

Under the Influence: What Factors Shaped the Character of America's
European Strategic Bombing Campaign in World War II?

A Monograph

by

Major Ralph Gary Foshee Jr
US Air Force



School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, Kansas

2019

Approved for public release; distribution is unlimited

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE (DD-MM-YYYY) 23-05-2019	2. REPORT TYPE Master's Thesis	3. DATES COVERED (From - To) JUN 2018 – MAY 2019
--	--	--

4. TITLE AND SUBTITLE Under the Influence: What Factors Shaped the Character of America's European Strategic Bombing Campaign in World War II?	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S) Maj Ralph G. Foshee Jr.	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301	8. PERFORMING ORG REPORT NUMBER
--	--

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Advanced Military Studies Program.	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT
Did the character of America's strategic bombing campaign in Europe change by 1945, and if so, how? Early American airpower theories developed at the Air Corps Tactical School focused on precision. However, in execution, strategic attacks often shifted to area bombing. These shifts and deviations shaped the character of the Allied bombing campaigns in Europe which varied between its strategic air forces, the 8th and 15th AF. These variations in character were due to a combination of factors; however, they were primarily due to mission sets, time, geography, and above all, leadership.

15. SUBJECT TERMS
Army Air Force, World War II, European Theater, Strategic Bombing, 8th Air Force, 15th Air Force

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Maj Ralph G. Foshee Jr.
a. REPORT (U)	b. ABSTRACT (U)	c. THIS PAGE (U)			19b. PHONE NUMBER (include area code) (913) 758-3300

Monograph Approval Page

Name of Candidate: Major Ralph Gary Foshee Jr

Monograph Title: Under the Influence: What Factors Shaped the Character of America's European Strategic Bombing Campaign in World War II?

Approved by:

_____, Monograph Director
John M. Curatola, PhD

_____, Seminar Leader
Glen E. Clubb, COL

_____, Director, School of Advanced Military Studies
Kirk Dorr, COL

Accepted this 23rd day of May 2019 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, PhD

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the US Army Command and General Staff College or any other government agency. (References to this study should include the foregoing statement.)

Fair use determination or copyright permission has been obtained for the inclusion of pictures, maps, graphics, and any other works incorporated into this manuscript. A work of the US government is not subject to copyright, however further publication or sale of copyrighted images is not permissible.

Abstract

Under the Influence: What Factors Shaped the Character of America's European Strategic Bombing Campaign in World War II? by Major Ralph Gary Foshee Jr, US Air Force, 62 Pages.

Did the character of America's strategic bombing campaign in Europe change by 1945, and if so, how? Early American airpower theories developed at the Air Corps Tactical School focused on precision. However, in execution, strategic attacks often shifted to area bombing. These shifts and deviations shaped the character of the Allied bombing campaigns in Europe which varied between its strategic air forces, the 8th and 15th AF. These variations in character were due to a combination of factors; however, they were primarily due to mission sets, time, geography, and above all, leadership.

Table of Contents

Acknowledgment.....	v
Acronyms	vi
Illustrations.....	vii
Introduction	1
The Mighty 8th Air Force.....	9
Mission Sets.....	10
Time.....	13
Geography	13
Targets	14
Attrition	21
The Forgotten 15th Air Force.....	23
Mission Sets.....	23
Time.....	25
Geography	26
Targets	27
Attrition	30
What Role Did Leadership Play?	31
The Character of 15th AF, Did It Change?	36
Conclusions and Application.....	46
Mission Sets.....	47
Time.....	48
Geography	49
Appendix	52
Bibliography.....	54

Acknowledgment

I would like to thank my family for their love and support during this rigorous academic year. Without them this daunting project would not have been possible. Additionally, I would also like to thank Dr John Curatola for guiding me through the process of academic research and my editor Mrs Venita Krueger. Notable thanks given to Dr Mark Hull and the Learning Resource Center, Command and General Staff College for setting the foundations for my future academic growth. Furthermore, many thanks to Dr Peter Schifferle and COL Glen Clubb for their continued mentorship supporting my efforts as a SAMS student. Finally, I want to thank each of my classmates whom I look forward to working with again down the road.

I love you Alicia, Mackenzie, Georgia, Mom, Dad, Peyton.

Acronyms

8th AF	8th Air Force
15th AF	15th Air Force
AAA	Anti-Aircraft Artillery (“Flak” derived from “Flugzeugabwehrkanone”)
ACTS	Air Corps Tactical School
AF	Air Force
AAF	Army Air Force
AWPD	Air War Planning Document
B-17	Boeing B-17 “Flying Fortress” (Heavy Bomber)
B-24	Consolidated B-24 “Liberator” (Heavy Bomber)
CBO	Combined Bomber Offensive
H2S/X	Airborne bombing radar set (aka “Mickey”)
HB	Heavy Bombers
P-51	North American Aviation P-51 “Mustang” (Long-range Fighter)
RAF	Royal Air Force
USAF	United States Air Force
USAAF	United States Army Air Forces
USSBS	<i>United States Strategic Bombing Survey</i>
V-1	German air-breathing guided missile
V-2	German ballistic rocket
V.E. Day	Victory in Europe Day

