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The fight against the Axis powers in Europe was the last time that the United States faced off directly against nations which could compete technologically, industrially, and tactically to field an air force that could be considered comparable to the that of the United States. The paper uses the Fifteenth Air Force as a case study and investigates six different areas to explore how the realities of each compared to the expectations that planners had based on the doctrine and information that they had available prior to the U.S. entry into the war, and their applicability to future conflicts.

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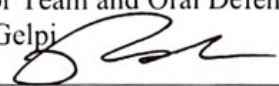
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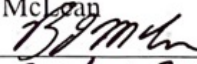
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Executive Summary

Title: Al Ataque – The Experience and Lessons of the Fifteenth Air Force in World War II

Author: Major Brian A. Kursawe, United States Marine Corps

Thesis: Aviation planners today can, and must, consider the lessons and experiences of the U.S. Army Air Forces in World War II to improve doctrine, strategy, and tactics to sustain a successful air campaign in a contemporary peer or near-peer conflict.

Discussion: The fight against the Axis powers in Europe was the last time that the United States faced off directly against nations which could compete technologically, industrially, and tactically to field an air force that could be considered comparable to that of the United States. The paper uses the Fifteenth Air Force as a case study and investigates six different factors: coercion, airpower theory, splitting the bomber force, targeting, resourcing, and technology. It explores how the realities of each factor compared to the expectations that planners had based on the doctrine and information that they had available prior to the United States' entry into the war. The first subject is how the Fifteenth's actions fit into the overall coercive effort against the Axis. Following this, the paper discusses the Fifteenth's role in the application of the airpower theories developed during the interwar period and put into practice during World War II. As the creation of the Fifteenth essentially split the resources of the U.S. Army Air Forces, a look into the decision making that led to this split and its results can certainly inform planners of the next peer or near-peer conflict in the air. Moving from the theoretical into the practical, a discussion of how the United States executed targeting and assessments seeks out methods and techniques that could still be applicable today. Following this, a look at resourcing attempts to find applicable lessons from how U.S. planners first imagined mobilizing a strategic bombing force to the more specific resourcing of squadrons with personnel and equipment throughout the conflict. The final section addresses changes in technology that occurred during the war and how these changes affected the Fifteenth. Although the same changes will not happen again, there are certainly lessons modern practitioners can learn from how the different actors reacted to technological advantages.

Conclusion: The study concludes that today's joint force can apply lessons from each of these areas to help the United States achieve victory against a peer competitor. Today's planners and leaders must take the lessons learned from the actions of the U.S. Army Air Forces and the Fifteenth Air Force and use them to apply airpower in a way that achieves the goals of the overall joint force.

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

A paper about airpower and strategic bombing is certainly not the most likely topic of choice for a Marine at a Marine Corps school. The topic came about due to my interest in my grandfather's service during World War II. I saw this research project as an opportunity to investigate a little more thoroughly into the conflict in which he participated. Hans "Jack" Kursawe was a B-24 tail gunner who deployed to Torretta, Italy as part of the 764th Squadron, 461st Bomb Group, 15th Air Force. Focusing on the Fifteenth Air Force allowed me a closer look at how the actions of ships like the "Lucky Seven" and her crew (pictured below) affected the greater conflict. Assisting my understanding of this relationship was his daily journal, which cataloged the Lucky Seven's actions from the viewpoint of her tail gunner. The epigraphs for each section are his words from various points during the Lucky Seven's operations, from their transit across the Atlantic to the crew's last flight together on June 30, 1944.

I could not have completed this project without assistance. First, I must thank my wife, Amanda, who assisted with ideas and proofreading and more importantly helped me balance this work with the birth of our first child, adding 'mom' to the top of her already long list of roles and accomplishments.

Directly assisting my research effort was Dr. Paul Gelpi, my advisor and mentor for this project. From helping to focus my topic, to pointing me in the right direction for research, to keeping me on task with deadlines, Dr. Gelpi was certainly the driving force behind my writing. I thank him for his guidance and patience throughout the project. I would also like to thank LtCol Brian McLean for his feedback and thoughtful discussion of the various elements of this paper.

Finally, I must thank the men that were the subject of this paper, the airmen of the Fifteenth Air Force. These young men accomplished heroic feats against strong opposition to

bring the fight to the Axis, often without the showy recognition typically provided the Eighth Air Force and their “Flying Forts.”* To the “Libs” of the Fifteenth, their crews, and all who gave lives and blood in the fight against the Axis, and who are an example of airmanship, grit, and perseverance, I salute you with the motto of the 461st: *Al Ataque* – To the Attack.



“Lucky Seven” (B-24H 41-29362) and Crew. Hans “Jack” Kursawe is back row, far right.[†]

* Lt. James A. Souters, Lt. Thomas E. Spencer, and Lt. William A. Ross, “Mail Call: Libs vs. Forts,” *The Stars and Stripes (Mediterranean)*, July 13, 1944.

[†] “Lucky Seven,” accessed February 28, 2021, <https://461st.org/Aircraft/Nose%20Art/LuckySeven.htm>.

Introduction

“We don’t know where we’re going, but Crew Seven is ready for anything.”
-Hans J. Kursawe, *Diary*, 4 February 1944

There is much discussion in recent United States National Security literature regarding peer competition and conflict. The 2017 *National Security Strategy* and the 2018 *National Defense Strategy* both identify China and Russia as the major strategic competitors to the United States.¹ The summary of the *National Military Strategy* describes “the reemergence of great power competition with China and Russia” as one of the “most difficult challenges facing the joint force.”² Even service-level literature, such as the *38th Commandant’s Planning Guidance*, anchors most of its guidance around conflict with peer adversaries.³

With a renewed focus on preparing for peer conflict, the joint force must examine how it will fight. If the United States does eventually enter armed conflict with an adversary such as China or Russia, there is no doubt that aviation will play a significant role. It is important for leaders and planners, then, to understand that the United States has not fought a nation with a peer-level air force since World War II. Although there have been conflicts since which have presented significant air threats and required changes in doctrine, tactics, and technology, World War II was the last time the United States faced off directly against nations that could compete technologically, industrially, and tactically to field an air force comparable to that of the United States.

