. On this day, XVIII Airborne Corps planned attacks with its helicopters against the enemy on the Hawr al Hammar causeway. To do this, it moved the FSCL north of the Euphrates. With the FSCL placed that far north, air attacks could only strike the causeway under the positive control of a FAC. Unfortunately,

the adverse weather and the lack of FAC availability prohibited the use of FACs. Eventually, General Schwarzkopf had to resolve the dispute between component commanders. In the 15 hours that it took to move the FSCL south, coalition fixed-wing airpower remained on the sidelines.[51] However, "through the afternoon and night of 27 February, tankers, fighting vehicle gunners, helicopter crews and artillery-men destroyed hundreds of vehicles trying to redeploy to meet the American attack or simply escape across the Euphrates River."[52] However, this doctrinal fight created a seam that the Iraqis exploited.

The escape of the RG divisions was also abetted by the timing of the Bush administration's decision to cease hostilities. President Bush's recent book *A World Transformed,* with Brent Scowcroft, provides unique insight into the decision. On 27 February, President Bush gathered with his senior advisors to receive another routine war briefing. General Powell detailed how "we're within the window of opportunity to end this."[53] He went on to detail the state of the Iraqi army and "observed that the Basra gate would be completely closed at the latest by the end of the next day, cutting off the remaining Iraqi units."[54] One item of concern was the impressions being created by the press reports of the "highway of death." Scowcroft then says the president "in a very matter-of-fact way" asked if it was time to stop.[55] Scowcroft observed that there was no dissent. So they contacted General Schwarzkopf to get his opinion. They talked to Schwarzkopf after he had just completed the "mother of all briefings."

At this meeting there was a misperception as to the state of the RG among the participants. Secretary of Defense Richard B. "Dick" Cheney had been told "'the Republican Guard are encircled . . . They have few options other than surrender or destruction.' Several of Bush's advisers assumed that withdrawing Iraqis would have to pass through an allied checkpoint."[56] In reality, a 30-mile gap remained between VII and XVIII Corps allowing most of the remnants of the three RG infantry divisions to slip across the Euphrates or into Basra.[57] In Basra, approximately two divisions of armor were stacked up waiting to cross a makeshift pontoon bridge across the Shatt al Bashrah.

General Schwarzkopf may have contributed to the confusion by stating in his press conference on G+3, "'the gates are closed. There is no way out of here.'" All Republican Guard divisions in the theater had been destroyed except for 'a couple that we're in the process of fighting right now.' Although when asked whether ground forces were blocking the roads to Basrah, Schwarzkopf replied, "'No . . . I don't want to give the impression that absolutely nothing is escaping. Quite the contrary. What isn't escaping is heavy tanks, what isn't escaping is artillery pieces . . . I'm talking about the gate is closed on the war machine out there.'"[58]

Scowcroft also admits confusion as to the state of the RG forces; however, he says, "Would it have made a difference had we known? I doubt it. We still would have relied heavily on the military judgment that the mission had been accomplished."[59]

Whatever the reason for the confusion, President Bush deferred to General Powell's strong feelings about the value of life, both American and Iraqi. Schwarzkopf says that when asked by General Powell if the coalition could quit, he thought, "Why get somebody else killed tomorrow?"[60] So

President Bush announced the unilateral cessation of hostilities. In his diary, President Bush reflects this sentiment. He wrote, "At the time of the cease-fire, there were 79 US service members killed in action, 212 wounded in action, and 45 missing; 110,000 combat sorties had been flown in the campaign. I am proud of the way our military performed, very proud."[61]