Illustrations

Figure 1.	World War II, European Theater Bomb Tonnage Timeline	6
Figure 2.	8th Air Force Targets in Germany 1945	14
Figure 3.	8th Air Force Bomb Accuracy	16
Figure 4.	8th Air Force Strategic Bombing November 1943 to April 1945.....	20
Figure 5.	15th Air Force Target Area, 1945.....	27
Figure 6.	15th Air Force Strategic Bombing.....	29
Figure 7.	Strategic Bombing of Oil Targets	40
Figure 8.	Strategic Bombing of Marshalling Yards	41
Figure 9.	Strategic Bombing of Industrial Areas (City).....	41
Figure 10.	Strategic Bombing of Railroads.....	42

Introduction

You must remember this
The flak can't always miss
Somebody's gonna die.
The odds are always too damn high
As flak goes by...
It's still the same old story
The Eighth gets all the glory
While we're the ones who die.
The odds are always too damn high
As the flak goes by.

— Mediterranean Theater ditty song, *As the Time Goes By*, quoted in Stephen Ambrose,
The Wild Blue Yonder: The Men and the Boys Who Flew the B-24s over Germany

The Allied air campaign in World War II was a watershed event for American airpower and would later stand out as a high-water mark in the application of force. Specifically, the Combined Bomber Offensive (CBO) portion of the overall air campaign was a major leap in warfare. The early theories from General William “Billy” Mitchell, Italian General Giulio Douhet, and the Air Corps Tactical School (ACTS) were put to the test as both doctrine and tactics evolved at a rapid pace. America’s entry into World War II prompted the United States Army Air Force (USAAF) to raise various units to fight in the new air domain across multiple theaters and varying environments.¹ Among the most strategically significant were the bomber organizations. This research will focus on the strategic bombing efforts from two of America’s numbered air forces, the European theater’s 8th Air Force (AF), and the younger 15th AF in the Mediterranean theater. The 9th and 12th AFs will not be focal points herein, but rather covered only as supporting efforts or as they relate to strategic bombing. Accordingly, the B-17 Flying

¹ Prior to June 1941, before America’s entry into World War II, the United States Army Air Corps (USAAC) preceded the United States Army Air Forces (USAAF). Accordingly, the abbreviation USAAC will be used throughout the work.

Fortress and B-24 Liberator heavy four-engine bombers were the primary means for American strategic bombing and thus are the focus of research.²

In order to better frame Allied employment of strategic airpower, Great Britain's Royal Air Force (RAF) Bomber Command (two and four-engine bombers) efforts will also be included. As the RAF approach to strategic bombing was quite different from the United States', it will not detract from the US-centric thesis.

The character of the Allied bombing campaigns in Europe varied between 15th and 8th AF. These varying results were due to a combination of factors; however, they were primarily due to mission sets, time, geography, and leadership. In addition to these primary factors, the unique geography and unit attrition also set these AFs apart. Much has been written of strategic bombing, with numerous accounts of the exploits of famed units like the 8th AF. However, the impacts of some units, like the 15th AF, have been glossed over by historians. Accordingly, this monograph will provide more insight into the conduct and character of the Mediterranean-based 15th AF while still exploring the uniqueness of both air campaigns. This research will examine how these two similar units, tasked with the same objective, achieved their operational goals. By 1945, the application of airpower appeared to have been very different between the two forces. During this time, 8th AF continued their strategic bombings of military targets, but they were also responsible for the devastating attacks on the German cities of Dresden and Berlin, contributing to the economic destruction of Germany and breaking the will of the German people. Each of these urban attacks resulted in numerous civilian casualties. The 15th AF was different. The younger bomber outfit maintained a steadier focus on the destruction of traditional military targets. Such targets included oil refineries and distribution facilities, factories, railroads, and bridges. The issue of "morale bombing," while not the primary focus of research, will be

² Dr. Clayton S. Chun states in *Aerospace Power in the Twenty-First Century: A Basic Primer*, while all types of aircraft could conduct strategic attack, a key determination of whether a target is strategic or not is its impact on an enemy's war-making capability. Clayton K. S. Chun, *Aerospace Power in the Twenty-First Century: A Basic Primer* (Honolulu, HI: University Press of the Pacific, 2002), 100.

addressed due to influence on the character of the respective air campaigns. Put simply, how did “morale bombing” effect both 8th and 15th AF’s?

The monograph uses qualitative research from both primary and secondary sources to frame both the 8th and 15th AF through comparative analysis across two case studies with a section devoted to each. This analysis will start in November 1943, the birth of 15th AF, until Victory in Europe Day (V.E. Day). However, the research will provide background context about the more mature 8th AF and the trajectory of the organization prior to the arrival of the 15th AF. Additionally, the mission sets of each air force will be examined while paying attention to the following differences: What were the assigned targets (quantities and types)? How and why were each air force’s respective targets different? What role did geography have in defining where each air force operated? And finally, what influence did leadership have on the character of the respective bombing efforts?