Although it is fortunate that the United States has avoided such conflict for three quarters of a century, one consequence is that the joint force has not faced the challenge of fighting a peer adversary; thus, it lacks experience in doing so. In the absence of experience, the joint force will need to find other means to prepare for peer conflict. History can provide such an avenue. At the beginning of World War II, the fledgling U.S. Army Air Forces (USAAF) were in a similar

situation. There, a lack of both experience *and* history forced leaders to rely on airpower theory to determine the strategies that they would implement to fight the Axis powers. Today's joint force enjoys the advantage of being able to turn to the USAAF's experiences to help to prepare themselves for a potential peer conflict. Aviation planners today can, and must, consider the lessons and experiences of the U.S. Army Air Forces in World War II to improve doctrine, strategy, and tactics to sustain a successful air campaign in a contemporary peer or near-peer conflict.

While there are certainly lessons from the experiences in each theater, an investigation of all of World War II aviation operations would exceed the scope of a study of this length. For the purposes of focusing the discussion, this study will concentrate on the experiences of one portion of the air war against Nazi Germany: The Fifteenth Air Force. This southern arm of the USAAF's efforts against Hitler provides a succinct case study for exploring a few of the subjects that contemporary aviation planners can use to help prepare today's joint force for the air fight against a peer adversary.

Literature Review

"This sure is a lot of bunk...It takes too damn long."

-Hans J. Kursawe, Diary, 9 February 1944

There is a significant amount of literature regarding the United States Army Air Forces (USAAF) during World War II. For the fight against Germany and the Axis powers in Europe, most of this research and analysis focuses on the Eighth Air Force operating from Britain. Although the Eighth Air Force was the centerpiece of the air fight against Hitler, the Fifteenth, operating from bases in Italy starting in 1943, offered the United States and her allies a second avenue of air attack against the Axis. In focusing research on this lesser-studied bomber force

and their fighter escorts, this study will attempt to glean insights that the United States can apply to airpower in contemporary great power conflict.

The creation of a second bomber force to target the Axis powers provides a point to begin the exploration of the Fifteenth. Why did United States leadership decide to strip forces away from General Ira Eaker's Eighth Air Force to fly missions from Italy? Gerhard Weinberg points out in *A World at Arms* that the campaign for Tunisia relieved pressure on the Eastern Front, forcing the Axis to commit limited resources to a new theater. The success in North Africa also prepared the way for the invasion of Sicily, the Allies' bid to remove Italy from the war.⁴ The availability of airbases in Italy provided another means to stretch Germany's resources and attack Axis targets from a new direction. Another reason, as discussed by Barrett Tillman in *Forgotten Fifteenth*, was to reduce the impact of the notoriously bad English weather on bombing operations.⁵ As the United States has not faced an enemy with a significant Integrated Air Defense System since World War II, the idea of providing an air force with multiple launch sites and drawing an adversary's defenses in multiple directions certainly have application to modern forces operating against a major power adversary.

Comparing airpower theory to its application will provide insight to how modern forces might apply new theories of warfare in future conflict. As the Fifteenth was created late in the war, there had been enough time since the origins of airpower theories in the interwar period for the U.S. Army Air Forces to gain experience and test some of the theories. Before World War II, Giulio Douhet had argued that aircraft were the answer to the war of attrition.⁶ Billy Mitchell had concurred, advocating for independent air operations to attack sources of production rather than an adversary's army or navy.⁷ These ideas formed the basis for the Air Corps Tactical School's development of the idea of utilizing an independent air force to apply a strategy of

high-altitude precision bombing.⁸ Some parts of these theories withstood the test of conflict; others did not. *The Paths of Heaven* and *Case Studies in Strategic Bombardment* offer analysis of the original theories as well as examples of how they succeeded or failed when tested in practice. For example, the aspirations of Operation POINTBLANK, one of the Fifteenth's first major commitments, were foiled by miscalculations driven by the original theories.⁹ Further analysis of the assumptions of some of these theories, as well as the supporting concepts of targeting, logistics, and enemy threats, will reveal how effective the theories were and provide insight into the application of airpower against a peer competitor in the 21st century.

Intelligence and targeting play a major role in any conflict. The air campaigns of World War II were no exception, and the success of airpower theory would depend on the support of these concepts.¹⁰ In *Selling Schweinfurt*, Brian Vlaun analyzes the successes and failures of the intelligence and targeting pairing from their origins in the interwar period through the operationalizing and nationalizing of the intelligence and targeting process. From the idea of using a civilian-staffed Committee of Operations Analysts to advise on targeting Germany's industrial systems,¹¹ to reconciling the differences between initial assessments and long-term effects,¹² Vlaun describes how the air intelligence system impacted USAAF operations. Though these disciplines have significantly matured since the 1940s, the experiences of these early air intelligence systems represent the last time they worked to dismantle a peer enemy's system, and thus offer lessons for modern practitioners to apply while examining a peer competitor.

In addition to targeting, the remainder of the theories of strategic bombing had to be put into practice. In *Beneficial Bombing*, Mark Clodfelter provides a review of the effectiveness of various elements of the USAAF's actions. From the attempts to describe the resources and strategies required for success in Air War Plans Division-1 (AWPD-1) and AWPD-42,¹³ to the

impacts of enemy tactics,¹⁴ to the effects of the strategy on United States airmen,¹⁵ all elements of strategic bombing had to combine to generate success. Similar elements will play a role in future conflict, and today's aviation forces must address them in their preparations against a peer adversary.

At its core, the discussion of strategic bombing is a discussion of coercion. However well designed a strategy may appear, it must succeed against a thinking, reacting enemy. As history tells, the air campaign alone did not force Germany to surrender; a land invasion was required. Peter Pape, in *Bombing to Win*, offers the explanation that Germans were exceptionally good at enduring the punishment imposed by strategic bombing, and that Germany considered Russian occupation (which could not be avoided by surrender) more costly than continuing to fight.¹⁶ Modern authors also help to frame the discussion of coercion. Tami Biddle's "Coercion Theory: A Basic Introduction for Practitioners" and Michael Mazarr's *Understanding Deterrence* outline the practical effects of coercive strategies and identify the variables at play within the idea of deterrence.¹⁷ Though deterrence was no longer a consideration by the time the actions in the Mediterranean began, the overall idea of coercion certainly applies to both World War II and future competition and conflict. Considering *Bombing to Win*'s conclusion that airpower alone cannot effectively coerce,¹⁸ future strategies against peer competitors will need to consider the place of airpower among other elements of a broader initiative.