The unilateral nature of the cessation of hostilities is important because at the time of the cease-fire, a plan was in place to conduct an air assault north of Basra, sealing the escape route across the Euphrates.[62] Once accomplished, the Iraqi forces would have been trapped, surrounded by coalition forces. The Iraqi ground forces, without air supremacy, certainly were vulnerable to helicopter or CAS attack. However, a coalition ground attack into Basra was a low-probability event because of the high risk. In either case, the Iraqi forces' ability to exit the Basra pocket would have been at the goodwill or indifference of the coalition forces. Coalition forces certainly could have killed many Iraqis. President Bush said of allowing the military operation that would have resulted from these actions, "One more day would not have altered the strategic situation, but would have made a substantial difference in human terms. We would have been castigated for slaughtering fleeing soldiers after our own mission was successfully completed."[63]

The victory of the coalition forces in the Gulf War is undeniable. The coalition devastated the Iraqi forces. General Scales said the "Iraqi Army that sputtered out of Basra was still a beaten army . . . the Republican Guard was but a shadow of its former self. Forced to reconstitute, the Guard stripped its regular army brethren of the best equipment, reducing even many regular units to shells."[64] In his testimony to Congress, General Schwarzkopf was asked if the war continued on for a brief period would it have mitigated some of the problems with the Shiites and the Kurds. He answered, "I think it makes absolutely no difference at all in the outcome, one way or another, when we stopped. We tend to forget that the Iraqis had another 770,000 outside the KTO in Iraq . . . So there was a huge military force that remained in Iraq. And it is basically that military force around which they are rebuilding their military."[65]

President Bush wrote, "We soon discovered that more of the Republican Guard survived the war than we had believed or anticipated. . . . While we would have preferred to reduce further the threat Saddam posed to the region—and help undermine his hold on power—by destroying additional Guard divisions, in truth he didn't need those forces which escaped destruction in order to maintain internal control. He had more than twenty untouched divisions in other parts of Iraq."[66]

In summary, this analysis demonstrates that at least two RG divisions did escape, but their escape was only temporary; therefore, ultimately the Iraqis were released by President Bush's decision to cease operations unilaterally. Remnants of at least two RG divisions exploited the weather and two seams in the halt operation. The first seam was created by doctrinal friction between the Army and Air Force over the FSCL. The second seam was a 30-mile gap between VII and XVIII Corps that some Iraqi forces used to avoid coalition ground forces to move into the Basra pocket. However, the Iraqi's exploitation of these seams was only temporary. Coalition

forces' scheme of maneuver would have cut the Iraqi escape route and subjugated the trapped Iraqis to coalition combined arms effects. Ultimately, the Iraqi forces streaming north into the Basra pocket were not forced to fight or flee because of the leadership of President Bush. Col Richard M. Swain, USA, Retired, says, "The distinction in terms is important. It indicates that their departure was not one over which they had much control at the time. It was the result of a political decision."[67]

Intelligence

Following the Gulf War, the intelligence community was showered with criticisms. The area of most concern to senior air commanders was BDA. "Battle damage assessment (BDA) was a problem—sometimes taking 12 days to obtain."[68] The lack of timely feedback and problems with the dissemination of the information to planners caused aircraft to strike or restrike unnecessary targets. This critique was particularly true during the air campaign when the RG forces were static.

Another intelligence shortcoming was the estimate of the number of Iraqi troops in the KTO. Intelligence provided the general disposition of Iraqi troops; they understood far less well the actual numbers of men and combat equipment in the Iraqi forces. This lack of data resulted in an overestimate on the number of troops and equipment in-theater. This overestimate created the unintended consequence of basing phases on percentages of equipment destroyed.[69] Eventually the combination of poor BDA and an exaggeration of Iraqi troop strength created confusion, which required General Schwarzkopf to apply judgment on when to change phases. The resultant lack of understanding of how weak and ineffective the Iraqis were may have resulted in a concept of ground operations that allowed significant elements of the RG to escape.