15th AF, based on its sheer proximity to Romania and the Balkan region, was predisposed to maintain focus on strategic attacks against oil and other petroleum-related targets. To use a boxing analogy, the 15th AF provided the “kidney shots,” opening a new axis of attack for the Allied bombing campaign. These strikes were not as obvious as the “jabs” and “crosses” that 8th AF conducted from England, but nonetheless had a significant impact across the entire European theater. 15th AF was instrumental in setting the conditions for not only the 8th AF success, but for Allied operations writ large.

Lastly, research will summarize the results of 15th AF’s bombing campaign and its associated steady character. Future air power operators and planners will be able to apply this research when executing the United States Air Force (USAF) refocus on Large Scale Combat Operations. Due to decades of counter-insurgency operations in the Middle East and southwest Asia, an entire generation of American aviators have grown up with a limited appreciation of what airpower can provide as a strategic line of effort. This research will address the reality and

difficulty of waging a massive bombing campaign in a contested environment against a great power actor.

Using primary sources and reports like the *United States Strategic Bombing Survey*, the leadership section will focus on its influence to either support or disprove the thesis' claim. A collection of secondary sources, which cover the spectrum of biases, provide the extremes of perspective. Some of these sources will overstate the impact of strategic bombing in Europe while others will marginalize it. The author will objectively review the claims within each source, but ultimately make conclusions justified with factual evidence (metrics, historical examples, etc.). These sources are all based on the lasting impacts of a hastily planned, albeit bold doctrine.

Prior to Imperial Japan's attack on Pearl Harbor the US Army published Air War Planning Document-1 (AWPD-1). This document and its subsequent updates became the cornerstone doctrine from which the application of airpower was applied throughout World War II. AWPD-1 focused on "industrial web theory" developed at ACTS by Laurence S. Kuter, Kenneth N. Walker, Harold L. George, and Haywood S. Hansell Jr. The basic premise of this theory was. . .

the application of air power for the breakdown of the industrial and economic structure of Germany. This concept involves the selection of systems-based objectives vital to the continued German war effort, and the means of livelihood of the German people, and tenaciously concentrating all bombing toward the destruction of those objectives.³

This doctrine boldly attempted to use airpower to destroy the systems and structures that supported the German military. As the war progressed, hard-earned experience and politics would play a part as well, and the doctrine was updated accordingly. AWPD-1 was the first-time airmen of the AAF were permitted to do their own independent planning from the greater US Army, thus

³ Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996), 259.

marking a crucial step towards future Air Force independence.⁴ AWPD-1 would later evolve into AWPD-42 after direct influences from President Roosevelt in August 1942.⁵ AWPD-42 made no fundamental changes to the original plan, but it did include the combined British-American strategic bombing campaign, the acknowledgment of a future Allied land invasion in Europe, and provisions for an air offensive against Japan after the defeat of Germany.⁶

Following America's declaration of war against Japan, Germany declared war on America. Weeks later, President Franklin D. Roosevelt and Prime Minister Winston Churchill committed to a "Germany First" strategy at the Arcadia Conference hosted at the White House in Washington, DC. This strategy resulted in an immediate buildup of American airpower in Britain, including the "Mighty 8th" Air Force.⁷

The first 8th AF units arrived in England two and one-half months after the attacks on Pearl Harbor.⁸ Despite America's quick response to create the organization, however, the actual buildup of airbases, combat crews, maintenance support, and aircraft took time. In fact, the first American heavy bombers did not arrive in England until early July 1942, approximately seven months after the attack on Hawaii.⁹ Thus, the 8th AF was only incrementally employed against Germany early on, as it added units and built combat power. Accordingly, only 17 percent of the

⁴ James C. Gaston, *Planning the American Air War* (Washington, DC: National Defense University Press, 1982), ix. AWPD was both a doctrinal framework and plan.

⁵ Gaston, 105.

⁶ *Ibid.*, 106.

⁷ Donald L. Miller, *Masters of the Air* (New York, NY: Simon and Schuster Paperbacks, 2006), 47.

⁸ Franklin D' Olier, Henry C Alexander, George W. Ball, Harry L. Bowman, John K. Galbraith, Rensis Likert, Frank A. McNamee, Paul H. Nitze, Robert P. Russell, Fred Searls, Jr., Theodore P. Wright, and Charles C. Cabot, *The United States Strategic Bombing Survey: Over-all Report (European War)* (Washington, DC: Government Printing Office, 1945), 9-10.