What will a 21st century United States military need to accomplish coercion? Whether it is deterrence during competition or broader coercion during conflict, airpower will play a role. Working against the success of coercive airpower is the fact that the United States has not engaged in direct, active conflict with a major-power competitor since World War II. National leaders recognize this fact and, in response to the priorities of the National Security Strategy and

National Defense Strategy, have asked for research and recommendations regarding the future of airpower. One response to this request is the Center for Strategic and Budgetary Assessments' (CSBA) *Five Priorities for the Air Force's Future Combat Air Force*. In this study, the authors identify trends in the recent history of the Air Force and offer five areas of focus to develop a Combat Air Force that is prepared to meet the needs of the National Defense Strategy.¹⁹

These recommendations have roots in previous conflicts. Though CSBA's recommendations follow from their analysis of the Air Force since the late 1980s, there are concepts that will have links to the United States' last experience in peer-conflict. Their first three areas for recommendation (size of the force, survivability, and the forward posture of the force) will certainly have parallels in the Mediterranean Theater. Although their final recommendations regarding Unmanned Aircraft Systems and other advanced weapons and future technologies may not have a direct link to the Fifteenth Air Force's operations in Italy, changes in technology are certainly a factor in any conflict. The impacts of such changes on the effectiveness of the Fifteenth Air Force will be an area of focus in this study.

The Fifteenth Air Force

*"We left the states at 6 A.M. Sure felt funny wondering what the next few months will bring."
-Hans J. Kursawe, Diary, 10 February 1944*

The Fifteenth Air Force headquarters officially opened its doors in Bari, Italy on December 1, 1943,²⁰ but the unit's buildup had begun much earlier. Some of the aircraft that would eventually become the Fifteenth's core groups were originally diverted from Eighth Air Force operations to support ground troops in the invasion of North Africa. To manage this tactical support, these groups were organized under the Twelfth Air Force for the remainder of the North Africa campaign and subsequent invasion of Italy in September 1943.²¹ Though some resources were dedicated to supporting these land campaigns, USAAF leadership was still keen

on continuing the strategic bombing campaign. Groups from both the Eighth and Twelfth Air Forces began to sortie together from Libya in August 1943 to strike targets such as Ploesti, Romania and Weiner Neustadt, Austria. By October, the British Eighth Army had captured Foggia, Italy, and General ‘Hap’ Arnold, Chief of the Army Air Forces, petitioned for and received approval for the creation of the Fifteenth to consolidate the strategic bombing role in the Mediterranean under one headquarters.²²

As this establishment came on short notice, the initial resourcing of the Fifteenth stripped away from other commands. The Twelfth Air Force gave all six of its heavy bomber groups to the Fifteenth, and fifteen new groups previously allocated to the Eighth would instead deploy to Italy under the Fifteenth. By April of 1944, those first six groups had grown into the second largest air force in the world (behind the Eighth), with twenty-one bomber and seven fighter groups.²³

Despite some initial setbacks by the Luftwaffe, the Fifteenth got right to work, even striking targets in northern Italy on the first day of their official existence. By Christmas of 1944, Fifteenth bombers had struck back at the Luftwaffe at home, hitting the Messerschmitt plant in Augsburg, Germany.²⁴ The true power of multiple heavy bombing forces was exercised during “Big Week” in February 1944, in a six-day operation targeting German aviation production. In an impressive show of aviation might, the Eighth and Fifteenth combined to put more than 1,000 bombers in the air on a single day to strike targets in Regensburg, Augsburg, Fürth, and Stuttgart.²⁵

In June 1944, the priority for strategic bombing became oil and remained oil for the remainder of the war. In this effort, the Fifteenth’s focus was Ploesti, Romania. At Ploesti, the Fifteenth battled German fighters, anti-aircraft defenses, and smoke screens to render the Ploesti

oil fields useless, eventually reducing gas exports to Germany by over 85 percent by June 1944.²⁶ The Fifteenth would return to Ploesti on multiple occasions throughout 1944 in addition to striking other oil and synthetic petroleum production in Bucharest, Belgrade, Blechhammer, Ordetal, and Yugoslavia.²⁷ By the time Russia's army convinced Romania to join the side of the Allies at the end of August, the Fifteenth had flown 20 daylight missions against Ploesti, dropping 13,469 tons of ordnance. The estimated 1.8 million tons of oil denied to Germany came at a cost of 350 heavy bombers.²⁸

In the remainder of 1944 through their last bombing mission on May 1, 1945,²⁹ the Fifteenth serviced a mix of tactical and strategic targets. In August, they began striking targets in southern France in preparation for the southern portion of the Allied invasion.³⁰ After the landings, the focus returned to oil, with missions to Vienna, Ordeal, and a return to Blechhammer.³¹ The Fifteenth even got a chance to strike at the heart of Germany, bombing Berlin in March of 1945 in support of Operation PLUNDER, the Allied crossing of the Rhine.³²

The Fifteenth's efforts were not without cost. Of the 3,544 B-24 and 1,407 B-17 assigned, 1,756 B-24 and 624 B-17 fell to the Luftwaffe or German artillery.³³ In March of 1945, General Eaker commented on the loss of over 20,570 men in the Mediterranean command over the previous year. "When we remember that the combat crew strength of the 15th Air Force is about 20,000 men," he said, "it can be seen we've lost 100% of our strength in one year." Of these lives, and the 2,050 heavy bombers that were lost with them, he remarked that "[w]e take some consolation that these losses saved many thousands of ground soldiers from the loss of their lives in battle."³⁴

The Fifteenth was certainly a significant part of the USAAF's air campaign against Germany. The sections that follow will discuss how the Fifteenth's actions fit into the overall

effort to defeat the Axis, how actions by U.S leadership and changes occurring throughout the war affected the Fifteenth, and what today's joint force planners might learn from each.