Command and Control

The C^2 of coalition troops in the Gulf War presented many challenges. There are many success stories; but from the airman's perspective, implementation of the JFACC concept was the greatest. General Horner's ability to develop a unified campaign plan that centrally coordinated and controlled coalition airpower enabled the success of airpower. Remarkably, control measures like the airspace control plan, the air tasking order (ATO), the FSCL, the military assistance plan, and—most importantly—airborne control platforms like the airborne warning and control system to monitor and allow quick responses all worked in concert ensuring no cases of air-to-air fratricide and no cases of midair collisions.[70]

There were problems with the C^2 that influenced the coalition's ability to destroy the retreating Iraqi forces. To a certain extent, the JFACC concept and the lack of trust and communication between the JFACC and corps commanders created the problem. As the JFACC, General Horner insisted on centralized control of all theater air assets with tacit decentralized control to the US Marine Corps Central Command (MARCENT)

and US Navy Component, Central Command (NAVCENT) of their organic assets. Schwarzkopf supported this concept and determined that a battlefield coordination element (BCE) was sufficient for coordinating surface force air support requests. However, as air operations progressed, the corps commanders were frustrated in the support they were receiving in servicing their desired targets. Their frustration was a result of poor communications between Schwarzkopf's staff and the corps commanders. To alleviate such criticism, Horner asked Lt Gen Calvin Waller, USA, Schwarzkopf's deputy, to review and approve the target list during the daily meeting before its inclusion on the ATO. Although Horner insists Waller's approval did not constitute a joint targeting board, it did provide an avenue for US Army Forces Central Command (ARCENT) to have input in targeting.[71] This created a very cumbersome C^2 organization in which Schwarzkopf became the adjudicator of all disputes between ARCENT and CENTAF. These points become directly relevant in the RG escape story because when ARCENT and CENTAF disagreed over placement of the FSCL, CENTCOM's adjudication process could not keep pace with the rapidly shifting situation in the KTO. In effect the RG divisions operated inside the cumbersome ARCENT– CENTAF–CENTCOM observe, orient, decide, act loop.[72] Had General Schwarzkopf realized that the centralized structure he created and agreed to was adequate for the air-only phase of the campaign but inadequate for the air-ground phase of the campaign, which demanded a more decentralized structure, the RG might not have gotten away.

The second problem concerned the fog of war in informing the ground troops of the time of the cessation of hostilities. Someone neglected to change local time to Zulu time. The miscommunication of the time of the cease-fire resulted in Gen Barry R. McCaffrey canceling his attack toward Basra with the 24th Division and the 3d Armored Cavalry Regiment. General McCaffrey managed to get his troops moving again; and at 0800 halted at phase line Victory, less than 30 miles from downtown Basra. However, the last best chance to attack the Basra pocket was lost. But even in the best of C^2 systems, fog and friction will appear because no C^2 organization is without people.

Logistics

In the prosecution of the air campaign against the RG and Iraqi army forces, there were no major logistical shortfalls. In the details of the air and ground campaigns, there were plenty of items to improve. However, the biggest logistical factor that influenced the destruction of the Iraqi ground forces was the fuel supplies for the coalition ground forces. This was particularly true of VII Corps "which was the largest armored force ever maneuvered in the history of the US Army."[73] Keeping 8,508 fuel-gulping tracked vehicles in hot pursuit of a retreating army took tremendous planning.[74] The remarkable fact is that they never halted solely for logistical reasons.

Analysis

The success of the coalition in defeating the Iraqi army and RG forces cannot be subscribed to one factor. It seems to be a case of Iraq fighting the United States and its allies at the peak of power. The doctrine of the United States did not particularly fit the static defensive battle the Iraqis fought, but the doctrine was flexible enough to adapt to the problems Iraq presented and develop solutions. The organization of the coalition air under a single commander maximized airpower's effectiveness and flexibility. The equipment and technology employed against the Iraqis was far superior. The use of PGMs created new opportunities and tactics in the future employment of US forces. The training of the US forces was superb. The proficiency of the pilots flying the air campaign was at peak performance by the time the ground campaign started. The introduction of the JSTARS provided commanders unparalleled visibility of ground movements. Finally, logistics was coordinated and well planned, so that no logistical requirement impeded the air or ground operation.