⁹ Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), 43.

total tonnage of bombs dropped during World War II were before January 1944 (Figure 1); during its first year, American strategic bombing was off to a slow start.¹⁰

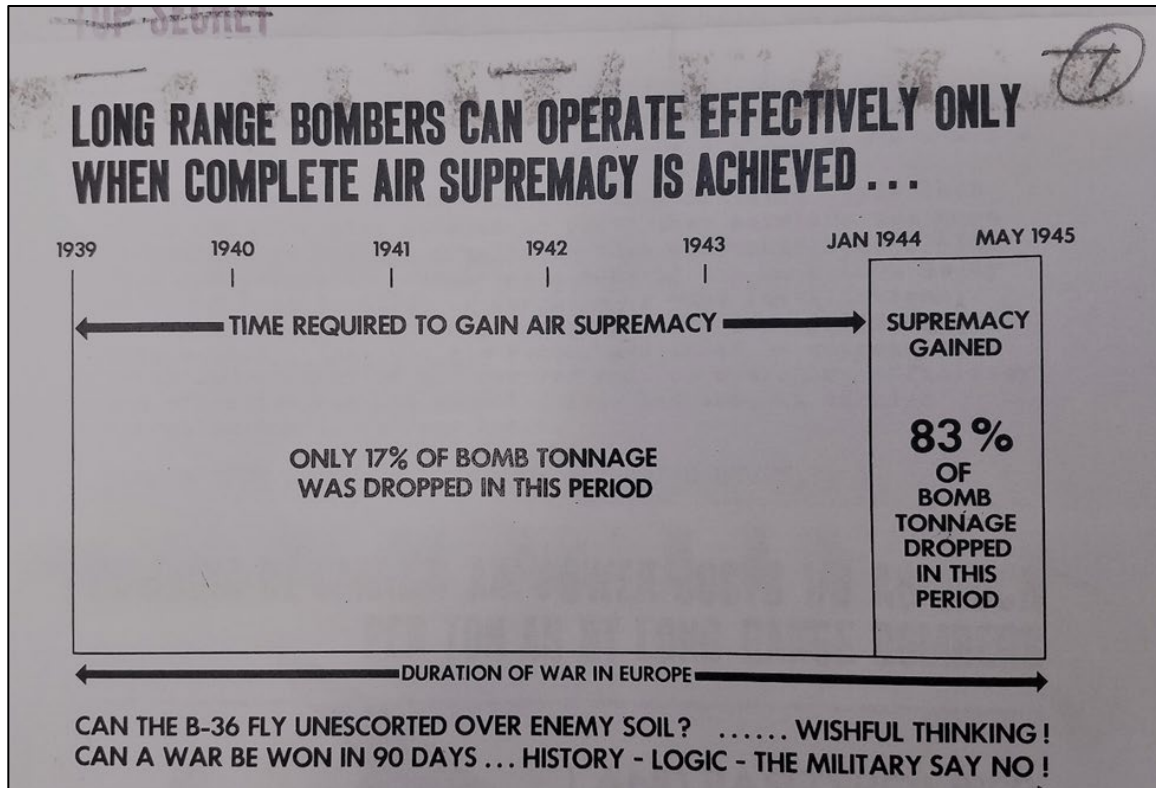


Figure 1. World War II, European Theater Bomb Tonnage Timeline: Naval History and Heritage Command, Washington DC, CNO Papers Organizational and Research and Policy (OP-23) 1932-1949, Box 169, Summary Report on B-36 Investigation G-10 Folder.

In January 1943, the Combined Chiefs of Staff published the Casablanca Directive. After the defeat of Germany in North Africa both Roosevelt and Churchill were looking beyond current operations in the Mediterranean and refining European war plans. Before the ground invasion, a CBO with British nighttime bombing and American daytime bombing was required. At first, Churchill was reluctant to the idea, but General Ira Eaker’s vision of “round the clock bombing” convinced him of its feasibility. Eaker, 8th AF Commander, promised to begin attacking the

¹⁰D’ Olier et al., 9-10.

German homeland by February, but he grossly underestimated the survivability of unescorted bombers attacking into Germany.¹¹

As active participants in the early years of World War II, both the RAF and the 8th AF reflected the political environment of the early war effort. In 1939, after the Czech crisis, the RAF was guided by restrictive principles established by Prime Minister Neville Chamberlain, Churchill's predecessor. The principles forbade the killing of civilians and reinforced the need to only target legitimate military objectives.¹² Unsurprisingly, bombing policy changed after the Battle of Britain, indicating a significant transition point in the application of British airpower. During the Battle of Britain, Churchill went as far as suggesting to Bomber Command that the campaign against Germany should be as widespread as possible, to include population centers and civilians within reach.¹³ However, the evolution of the British bombing campaign was complicated. Initially, the British maintained that their attacks would be more effective with greater target discrimination. In September 1940, instructions to Bomber Command prioritized reasonable military targets, with oil at the top of the list. However, Bomber Command's Air Officer Commanding, Air Marshall Sir Charles A. Portal, saw to it that area bombing was acceptable when he approved striking Berlin.¹⁴ Soon after, Portal was assigned as the Chief of Staff, RAF. Portal then committed to the belief that lowering German morale via aerial bombing was an acceptable alternative when targeting oil was not possible, thus making his previous views official RAF policy.¹⁵ This fundamentally changed the character of the British strategic bombing campaign.

¹¹ Miller, 111-113.

¹² Davis, *Bombing the European Axis Powers*, 9-10.

¹³ *Ibid.*, 15.

¹⁴ *Ibid.*

¹⁵ *Ibid.*, 16.