Coercion

“‘*Mucho*’ *flak*...*Many fighters.*”

-Hans J. Kursawe, *Diary*, 28 June 1944

To begin the analysis of the Fifteenth and their actions broadly, these efforts and those of the USAAF writ large were a portion of the overall coercive effort against the Axis powers. At the time, USAAF Commanding General Hap Arnold believed that airpower was key to this coercive effort and could achieve an independent victory over Germany and her allies, an idea which was espoused even up to the level of Army Chief of Staff George Marshall.³⁵ In his analysis of coercion through airpower, Peter Pape identifies four types of coercion: Punishment, risk, denial, and decapitation. *Punishment* inflicts pain on a nation's civilians, targeting the people's will and hoping to cause a benevolent government to concede rather than allow their continued suffering.³⁶ Similarly, *risk* seeks to slowly increase the risk of damage to civilians or property, advertising future costs to the adversary if they do not submit.³⁷ In a *denial* role, airpower seeks to damage the enemy's military capability to the point where friendly ground forces can proceed with an acceptable level of risk.³⁸ Finally, *decapitation* seeks to remove the adversary's leadership, either directly or by destroying their ability to communicate.³⁹

The strategic bombing strategy that the USAAF would implement (discussed in the next section) was one of punishment. It sought to bypass the enemy's military forces and inflict damage on the population and their means of production. Unfortunately for the Allies, this strategy failed to coerce Germany into unconditional surrender. The typical explanation for this failure identifies Germany's exceptional ability to endure the Allied punishment. Pape also offers the explanation that either unconditional surrender or continued resistance both resulted in a

Russian occupation of Germany, so the Germans had less motivation to accept surrender.⁴⁰ In this case, the political goal of unconditional surrender was mismatched with strategic bombing's ability to achieve it.

In the end, the Allies invaded France to secure their victory over Germany. Airpower did not achieve independent victory, providing the first data point for Pape's conclusion that airpower alone cannot achieve coercion.⁴¹ As airpower has matured in the years and conflicts since World War II, it has remained the United States' most-used tool of coercion due to its easily scalable and tailorable nature.⁴² Additionally, despite changes in technology and tactics, many of the fundamentals of airpower theory have changed very little since their beginnings in World War II.⁴³ This reliance on airpower as the first choice in coercion has certainly been influenced by the types of adversaries that America has faced since its last conflict with a major power. Although there have been conflicts where American airmen have faced capable air defenses, no enemy has presented such deadly capabilities as the Luftwaffe showed the USAAF in the skies over Europe. Where the Eighth and Fifteenth Air Forces contributed to the goal of unconditional surrender with extreme effort instead of precision,⁴⁴ airpower has consistently relied more and more on precision as technology has improved. The varying degrees of air superiority that the Air Force has enjoyed over adversaries has encouraged this reliance.⁴⁵ For example, in Vietnam, airpower was first used in a primarily punishment role, but its use shifted to denial as positive results (and political guidance) favored the more precise targeting of North Vietnamese military capabilities.⁴⁶ Based on the experience that the USAAF had fighting a peer adversary in World War II, a modern joint force will have to utilize airpower alongside other capabilities to achieve coercion effectively. Although there have and will be those who advocate that airpower can do it alone, experience and opinion as recently as Desert Storm show that there

must be a ground element. Airpower's role is to reduce risk for this element by removing the enemy's ability to resist.⁴⁷ Modern airpower practitioners should remind themselves of the challenges that airpower faced and prepare to use airpower in conjunction with other military resources against a peer adversary.

As war is an extension of politics by other means,⁴⁸ so too is airpower. As such, policy guidance must match the capabilities that airpower provides. In World War II, the USAAF had clear goals without negative objectives that limited the application of airpower. Later conflicts like Vietnam saw the application of political restrictions which placed limitations on the Air Force's capabilities.⁴⁹ More recently, United States leaders have similarly attempted to rely primarily on airpower, but it has proven difficult to match airpower's capabilities with political goals such as "stability," "security," and "democracy."⁵⁰ Such restrictions can hinder the ability of airpower to support the joint force if there is a mismatch between the expectation of what airpower can achieve and the freedom planners have to apply the joint force's resources. In preparation for facing a peer adversary, military and civilian leaders must have honest conversations about matching airpower's capabilities with the desired political outcomes.

Airpower Theory and Strategic Bombing

*"15th Air Force putting up 1500 B-24 over Italy every day...They ought to be folding up soon."
-Hans J. Kursawe, Diary, 15 May 1944*

One of the main missions of the Fifteenth Air Force was to participate in the Combined Bomber Offensive (CBO), also known as Operation POINTBLANK.⁵¹ The CBO represented the Allies' latest plan to overcome Germany through the strategic targeting of industrial and economic targets.⁵² Though the specifics of plans like the CBO were developed throughout the war, this idea of using long-range bombing to target an enemy's "industrial web" instead of military forces had its origins in the interwar period in theorists like Italian General Giulio

Douhet and General William “Billy” Mitchell. Douhet advocated for the aircraft’s use as a strategic platform instead of merely supporting surface forces,⁵³ noting that the advent of aircraft technology expanded the battlefield well beyond the range of surface weapons and made any part of an enemy’s territory susceptible to attack.⁵⁴ Mitchell advanced this theory in the United States, becoming the champion of an independent air service designed around strategic bombing.⁵⁵ These theories of strategic airpower were truly honed into the industrial web theory by the Air Corps Tactical School (ACTS). From 1935 to 1940, the staff at ACTS formalized the U.S doctrine for strategic bombardment and began to determine the types of targets that, if destroyed, would cripple an adversary’s ability to wage war.⁵⁶

As the proponents for service independence and the developers of strategic bombing doctrine were largely the same group, the two became linked in the minds of USAAF leadership. The success of strategic bombing would be the justification for an independent air service, and the drive to prove strategic bombing’s success would force the continued application of airpower theories in their original form.⁵⁷ The creation of the Fifteenth was representative of this continued drive for an independent airpower victory. USAAF leadership could have put resources toward assessing some of the shortfalls and miscalculations that had prevented strategic bombing’s success. Instead, they created a second bomber force which would attack Germany from a new direction, but with the same doctrine that had yet to prove its success.