However, the failure to halt the escape of the RG forces from the KTO cannot be ascribed to one factor, but three. The first problem was the weather. The weather was the worst of the campaign and degraded the interdiction efforts of airpower assets. Second, disputes in C^2 and coordination issues slowed the responsiveness of coalition forces. Coordinating disputes over the placement of the FSCL should not have taken 15 hours to resolve. This dispute created a seam that the RG forces exploited. The third factor was political. The criteria President Bush used in explaining his decision to cease operations on 28 February had nothing to do with the level of RG destruction; it hinged simply on the fact that the coalition had accomplished their objective and liberated Kuwait. President Bush opened his speech saying, "Kuwait is liberated. Iraq's army is defeated. Our military objectives were met."[75] "More killing did not seem important, nor should it have."[76] US forces were in position to destroy the Iraqi forces in the Basra pocket, but all of the killing—as General Schwarzkopf testified—would not have affected the results of the Iraqi insurrections. General Horner says of the postwar criticisms of not annihilating the RG. "I think we did about as much as possible. We could have done more maybe, but at what cost to American life? It's an argument in perfection."[77] If an error was made, it was in establishing the conditions of the cease-fire and compliance with any imposed peace terms. "Stopping the war was no mistake. Rather it was a rare triumph for the better angels of our nature."[78]

Finally, this analysis demonstrates that the halt strategy is applicable to retreating forces. However, it does point to three lessons. First, the synergistic effects of the ground-air combination are required for success. Second, airpower will be more effective if topography requires some funneling of the retreating forces. This concentration of forces at bridges or mountain passes will enhance airpower effects as opposed to a dispersed retreat. Third, halting retreating forces is harder than advancing forces. The enemy's lines of communication are getting shorter, and the troops have a greater psychological motivation since they are attempting to get out of danger.

Notes

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36. Scales, 314.
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Chapter 7

Conclusions

The preceding chapters evaluated three very different air operations. Each case study's reasons for success or failure varied. Table 1 synthesizes the data. The criteria for each case study is judged as: +, positively affecting the ability to halt enemy forces; 0, neutral in influencing the halting of enemy forces; -, negatively affecting the ability to halt enemy forces. From the table, the dominant criteria in halting an enemy force are organization and training. Doctrine, technology, and C^2 are also determinant factors.

The most important similarity in the three case studies regarding organization was having a single airman in charge of all the air forces. This command structure enabled airmen to flexibly control air assets. Another similarity involved the Bismarck Sea and the Golan Heights case studies where the commanders created special units to execute particular missions. General Kenney developed the 90th Bomb Squadron to specialize in low-level attack. Similarly, the Israelis placed their most experienced pilots in Hunter squadrons, thus ensuring Israel's best pilots would be the first to respond to an attack upon Israel.

Table 1
Summary of Halt Criteria

Factor	Pacific Campaign Bismarck Sea	Yom Kippur Golan Heights	Gulf War Republican Guard	Summary
Doctrine	0	+	+	2+
Organization	+	+	+	3+
Technology or Equipment	+	-	+	1+
Training	+	+	+	3+
Context	0	+	-	0
Intelligence	+	-	0	0
Command and Control	+	+	-	2+
Logistics	-	0	0	1-

Critical training aspects were pilot proficiency and familiarity with the area of operations. In the Bismarck Sea action, the pilots trained for a specific mission with live ordnance. In Golan the IAF pilots' familiarity with the area of operations and proficiency at flying low level became critical because the Syrian SA-6 threat forced them to low-level tactics. In the Gulf War, the pilots honed razor sharp their proficiency for nearly five weeks before the ground war drove the RG forces out of defensive positions. This five-week period allowed aircrews to become extremely proficient in the employment of their weapons systems.