8th AF did not fly its first heavy bomber combat mission into Europe until August 1942.¹⁶ Soon after January 1943, the Combined Chiefs of Staff established the CBO; that month, the first American heavy bomber raid struck Germany.¹⁷ Within the CBO, Operation Pointblank focused strategic bombing against both German aircraft and industry in an attempt at gaining air superiority. Months prior to 15th AF's establishment, 8th AF had already matured as a battle-tested combat organization. September 1943 marked significant firsts for 8th AF. This month would mark the first use of the "H2S" radar to assist bombing, but more grimly, 8th AF also aimed at the center of a city as its desired target rather than an industrial or transportation target.¹⁸ The use of radar-bombing sets would from here forward play a pivotal role in character of strategic bombing.

15th AF was established on 1 November 1943. The 15th AF was the third and newest strategic air force in Europe. Its establishment was controversial, as General Henry "Hap" Arnold believed that a strategic bombing capability poised to strike Eastern Europe, based in the Mediterranean, would dilute resources from Britain. General Arnold, the Commanding General of the Army Air Force throughout World War II, was a bold and visionary leader committed to airpower. He was also stubborn and believed that strategic bombing from the British Isles was the most direct approach to applying airpower. Put simply, Arnold was uneasy reallocating assets away from the 8th AF. However, he was later persuaded after Portal, along with 12th AF Commander, General Carl A. "Tooe" Spaatz, described the benefits of a new axis of attack which could strike at the heart of Germany's combat power and Eastern Europe.¹⁹

¹⁶ Davis, *Bombing the European Axis Powers*, 43.

¹⁷ *Ibid.*, 93, 103.

¹⁸ *Ibid.*, 176-177. Radar-bombing sets had numerous names depending on type ("Mickey," H2X, H2S, "Gee," PFF)

¹⁹ *Ibid.*, 197-198.

The character of American strategic bombing changed drastically by V.E. Day 1945. This change, while not purely linear, was different across organizations and this research will frame the causal reasons and factors that led to an evolution in lethality.

The Mighty 8th Air Force

Six factors influenced the character of the 8th AF's bombing campaign: mission sets, time, geography, targets, attrition, and leadership. This section will assess the first five. Due to its scope, leadership will be addressed in its own section. These factors comprehensively describe the way 8th AF executed strategic bombing. Mission sets are the assigned groupings of tasks and operations distributed across the command. Time, which is rather straightforward, will primarily cover the latter half of the war from November 1943, the birth of 15th AF, forward.²⁰ Geography, a significant factor, greatly influenced where 8th AF could strike. Basing out of England significantly restricted America's first strategic air force to missions within Northern Europe. Equally, leadership and politics, dramatically changed both where and how strategic airpower was employed via its influence on targets. Such target definition changed throughout the war. Above all, attrition was the factor that had the most profound influence on 8th AF. Staggering casualties and aircraft losses during their first few years brought the organization to the brink of mission failure. Before addressing each of these factors, some theater specific influences germane to Northern Europe must be highlighted.

Above all, 8th AF felt tremendous pressure from President Eisenhower to focus on shaping efforts leading up to the continental ground invasion, Operation Overlord. However, months before the landings at D-Day, 8th AF played a significant role in Operation Argument, better known as "Big Week." "Big Week" was the first air battle in which all three Allied

²⁰ November 1943 was selected as the baseline to enable a fairer comparison for both AFs in the Character of 15th AF section.

Strategic AFs fought together.²¹ “Big Week” was the most concentrated and intense effort to date, focused on destroying one specific sector of German economic war production.²² This operation was conducted before the establishment of air superiority.²³ However, the significance of local air superiority was well understood as an enabling function to ground combat even before the war, as cited in FM 1-10 *US Army Air Corps Manual Tactics and Techniques of Air Attack*.²⁴ “Big Week” consisted of six major raids during the last week of February 1944. These raids included fighter aircraft executing both sweep and escort duties in support of their assigned bomber formations.²⁵ Thanks to new additional external fuel tanks and upgraded P-51 “Mustang” escort fighter aircraft, bomber losses were reduced to below 10 percent per raid.²⁶ This complimented a doctrinal shift that allowed the fighters to conduct “ultimate pursuit” flying untethered from bomber escort duties to pursue and destroy the Luftwaffe directly via sweep missions prior to contact.

Mission Sets

From the beginning, 8th AF set out to destroy lucrative industrial targets as described in the CBO. This application of airpower, most visibly displayed during “Big Week,” correlated with the spirit of early American airpower theory. However, throughout the war, 8th AF was tasked to support many operations that differed from the concepts developed at ACTS during the interwar years.

²¹ Davis, *Bombing the European Axis Powers*, 279.

²² Stephen L McFarland and Wesley Phillips Newton, “The American Strategic Air Offensive,” in *Case Studies in Strategic Bombardment*, eds. R. Cargill Hall (Honolulu, HI: University Press of the Pacific, 2005), 216.

²³ Ibid.

²⁴ US Army, *Army Air Corps Field Manual 1-10, Manual Tactics and Techniques of Air Attack* (Washington, DC: Government Printing Office, 1940), 115.

²⁵ “sweep” missions allowed for the offensive pursuit of enemy aircraft forward of the bomber formation.