Unfortunately, some of the shortfalls that had hindered strategic bombing’s success would continue to hamper the outcomes of the CBO. Examples of these miscalculations include the continued use of American industry as the model for German target selection, the lack of escorts for bombers, and shortfalls in the ability of intelligence sources such as ULTRA to adequately assess the impact of strategic bombing.⁵⁸ In the end, despite the commitment of

resources represented by the Fifteenth, strategic bombing still failed to achieve the independent victory that proponents had upheld as the path to service independence. These leaders had justified their commitment to a strategic bombing strategy with the logic that it would end the war quickly and thus lead to fewer deaths.⁵⁹ Indeed on its surface, strategic bombing seemed like a safer way to wage war, keeping U.S. servicemen out of ground combat with the enemy. However, one must contrast this with indicators like a 15-mission life expectancy for bomber crewmembers as of 1943 and the loss of 300 aircraft and 2,500 personnel in one week of operations in February 1944.⁶⁰ The drive for service independence seemed to blind Army Air Forces leadership to the possibility that there were other means in which to apply airpower which could be less costly in lives in the long run.⁶¹

The cautionary lessons that modern strategists can learn from this example are twofold. First, however well-researched and -resourced a strategy might be prior to the start of hostilities, military leadership must constantly consider the need for adaptation in a long-term conflict. The unconditional commitment that USAAF leadership maintained to the strategic bombing strategy prevented them from recognizing the factors that were hampering its success. Had these leaders been more willing to admit that their strategy was not proving as successful as had been advertised, adjustments might have been made earlier to improve the outcomes. The second lesson is equally important and also related to humility: leaders must not allow service goals, from relevance to even survival, to be the basis of doctrine. However important these goals might seem on home territory, allowing them to prop up an unsuccessful strategy is not worth the cost in lost battles or time, and certainly not servicemembers' lives.

A Second Bomber Force

“Will it ever clear up in this country?”

-Hans J. Kursawe, Diary, 27 March 1944

One of the more interesting areas of study regarding the Fifteenth Air Force is its existence. With a bomber force established in England (the Eighth Air Force) that could more easily range most Third Reich targets (see Figure 1),⁶² the decision to divert resources to create an entirely separate bomber force is worthy of investigation. To begin with, the Fifteenth would not have been able to fly from its bases in Italy without the success of the preceding campaign in North Africa and subsequent invasion of Italy. The resources that Hitler diverted to fight the Allies in the Mediterranean relieved significant pressure from Russia’s fight on the eastern front.⁶³ General Hap Arnold saw a place for a similar opportunity in the air fight. At its creation, the Fifteenth was given four missions:

- (1) Achieving air superiority by destroying the Luftwaffe in the air and on the ground;
- (2) Participate in Operation POINTBLANK, the Anglo-American Combined Bomber Offensive (CBO) against Axis industry, including aircraft factories and airfields, ball-bearing plants, oil refineries, armament production, and submarine bases;
- (3) Support ground forces in the Mediterranean Theater by attacking enemy transport in Italy and over the Brenner Pass into Austria. (The tactical Twelfth Air Force would provide direct air support to Allied armies.);
- (4) Attack Axis forces and facilities in the Balkans.⁶⁴

The first and fourth missions align with Arnold’s support for creating the Fifteenth: a second bomber force attacking from a different direction and expanding the potential targets would benefit the Eighth Air Force by diverting Luftwaffe defenses away from the Eighth’s missions.⁶⁵ USAAF leadership also believed that another location in the typically mild Mediterranean would combat the effects of the stereotypical English weather was having on the Eighth Air Force. This new site would provide better (or at least different) weather and increase the odds of favorable conditions.⁶⁶

The other side of the argument came from General Eaker. Besides the desire to protect his own force from losing resources, Eaker was concerned about range. The Fifteenth's second mission listed above called for its participation in Operation POINTBLANK. However, the range of the Fifteenth's B-24 Liberators would only permit them to reach targets in southern Germany, Austria, and the Balkans.⁶⁷ Eaker thought that this limitation would preclude the Fifteenth's ability to decisively affect German industry, the target of POINTBLANK.⁶⁸ Furthermore, Eaker charged that splitting resources to two Air Forces violated the concept of concentration of force. He also feared that the Alps, standing between the Fifteenth and many of their targets, would prevent damaged aircraft from returning to Italy safely. Eaker also challenged the weather argument, believing that the issue was the weather over the targets, not in England.⁶⁹

Arnold's arguments ultimately prevailed, and the Fifteenth began operations from Italy in November 1943.⁷⁰ Regardless of the result, this debate can provide some insight into how today's joint force might approach a similar problem. Even with modern aircraft navigation systems, the issue of the weather can be a factor anywhere in the world and having an additional location from which to launch sorties will always decrease the likelihood of weather impacts. The idea of creating a second air "front", however, would likely be cause for a debate like the one described above. Whether considering sovereign territory or additional territorial claims, both peer competitors that the joint force might encounter command a large geographic area. In either scenario, multiple geographically dispersed locations from which the joint force could conduct air operations would force the adversary to dedicate resources to defending in each direction, denying the ability to focus air defenses along a single axis. The questions that the joint force will have to answer are the same as those that the Army Air Forces leadership considered: resources and effectiveness. First, the joint force must possess enough resources to

dedicate to each location with enough combat power to truly threaten the adversary. Second, the location must also be situated such that aircraft can range far enough to contribute to the overall air campaign, not merely harass the outskirts of the adversary's defenses. Both conditions would have to be met for an additional force to truly cause the adversary to split defenses and resources. In considering options for operations against a peer adversary, today's planners can turn to some of the same questions considered by USAAF leadership to help shape the force and allocate resources.

Targeting and Assessment

"Big day today – bombed famous Romanian oil fields at Ploesti."