The flexibility of centralized control was the key factor in the C^2 criteria. The commanders' situational awareness in the Golan and Gulf War was the key to this flexibility. Technological advances provided General Peled and General Horner sufficient feedback to allow them to direct air as necessary in responding to maneuvering enemy forces. However, in the Gulf War, General Horner's flexibility was stifled for 15 hours as the cumbersome adjudication process over the placement of the FSCL resolved the dispute. In halting a maneuvering enemy, the ability to detect the enemy massing and then directing strikes against these massed enemy formations in a timely manner is critical to success.

Doctrinal analysis demonstrated that rigidity or flexibility in the application of doctrine is critical. In the Bismarck Sea action, when the existent doctrine proved ineffective, Kenney developed a de facto doctrine and put it into practice. In the Golan action, the IAF specifically departed from their approved doctrine of executing a SEAD campaign before initiating interdiction or CAS missions. The Syrian advance caused the IAF to respond initially with a tremendous quantity of CAS sorties; however, the high aircraft loss rate and invulnerability of the targets resulted in the IAF returning to its doctrinal preference of interdiction. In the Gulf War, classic USAF interdiction doctrine did not apply during the air campaign because the Iraqis fought a defensive campaign. However, once again, airmen created de facto solutions in tank plinking the dug-in Iraqi forces. Once the ground war forced Iraqi units to maneuver, the doctrine and equipment developed to implement interdiction of maneuvering forces severely degraded some Iraqi forces as they concentrated at coalition-created choke points. Interestingly, the doctrine was created for advancing forces but displayed its capability to work against retreating forces as well as long as they were forced to concentrate. This concentration can be either caused by narrowing or blocking lines of communication or in response to friendly advances.

Technology was also significant but not as important as the aforementioned factors. The innovative use of technology to influence operations was common to all case studies. In the Bismarck Sea action, the technology employed was not new. The innovation of adapting existing technologies to the B-25C-1 with ingenious new tactics significantly affected the outcome of the battle. In the Gulf War, this innovative theme reoccurs. Combining laser-guided bombs with the new tactic of using F-111s to attack the armored forces in their defensive shelters significantly increased the attrition of Iraqi armor. In the Golan Heights, advanced Syrian SAMs caught the Israelis by surprise and degraded the IAF's ability to halt Syrian armor. Significantly, the Israelis changed tactics, effectively neutralized the SA-6, and eventually defeated the threat. Overall technology provided for initial surprise but yielded to Israeli tactical innovation.

Interestingly, but not surprisingly, logistics was determined as the only factor that negatively impacted the capability of air forces to halt the movement of surface forces. Lack of logistical support could prevent halt accomplishment. Logistics deficiencies were noted in the Bismarck Sea action and were also present, but not a factor, in the Golan Heights action. Logistical limitations in the form of aircraft or precision munitions should not be discounted.

How Valid Are Sister-Service Critiques?

There are 10 basic sister-service critiques of the halt-phase strategy. From the evidence of the study it can be determined if the critiques are generally valid, partially valid, or invalid. The first of the criticisms is a basic difference in the understanding of the nature of war. The critics argue that airpower has yet to be the decisive element in war and that the presence of ground forces demonstrates commitment and leadership. The evidence shows this argument to be partially valid. Airpower was a decisive element in all of these actions, but only in Bismarck Sea was it independent of ground forces. Importantly though, the halt strategy does not claim to be absolutely decisive. It does argue that airpower will regain the initiative from the enemy, thus providing the leadership with time to assess their options. It also argues that if a ground counteroffensive is necessary, airpower will have degraded the enemy capabilities, which ultimately saves American lives because the force-on-force combat favors the undegraded US forces.

The second critique involves friction. The pundits say that dominant battle space knowledge is unachievable. They argue that friction in combat is pervasive, and technology will not allow you to solve this very human characteristic of war. The evidence demonstrates that this argument is partially valid. Friction is present. It caused problems in all three case studies; however, evidence also demonstrates that technology helps overcome the effects of friction. Technology enabled the redistribution of airpower in Golan and provided JSTARS the ability to locate surface forces maneuvering out of Kuwait. This evidence suggests that friction will be present, but using technology in an attempt to mitigate friction's impact is a worthwhile cause because technological advances can increase C^2 effectiveness.