²⁶ Allan R. Millett and Peter Maslowski, *For the Common Defense: A Military History of United States of America* (New York, NY: Simon and Schuster Paperbacks, 1994), 458-9.

Operation Pointblank was among the most crucial mission sets 8th AF supported. Pointblank was an operation nested within the overall CBO that focused on the destruction of German airpower.²⁷ However, not until mid-March, 1944, did European-based AAF aircraft reach the kind of strategic bombing capability envisioned by airpower theorists and advocates like Douhet, Mitchell, and Arnold.²⁸ Initial planning for Pointblank identified six industries as targets for destruction, in order of priority: submarines, aircraft, ball bearings, oil, synthetic rubber, and military transport. Allied leadership selected seventy-six targets within these priorities whose destruction would have the most immediate and longest-lasting effects on the battlefield.²⁹ This prioritized plan for strategic bombing would conflict with other competing named operations as the war progressed.

Three diversions would pull 8th AF away from their desired task of striking Operation Pointblank objectives. The first among them was the task to destroy V-1 air-breathing guided missiles and V-2 ballistic rocket facilities in support of Operation Crossbow.³⁰ Even though high-altitude strategic bombers were not ideal for this mission set, 8th AF was the primary unit tasked to strike Crossbow objectives.³¹ Eighty percent of nearly 500 aircraft and 2,000 aircrew lost in support of Operation Crossbow were American.³² This diversion did not result in any actual

²⁷ James L. Cate and Wesley F. Craven, eds., *The Army Air Forces in World War II, vol. 3, Europe: Argument to V.E. Day January 1944 to May 1945* (Washington, DC: Office of Air Force History, 1979), 8.

²⁸ McFarland and Newton, 221.

²⁹ “History of the Organization and Operations of the Committee of Operations Analysts,” 1942-44, File 118.01, HRA; W. W. Rostow, *Pre-Invasion Bombing Strategy: General Eisenhower's Decision of March 25, 1944* (Austin: University of Texas Press, 1981), 17; W. W. Rostow, “The London Operation: Recollections of an Economist,” unpublished manuscript, quoted in Stephen L. McFarland, *America's Pursuit of Precision Bombing, 1910-1945* (Washington, DC: Smithsonian Institution Press, 1995), 168.

³⁰ McFarland and Newton, 221.

³¹ *Ibid.*

³² *Ibid.*

reduction of V-weapon capability but simply delayed them, which was a stiff price to pay as Crossbow drew 6,100 sorties away from Pointblank missions.³³

The second significant diversion was much more reasonable when viewed through the lens of history; preparation for Operation Overlord. These missions would have a significant impact on the Allied war effort. However, two competing airpower plans were devised in support of Overlord. British Air Chief, Marshal Trafford Leigh-Mallory, Commander of Allied Expeditionary Air Force, the tactical air command for Overlord, advocated for what would become known as the “Transportation Plan.”³⁴ This plan, widely supported by British leadership, sans Churchill, focused on critical focal points like marshalling yards, repair facilities, and bridges in France, Belgium, and Western Germany.³⁵ In contrast, Spaatz, along with strong American support, advocated for the “Oil Plan.” Spaatz identified oil as a vulnerable requirement to the German wartime economy and an attack on such would force the Luftwaffe into a continuous downward spiral of fruitless attritional war against the Allied air power.³⁶ Despite greater American military support for the “Oil Plan,” Eisenhower, in late March 1944, accepted the “Transportation Plan.”³⁷ Nonetheless, by 6 June 1944, D-Day, the Allies possessed air superiority over the Overlord landing sites as the operational reach of the Luftwaffe ceased to reach the range of the French coastline.³⁸ The use of strategic airpower assets, fulfilling an interdiction role, assisted the Allied land invasion of Europe.

The third significant diversion away from Pointblank objectives was Operation Frantic. This operation involved the shuttling of aircraft between England, Italy, and the Soviet Union, as

³³ McFarland and Newton, 221.

³⁴ Ibid., 222.

³⁵ Ibid.

³⁶ Ibid., 223.

³⁷ Ibid.

³⁸ Ibid., 224-5. Both the “Transportation Plan” and “Oil Plan” were shaping efforts that set the conditions for the continental Allied landings.

aircraft launched and recovered at different bases afforded greater operational depth to strike deeper into East Germany.³⁹ The mission started in June 1944, and proved ineffective, despite striking oil refineries in Poland that, up to that point, had been untouched. However, this bold gambit had a cost. One Frantic mission, for example, resulted in the loss of forty-three parked B-17s at a Ukrainian airfield.⁴⁰ Operation Frantic was short lived and caused unnecessary political tension between the US and Soviet Union.⁴¹

Time

8th AF flew its first bomber missions in August 1942 against a marshalling yard in Rouen-Sotteville, France. These early missions were raids as small as twelve bombers, yet within the range of RAF Spitfire escort fighters, but hardly a test to the spirit of American daylight strategic bombing doctrine.⁴² The first 8th AF strikes in Germany did not come until late January 1943.⁴³ Again the focus of comparing the character of the 8th and 15th AF will span events from November 1943 till V.E. Day.