-Hans J. Kursawe, Diary, 5 May 1944

Because the strategy of strategic bombing was based on attacking the enemy's industrial web instead of directly engaging enemy forces, choosing what targets to strike and locating them played an extremely important role. Army Air Forces planners recognized this fact from the early stages of the strategy and began to develop estimates of the effort it would take to defeat the Axis foes. The estimate for Germany came in the form of a document called AWPD-1. Published in August 1941, this plan was both the initial appraisal of the airpower required to defeat Germany, and also the first translation of strategic bombing doctrine into specific strategy.⁷¹ AWPD-1 proposed a list of 154 targets that, if destroyed over a six-month span, would disrupt German industry and morale to the point that it could no longer continue the fight.⁷² As discussed above, strategic bombing did not provide the swift victory that it had sought. At the time of the creation of the Fifteenth, USAAF planners had been adjusting the elements of German industry that they were targeting, attempting to identify those that would truly bring the adversary to its knees. AWPD-42, published in September 1942, no longer included morale, and the priorities of military and industrial targets like electrical grids,

transportation, oil, and rubber shifted throughout the various revisions, reflecting the analysis that the USAAF was performing on German industry and war production.⁷³ By the time of the Fifteenth's first missions, ball bearing production had jumped to the top of the list that now focused more directly on the sources of items that directly impacted the enemy's fighting ability instead of industry writ large.⁷⁴ Much of this analysis was provided by the Committee of Operations Analysis (COA), a team that brought in expert advisers from various industries to investigate the impacts that targeting each might have on enemy war production.⁷⁵

With much of the German homeland and the industry located there out of its reach, the Fifteenth had one major focus at the start of the Combined Bomber Offensive: oil. Nearly half of the German crude and synthetic oil production was in the twelve enemy or occupied countries within striking range of the Fifteenth's bases in Italy.⁷⁶ The Fifteenth's focus on oil included not only sources of production such as the plant at Ploesti, but also the enemy's means of transporting that oil and protecting its production.⁷⁷

Although the COA had put significant analysis into the target sets that became the priorities, the task remained of assessing if the strikes on these targets were achieving the effects that the USAAF desired. Before the overall effect on the German industry and war effort could be analyzed, the Allies first had the task of assessing the results of each bombing attack. The varying assessments by different agencies of the attack on the Schweinfurt ball bearing plant in August 1943 demonstrate the difficulty of this process. Reviewing the results of the attack, the Office of Strategic Services and the USAAF A-2 intelligence section provided a generally positive assessment, estimating that the plant had lost about three months' worth of production. VIII Bomber Command had a less optimistic assessment, determining that there had been damage to the city and communications capability but not to production. The British RE8 section

had the most conservative estimate, concluding that the raid had little effect, impacting about a week's supply of ball bearings.⁷⁸ These vastly differing conclusions from the same attack show the difficulty of the task faced by Allied assessments sections.

Today's planners will face similar challenges in analyzing a peer adversary for targeting choices. Determining the key elements of an enemy's war-making capability is a monumental task. Like the designers of the AWPD reports, the joint force will need to conduct a holistic analysis of an enemy's economy to be able to make the most informed choices for targeting. Such analysis will once again require the input of industry experts, like those of the COA, to assist planners in exploring the links between various industries, the vulnerabilities to those industries, and the key targets that will disrupt the enemy's ability to bring combat power to bear against the joint force. Such analysis may also lead back to the discussion of locations for forces. As in the case of the Fifteenth's raids on oil production in southern and eastern Europe, there may be a specific enemy industry that can be best attacked from a specific location.

Despite the insistence that strategic bombing could single-handedly end the war, Army Air Forces planners' continual reassessment of their target priorities did demonstrate that they were willing to adjust their strategy to maximize its effectiveness. Joint force planners must adopt a similar willingness to adapt strategies to ensure that initial analysis does not become a de-facto standard if new analysis and evidence become available.

A look at the difficulty of assessing the effectiveness of attacks during this time can also help to prepare today's intelligence and assessment sections for a fight with a peer competitor. Against such an adversary, the joint force will likely not possess the technological advantages that it has enjoyed over more recent adversaries. These foes will have the means to degrade the near-real-time assessments provided by technologies like persistent intelligence, surveillance,

and reconnaissance (ISR) platforms and satellite-based analysis. Assessments against a peer adversary might be remarkably like those of World War II, with much heavier reliance on trained teams of analysts from both military and industry to determine the results and effects of each strike. To be ready for this fight, joint force assessments sections must consider the composition of such teams and the training that they will need to undergo before hostilities begin. Failure to anticipate this need will likely result in a similar scrambling to understand target priorities as was seen in the revisions to the AWPDP reports.

Resourcing

“Chow P-poor, Mud terrific.”

-Hans J. Kursawe, Diary, 23 February 1944

In addition to identifying the appropriate targets in the enemy’s system, USAAF planners faced the additional challenge of creating an air force that could fulfill the strategies that they had created. This was the other role of the AWPDP documents: determining the resources that the nation would need to create such a force. To successfully service the targets initially identified in AWPDP-1, planners determined that America would need to produce 98 bomb groups, or 6,860 bombers, for the fight against Germany.⁷⁹ AWPDP-42 updated these estimates (adding the Pacific Theater) to recommend the production of 139,000 aircraft in 1943.⁸⁰ To meet such a demand, America’s industrial base had to mobilize. This led to some creativity in the manufacturing sector, such as converting automobile manufacturing facilities into aircraft plants.⁸¹ One Ford plant in Michigan, for example, could manufacture the Fifteenth’s B-24 Liberators at a rate of about eight per day, or three hours per one aircraft.⁸² Although steps like this contributed significantly to the production effort, quality could be impacted. Airmen found that automakers did not manufacture to the tolerances required for aircraft components, which led to additional maintenance effort in theater.⁸³ Additionally, since manufacturing lines were so streamlined,

they were ill-equipped to handle changes in aircraft which were required as the war progressed. This led to the USAAF sending brand new aircraft through depots for modifications before they could be sent forward to theater.