The third criticism of the strategy argues that the Air Force allows technology to provide the military solutions and drive the strategy. These critics argue that the Air Force has always embraced technology and overstated its capability to perform the mission. The evidence from the case studies shows that this argument is invalid. The technology the Air Force uses is enabling, not deterministic. If anything, the evidence demonstrates that the very real human dimensions of proficiency and courage are more important than technology because ultimately it is the people who make the technology work. This lesson is clear: the training of the personnel using the technology is more important than the technology itself.

The fourth argument against the halt phase is the requirement for physical occupation. The critics argue that punishment from the air without the physical domination of surface forces is a waste of assets and that surface forces are necessary to physically dominate the enemy to resolve the conflict. The evidence from these case studies demonstrates that this critique is partially valid. In the Golan and Gulf War, ground forces were instrumental in the defeat of the enemy. In the Bismarck Sea, ground forces were not involved in the battle but were obviously instrumental in the overall Pacific campaign. However, this critique is misguided regarding the halt-phase strategy. The halt strategy does not claim that there is not a synergistic effect between land and ground components. Actually,

studies acknowledge the benefits of friendly surface forces engaged in delaying the enemy. In addition, the halt strategy does not claim to be the war-winning strategy. Halt claims to be the portion of an overall military strategy that is used initially to wrest the initiative from the enemy. After the enemy is halted, options are created and other strategies may then be employed to achieve the eventual political objectives. However, halt claims to attrit enemy forces such that friendly surface forces will not require as many troops as previous campaigns.

The next critique says that the threat of airpower alone will fail to deter the enemy because the threat of airpower in isolation is not a sufficiently credible threat without land combat capability in place. The Golan case study offers the only evidence that sheds light on this critique. This evidence demonstrates this critique is partially valid. The IAF was superior to the Arabs, yet the Arab plan was based on achieving surprise so that the IDF would not be mobilized. The Syrians achieved their objective of surprise but were still unable to achieve their objective of capturing the Golan because of the synergistic effects of the limited ground defense and unrelenting attacks of the IAF. Ultimately, this argument is faulty because it looks at deterrence from a very simplistic perspective. Effective deterrence involves many variables, one of which is relative combat power.

The sixth critique argues that weather and terrain make a difference. They point out that wars have been won where the enemy did not have air supremacy over the battlefield, and in these cases weather and terrain have limited airpower's effectiveness. The evidence suggests that this critique is partially valid. Weather hampered the operations in the Bismarck Sea action and definitely affected the effectiveness of coalition airpower in the Gulf War, but terrain aided the Israelis in the defense of the Golan. This critique demonstrates that weather and terrain are important factors that strategists must account for in planning operations. Weather specifically does not invalidate the halt strategy but does create a requirement for the Air Force. If the Air Force wants to prevent being accused of overstating its capability, then it must develop an all-weather precision competence that allows halts to be performed in any type of weather. This capability must also be pervasive throughout Air Force strike aircraft. Currently, the B-2 is the only aircraft in the Air Force inventory to possess this capability.

The seventh criticism says the halt strategy is designed against a mechanized attack over open terrain and that it will not work against infantry forces or insurgencies like Vietnam. The evidence from the case studies is inconclusive. Once again the halt strategy is only a part of a national military strategy. It does not claim to be applicable to the entire spectrum of conflict in the paradigm described in this study. However, the Air Force defines the halt strategy to encompass a broader spectrum of conflict to include humanitarian relief where airpower "halts hunger and suffering." Most importantly, strategists must decide what type of conflict they are embarking on and what is the most appropriate use of airpower.