Geography

Figure 2 is a graphic from Richard Davis' *Bombing the European Axis Powers*, which displays the operational reach of the 8th AF by 1945. 8th AF missions barely went east of Berlin, Germany and thus were primarily focused on target sets in Western Europe.

³⁹ McFarland and Newton, 225.

⁴⁰ Ibid.

⁴¹ Ibid., 225-6.

⁴² Ibid., 185.

⁴³ Ibid., 187-8.



Figure 2. 8th Air Force Targets in Germany 1945: Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

Targets

What constitutes a target must be defined before target types are addressed. Per the *United States Strategic Bombing Survey Summary Report*, a “target area” is defined as a 1,000-foot radius centered around an aim point. Early Army Air Corps doctrine defined a target as the space within which fire must be placed to accomplish the desired result.⁴⁴ Curiously, the 1940 FM did not establish lateral parameters around the target and used a more conceptual definition. Post-blast assessment revealed that only 20 percent of ordinance fell within the 1,000-foot radius of identified objectives, with a peak of around 70 percent by February 1945.⁴⁵ However, the Air War Planning Document authors based accuracy calculations on a single bomber flying a training mission at 20,000 feet, with a 1.2 percent probability of hit a 100 square-foot target.⁴⁶ Thus, 220

⁴⁴ US Army, *Army Air Corps FM 1-10*, 64.

⁴⁵ David MacIsaac, *The United States Strategic Bombing Survey*, vol. 1 (New York, NY: Garland Publishing, 1976), 5.

⁴⁶ Gaston, 56.

sorties, or 6 bombardment groups, were needed to raise the probability of success to 90 percent.⁴⁷ America sought to achieve effects through volume, even though accuracy improved as the war progressed. This point is often overlooked and indeed characterized strategic bombing. The types of targets also changed at the direction of senior leadership.

Many factors contributed to the improvement in bombing accuracy, with air superiority being among the most important. Air superiority allowed more freedom of maneuver and thus the ability to strike more targets. By July 1944, United States Strategic Air Forces compiled a list of cities and towns viable for H2X radar-guided attacks.⁴⁸ The list contained 100 targets for the 8th AF, and only sixteen for the 15th AF.⁴⁹ However, poor weather forced the 8th AF to release double the tonnage on secondary targets; i.e. the nearest adjacent city.⁵⁰ Simply put, despite the promise of precision bombing via the Norden and Sperry bombsights or use of radar like H2X, strategic bombing was a brutal application of military power. Yet, radar-guided attacks tended to be very useful for area targets. Destruction of enemy area targets and the resulting demoralization were of greater importance than striking individual points within the area as described in FM 1-10 *US Army Air Corps Manual Tactic and Techniques of Air Attack*.⁵¹ Collateral damage was felt most severely around urban areas. Reference figure 3 to view the evolving 8th AF bombing accuracy.

⁴⁷ Gaston, 56.

⁴⁸ Davis, *Bombing the European Axis Powers*, 460.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ US Army, *Army Air Corps FM 1-10*, 58.