Once they had their resources, USAAF leaders still needed to determine how to manage them to achieve the effects they desired. The transfer of aircraft between commands proved to be a headache for tactical commanders, often affecting a command's inventory more than aircraft attrition.⁸⁴ Airfields were another issue, especially for the newly established Fifteenth. The initial surveys of the airfields planned for their basing at Foggia were not promising, forcing the advance parties to search farther than planned to determine that Bari airfield was more suitable.⁸⁵ Army Air Forces leadership hoped that the Fifteenth would quickly move all its units north into Italy, however the engineering effort required for the selected airfields moved more slowly than anticipated. Fortunately for the engineers, the rate at which the Fifteenth received aircraft and other resources was also delayed.⁸⁶ Although the supply shortage and engineering effort coincidentally delayed the Fifteenth's move north at similar rates, each could have individually slowed their efforts just as significantly.

Personnel were another resource that Army Air Forces leadership was forced to actively manage. Despite the ideal of the near-invincible bomber touted by strategic bombing theory, the USAAF lost 8,759 heavy bombers in the fight against the Axis in Europe.⁸⁷ These losses added up to about a 77 percent casualty rate among airmen who flew in Europe prior to D-Day.⁸⁸ Not only were these losses a blow to the USAAF leaders' belief in a "cheaper" way of warfare, but new airmen were required to replace those lost. As the demand for replacements increased, training suffered, with some not even completing training prior to arrival in theater. This placed

additional burden on combat forces, requiring experienced crews and leaders to provide training for their new airmen.⁸⁹

Although this is a brief description of only a few factors in the resourcing problem that faced the USAAF and the Fifteenth Air Force, there are certainly some takeaways for modern planners. The combination in the AWPD documents of targeting and resourcing was extremely proactive. Combining these analyses allowed planners to provide military leadership with the results and requirements linked together. Although both aspects needed revision throughout the war, joint force planners should use this model to describe the requirements for a potential peer conflict. This will allow military leadership to describe the cost of such a conflict on the nation more completely and to portray the results that national leadership can expect for that price. One aspect of the AWPD documents that today's planners can improve upon is preparations for deviations from the original plan. As Mark Clodfelter notes in *Beneficial Bombing*, the USAAF planners "provided meager allowances for the unexpected—what Prussian military philosopher Carl von Clausewitz called 'friction'—and the impact that such elements as chance, uncertainty, danger, and stress might have on an air offensive."⁹⁰ Friction like the engineering and supply delays described above is something that today's force must account for and ensure that there is enough excess capacity in resources to address the uncertainty of conflict.

Like in World War II, a peer conflict will necessitate a large increase in manufacturing to supply the equipment that the joint force will need. Unfortunately, aircraft have only become more complex since the 1940s and it is unlikely that other industries will be able to bolster aircraft manufacturing in the same way that they did to make Flying Fortresses and Liberators for the USAAF. Today's joint force must work with industry to determine what replacement rates will look like for aircraft combat losses and include this analysis in planning for a peer

conflict. This analysis must also accompany a look at the same capacity for the adversary. In a peer conflict, both sides will take losses, and an enemy industry's capacity to provide replacements will be pitted against our own. This is certainly a complex evaluation for joint force planners, but such analysis can provide valuable input into preparation for a peer or near-peer conflict.

Technology and Airpower

"Flew to 451st Group to pick up 'pathfinder' ship."

-Hans J. Kursawe, Diary, 20 May 1944

Although technology has advanced significantly since the Fifteenth Air Force flew against Axis targets, today's aviation forces can learn from how the Army Air Forces adapted to new technologies and applied technology to fight more effectively. One area of technology that bears particular importance to aviators is navigation. For the Fifteenth, despite the hope that the Mediterranean would provide a better weather situation than did England, this was not always the case. Unfortunately, due to the rapid pace of training mentioned above pilots and navigators did not receive as much training as they should in using aircraft instruments to navigate in bad weather.⁹¹ To combat weather conditions, crews relied on primitive homing beacons and basic navigation techniques, which did not necessarily provide the precision required for the targets that were assigned to a mission.⁹² The challenges of navigation were enough that one wing commander recommended that future planning should focus on targets that did not require precision.⁹³

One emerging technology that helped with this problem was radar. Though not all aircraft were equipped with radar navigation, adaptations such as offset bombing, pathfinder missions (where a lead ship equipped with radar would control navigation and ordnance release for the formation), and the choosing of targets that were identifiable by radar equipment all enhanced

the ability of USAAF crews to hit their targets.⁹⁴ These adaptations also assisted against enemy attempts at protecting targets, such as the smoke generators that the Fifteenth encountered at Ploesti.⁹⁵

The Army Air Forces also used technology to adapt to German threats to American bombers. In response to the Luftwaffe's head-on attacks against bomber formations, the B-17G model added a chin turret to protect this vulnerable forward sector.⁹⁶ Later in the war, range and endurance improvements to fighter escort aircraft allowed them to protect bomber formations for a longer duration, minimizing the time bombers would have to fend for themselves.⁹⁷

Modern aviators could conceivably face a similar navigation challenge. Today's technologies such as Global Position Systems (GPS) allow for precise navigation. Unfortunately, today's peer competitors are known to possess and employ GPS jamming capabilities.⁹⁸ In a GPS degraded or denied environment, crews will be forced to revert to less precise navigation methods. To adapt to this challenge, modern planners might employ a similar targeting strategy as the Army Air Forces: departing for a mission with a primary target that requires precision, and one or more secondaries that do not. As General Eaker described it: "We are going now on a new basis when we will go out in force on days when we may not be able to bomb our exact small point targets due to more than 5/10ths cloud cover, but we will at any rate be able to hit our second or last resort targets, the built-up industrial area"⁹⁹ In a fight against an adversary equipped with GPS-degrading technologies, modern crews will need similar target options to maximize the likelihood of effectively employing weapons on every sortie.

Today's planners will also need to consider whether today's technologically complex aircraft are capable of being adapted mid-conflict to react to enemy technologies and tactics. Just as design modifications resulted in post-manufacturing depot stops for the Fifteenth's aircraft, a

modification as substantial the B-17G's nose turret might cause unacceptable manufacturing delays in modern aircraft. The joint force might also look to adapt existing platforms to non-traditional roles. Ideas like this already exist, such as separating delivery and targeting platforms to allow for greater payloads and greater protection for both assets.¹⁰⁰ Planners must weigh the potential benefits of these modifications and adaptations against the costs of implementing them in both time and resources.