The eighth critique argues that once airpower has halted the enemy, the enemy has options such as digging in and building an integrated air defense system or consolidating fortifications. The evidence shows this critique is invalid. The Golan and Gulf War studies demonstrate that once

the enemy is stopped, the initiative flows to the side with air supremacy. If the enemy digs in without air supremacy, an air siege may begin. Precision munitions have greatly enhanced the effectiveness of such a siege, and eventually the effects of airpower will degrade the defending force. Then the combination of air and land forces can synergistically exploit the weakened enemy forces.

The ninth review states that the halt strategy is dependent upon strategic warning and access to bases. The evidence shows that this critique is valid but irrelevant. What other US military strategy is not also dependent upon strategic warning since the end of the cold war and the reduction of overseas bases? The expeditionary nature of current US military strategy guarantees a dependence on strategic intelligence. As for basing rights, for the United States to project sustained combat power with ground-based air or surface forces, some type of basing rights will be required.

The tenth critique argues against the halt proponent's argument that a halt strategy will save American lives because a costly counteroffensive will no longer be necessary. They argue that enemies will move into urban areas to mitigate the effects of precision munitions, and because of collateral casualty concerns the effects of airpower will be decreased; thus a land counteroffensive will be necessary. This study's evidence is inconclusive regarding this argument, but the argument appears valid. Once again, the halt strategy is only a part of the national military strategy; but this argument suggests that the Air Force needs to investigate the effects of airpower in this environment. In an urban environment, the capability to identify friendly troops, the ability to limit weapons effects, and the need to increase situational awareness will all have to increase. These aspects of the halt strategy require extensive study if, once again, the Air Force does not want to be accused of overselling its capability.

Which Issues Can Airmen Affect?

The utility of determining criteria for implementing the halt strategy rests in airmen influencing the malleable factors. From the dominant criteria determined in the study, issues emerge which the Air Force must study and act on if it is to make the halt phase work. The first of these is training. Training is the most important of the criteria. Commanders must ensure scenarios are developed that allow their pilots to train in the tasks required to halt a maneuvering enemy. This training requires proficiency in locating and targeting moving objects. This type of dynamic training cannot be done in isolation. Airmen must work with JSTARS and the Army to develop and practice the integration of the information necessary to dynamically retarget fighter aircraft on maneuvering forces. This type of training could be accomplished at the National Military Training Center at Fort Irwin in California. It also could be accomplished during Red Flag or Green Flag missions with the development of maneuvering targets. This mission also requires proficiency in the employment of Maverick and other precision munitions used for targeting maneuvering forces. Airmen can affect this criterion by being aware of the need to train in the tasks

required to halt an enemy force and search for innovative methods to integrate the training of fighter and surveillance aircraft with the Army.

With regard to organization, airmen should investigate methods to exploit all the aspects of airpower, not just simply Air Force airpower. In halting an enemy force, there will be valid missions for helicopter support. The JFACC concept theoretically integrated airpower under a single commander; however, institutional mistrust still results in the Army, Navy, and Marine Corps holding on to organic airpower assets. For the halt-phase strategy to work, it needs to incorporate all aspects of airpower to ensure unity of effort. Airmen should work within the existing joint doctrine organizational structure to enhance organizational effectiveness.

In the C^2 area, airmen should explore ways to enhance situational awareness, decentralize execution, and resolve the dispute with the Army over fighting the deep battle. Improvements in the JSTARS since the Gulf War will give commanders unprecedented real-time knowledge of the enemy's movements. However, to effectively target the enemy will require a refinement in decentralized execution. Commanders will not be able to plan targets 48 hours in advance in executing a halt. Commanders will have to delegate targeting apportionment to airborne assets who will have to integrate surface force requests with the airborne picture and available air assets. This dynamic C^2 is necessary to effectively prosecute a halt. This dynamic C^2 will require practice that should be accomplished at the National Military Training Center or at Nellis AFB, Nevada. Finally, in developing procedures to integrate surface force support, the Air Force and Army should be able to develop a solution to the FSCL placement. This solution should prevent another 15-hour seam that allows enemy divisions to escape.

Concerning technology, airmen should develop some precision munitions that are not affected by the weather, munitions that aid in the identification of friendly forces to help prevent fratricide, and munitions that limit collateral damage. All of these technologies will allow the Air Force to eliminate problem areas in the halt strategy. The first eliminates a possible sanctuary for the enemy. The second provides capability on intermingled battlefields or in urban environments. And the third enables operations in urban environments where collateral damage is a large concern. However, commanders must not rely on technology to solve these problems. Airmen must use innovative flexible tactics to overcome these limitations in mission accomplishment. This may involve modifying aircraft and creating a new attack doctrine as General Kenney did or simply adapting tactics to the new threat as the IAF did in 1973. In either case, commanders were flexible and changed what they could to accomplish the mission.

The last criterion is doctrine. Within the joint doctrine, the Air Force needs to get the halt-phase concept articulated and accepted in a joint nonthreatening manner. The doctrine should suggest when a halt strategy is appropriate and how to execute the strategy. The doctrine should also state the strategy's limitations and possible enemy counters. In addition, the Air Force needs to instill in its doctrine that the most important thing is flexibility to adapt once the shooting starts and to ensure that our doctrine should not be "too badly wrong."[1]

This study clarified the halt strategy by developing criteria to evaluate the strategy and to determine the validity of sister-service critiques. In the development of the criteria, three case studies were examined to demonstrate that halting an opposing force with airpower had been done before the Battle of Khafji. Each case study's unique circumstances shaped the result; however, the criteria of organization and training appear dominant with C^2, doctrine, and technology being recurrent in aiding air forces to halt an enemy force. The specific context of the battle, the intelligence preparation, and logistics of each conflict cannot be ignored but were not determined as recurrent factors in all three case studies, although intelligence was significant in the Bismarck Sea. Table 2 summarizes the sister-service critiques in relation to their validity and required Air Force action to enhance the halt-phase strategy's implementation.

Table 2
Summary of Sister-Service Critiques

Critique	Validity	Required AF Action
Nature of war	Partially valid	Clearly articulate halt strategy
Friction	Partially valid	Improve C^2 capability
Technological determinism	Invalid	Ensure adequate training
Physical occupation	Partially valid	Emphasize halt enhances surface force effectiveness
Deterrence requires surface forces	Partially valid	Emphasize synergistic effects of air/land/sea power
Strategic warning and basing rights	Valid	Ensure strategic intelligence capability exists
Weather and terrain	Partially valid	Develop all-weather weapons and identification munitions capability
Designed for mechanized invasion force	Inconclusive	Requires more study
Enemy options once halted	Invalid	Develop air siege doctrine
Urban environment	Valid	Develop friendly identification capability and munitions that minimize collateral damage effects

There are three lessons for airmen, the Air Force, and sister services to take away from this study. The first lesson for airmen is that people make an Air Force successful. This is an important reminder for strategists because technology may offer apparent easy solutions, but people implement strategies. The second lesson for the Air Force is that the halt strategy is an appropriate strategy for certain circumstances. This study cannot claim to be definitive, but it does demonstrate that the critiques of the halt-phase strategy have some validity. It is the Air Force's responsibility to develop new technologies and, more importantly, better-integrated training for its airmen if it wants to eliminate these critiques and make the halt strategy the strategy of choice for a broader spectrum of warfare. In addition, the Air Force must articulate both the strengths and the limitations of the halt and emphasize the synergistic relationship between air and sur-

face forces in implementing the halt strategy. The third lesson for sister services is that while the Air Force acknowledges the limitations of airpower, it should also develop methods to minimize these limits to make the halt strategy of the future even more effective than it has been in the past.

Notes

1. Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute for Defence Studies* 119, March 1974, 3–11.

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