When discussing modern aircraft technologies, it is impossible to ignore the advent of Unmanned Aircraft Systems (UAS). These systems have the potential to augment or even replace manned aviation in various roles, decreasing both operating costs and risk to friendly personnel.¹⁰¹ A complete discussion of the implications of the increased use of unmanned (and potentially autonomous) aircraft systems is beyond the scope of this paper. However, if UAS can effectively augment the air fight in greater capacity, this reduced risk and cost might represent the “cheap” solution that early airpower advocates envisioned.

Conclusion

“Give me the air any time.”

-Hans J. Kursawe, Diary, 23 July 1944

Air Force Chief of Staff General Charles Brown, Jr. recently challenged the Air Force to “accelerate the change necessary for us to remain the most dominant and respected Air Force in the world.”¹⁰² In addition to looking forward, today's planners and leaders across the joint force must also look back to their history to help shape the changes that will allow the United States to retain her edge over strengthening competitors. The Fifteenth Air Force and their actions to support the air campaign against Germany provide one look at how the United States last addressed a peer competitor in conflict.

Beginning with an air force's role in coercion, one of the most important takeaways from the USAAF's experiences was that planners must avoid the fallacy that airpower can "do it alone" against a peer competitor in a conventional fight.* Leaders must employ air in a way to enable victory for the joint force, enabling the accomplishment of joint goals with the least overall risk or losses.¹⁰³ Air planners and national leadership must also have frank conversations about matching aviation's capabilities with the desired outcomes of a conflict to avoid the pitfall of over-promising on airpower's capacity.

The twofold lessons from the USAAF's initial application of airpower theory were adaptation and humility. Leaders and planners must avoid the mistake of continuing to apply national resources to a strategy that appears sound at the beginning of a conflict but does not measure up to its promises as the conflict progresses. Service leadership must also have the humility to place the overall success of the joint force above individual service goals, however beneficial a particular strategy or course of action may be for their service.

The Fifteenth Air Force was an experiment in establishing a second "air front" against Germany with the intent of placing new targets within range and splitting the ability of the Luftwaffe to defend against Allied bombers. The Fifteenth achieved both goals, at the initial cost of siphoning aircraft and crews from the Eighth in England. Modern planners might find an additional location for forces an attractive option to help offset the advantage held by an enemy's consolidated defenses. To be truly effective, planners must ensure that each location can be

* A notable omission in this study is the nuclear side of coercion. Nuclear weapons were a significant change in technology and were not available to the USAAF until the very end of the war. Today's leadership must certainly consider nuclear weapons in their planning, and aviation is one of the options for delivering such weapons. However, as Robert Pape addresses, the gap in potential damage between nuclear and conventional weapons is so vast that nuclear coercion truly falls into its own category and the author has excluded it from this discussion. See Pape, *Bombing to Win*, 9-10.

appropriately resourced without reducing the effectiveness of other forces to an unacceptable level.

Location also affects targeting. A new location for forces might also allow the joint force to target a new piece of the enemy's system which was previously unavailable. Adaptation will also be key to targeting, and the joint force will need to continually assess their targeting choices to determine if the initial analysis of the enemy's warfighting system was correct and adjust if necessary. Inhibiting this process will be a peer adversary's technological parity with the United States. The joint force will need to apply ingenuity and creativity early to re-establish the advantage that the United States has enjoyed in recent conflicts against less technologically equipped foes.

In determining the resources that a fight against a peer adversary might require, today's planners can look to the model of the AWP documents. An effort like this would help anticipate the needs of the joint force and the price it would ask of the U.S. economy. Performing this analysis prior to initiation of a conflict could identify gaps and shortfalls in the United States' ability to resource a peer conflict before they manifest themselves during hostilities. Additionally, as was seen in the fight between Allied air forces and the Luftwaffe, the air war in a peer conflict will likely become a "resourcing race" to replace combat losses and continue the fight. An analysis of adversaries' ability to resource will help joint force planners anticipate how the United States will fare in such a race.

As mentioned, a peer adversary will be much more able to match the United States in technology. The precision strikes that have been the hallmark of recent conflicts may be negated by enemy countermeasures. The joint force must find ways to continue to utilize precision, but also have options if it is not available, or is denied during conflict. The USAAF's tactic of

utilizing precision targets as the primary objective and having backups which did not require precision will ensure that each sortie that today's joint force executes will have the best chance at striking at the enemy. The joint force will also need to anticipate changes in technology that occur during a conflict. Although planners might not be able to guess how the technology will change, they must anticipate that changes will occur and have processes for incorporating changes into increasingly complex systems.

In addition to advocating for accelerating change, General Brown also makes a somber note: that tomorrow's airmen "must be prepared to fight through combat attrition rates and risks to the Nation that are more akin to the World War II era than the uncontested environment to which we have since become accustomed."¹⁰⁴ The takeaways from the Fifteenth Air Force's experiences discussed here will help to prepare the joint force for such a conflict and reduce the attrition rates forecasted by General Brown. As Stephen Ambrose notes, even in World War II it was feared that the USAAF's casualty rate might "deprive the United States of the elite of its youth in much the way that Ypres and Passchendaele and other World War I battles had done to England."¹⁰⁵

Whether it is through preparation in one of the categories discussed here, or through the "indomitable American spirit and know-how" that General Twinning referenced in his farewell address to the Fifteenth,¹⁰⁶ today's joint force leaders and planners must assure the victory of tomorrow's servicemembers by remembering the past. United States leadership cannot let the sacrifices and contributions of the airmen of the Fifteenth Air Force be left to history. Leaders must turn to the lessons from the U.S. Army Air Forces and apply them to today's force to ensure victory against tomorrow's adversaries.

Appendix A (Figures)

Figure 1: Eighth and Fifteenth Air Force Heavy Bomber Radii of Action in the Combined Bomber Offensive January 1943 – May 1945¹⁰⁷



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