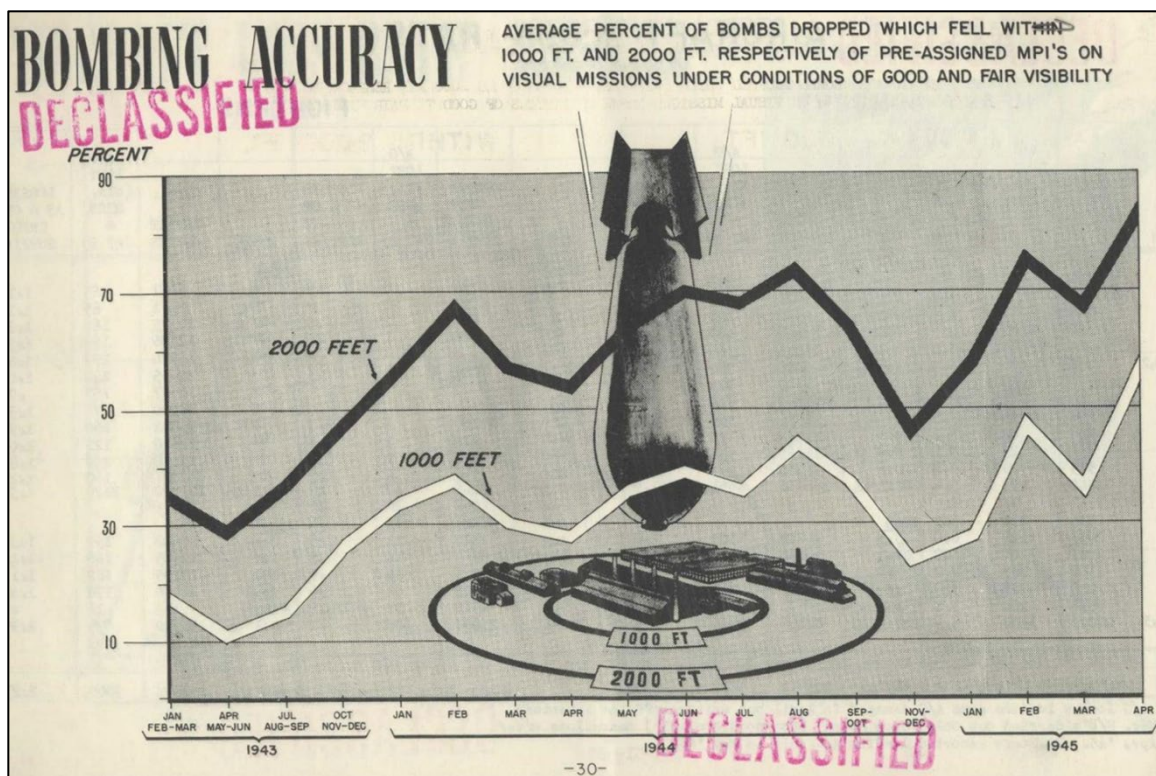


Figure 3. 8th Air Force Bomb Accuracy: Statistical Summary of Eighth Air Force Operations, 17 August 1942 - 8 May 1945, Box 5678, 8th Air Force, Records of the Army Air Forces, Record Group 18, Entry 7, National Archives at College Park, College Park, MD.

As the 8th AF's strategic bombing campaign continued, the reluctance to bomb cities waned for some American leaders. After the tragic losses of the Regensburg and Schweinfurt raids, the US argued for aiming at residential districts to make their bombings more effective and less risky.⁵² One of the advocates was none other than Brigadier General Curtis E. LeMay, who personally led the Regensburg raid. LeMay and others concluded that both homes and factories made good aim points. He argued for a British-style approach, allowing aircrew to "put down enough bombs to destroy the town."⁵³ This massing of effects would make additional missions to hit the same target unnecessary.⁵⁴ This change was an inflection point in the character of 8th AF's

⁵² Ronald Schaffer, *Wings of Judgement* (Oxford, NY: Oxford University Press., 1985), 66.

⁵³ Minutes of Combat Wing and Group Commanders meeting, Oct 21, 1943, Curtis E. LeMay Papers, LC; Schaffer, 66.

⁵⁴ *Ibid.*

bombing campaign. Just before a meeting between LeMay and other combat leaders, 8th AF made their first daylight area raid, executed in clear skies, aimed at the city center of Munster.⁵⁵ This raid was just a prelude to future area raids that would rely on radar sets to accomplish missions in poor visibility and weather. General Arnold was looking for more significant effects - bombing policy was evolving. Assistant Secretary of War, Robert Lovett, encouraged Eaker to continue such raids. Eaker needed no encouragement. While Eaker preferred more selective daylight bombing, he preferred his aircrew bomb inaccurately rather than stay grounded due to poor European weather during 1943-44.⁵⁶ Curiously, the AAF source reporting did not indicate the change in 8th AF targeting. For example, 8th AF's mission reporting from 10 October 1943 simply stated, "236 heavy bombers (HBs) attack railroads and waterways in and around Munster."⁵⁷ As intended, this change led to horrific results.

The joint 8th AF and RAF bombings of Dresden, Germany, resulted in the second man-made firestorm the world had ever witnessed, and only outdone by the RAF's prior firestorm producing attack on Hamburg, Germany in July 1943.⁵⁸ R. H. S. Crossman's *Esquire* magazine article "Apocalypse at Dresden: The Long-Suppressed Story of the Worst Massacre in the History of the World" soberly described the attack:

The Eighth Air Force was treated more gently [than RAF Bomber Command], both by politicians in Washington and by the American public . . . to this day [November 1963] it has never been officially admitted that by the end of the war they were bombing city centers and residential areas as wantonly by day as the RAF was by night . . . the myth was maintained that on every mission the Flying

⁵⁵ Minutes of Combat Wing and Group Commanders meeting, Oct 21, 1943, Curtis E. LeMay Papers, LC; Schaffer, 66-7.

⁵⁶ Eaker to Barney M. Giles, December 13, 1943, container 17, Eaker Papers; Eaker to Artemus Gates, December 16, 1943, box 324, Spaatz Papers; Schaffer, 66.

⁵⁷ Kit C. Carter and Robert Mueller, *Combat Chronology 1941-1945* (Washington, DC: Center for Air Force History, 1991), 200.

⁵⁸ Stewart Hasley Ross, *Strategic Bombing by the United States in World War II: The Myths and the Facts* (Jefferson, NC: McFarland and Company, 2003), 179. A firestorm is an intense and destructive fire where strong currents of air are drawn into the blaze, making it burn more fiercely (typically caused by intense bombing).

Fortress aimed exclusively at military targets, and this is still part of the official legend of World War II.⁵⁹

Dresden benefited from neither defensive anti-aircraft artillery (AAA) 'Flak' batteries nor any air coverage from the Luftwaffe, who by this stage in the war was in desperately short supply of fuel and pilots.⁶⁰ When allocating limited resources for defensive purposes, the German high command did not see the need to defend strategically unimportant areas.⁶¹ 8th AF struck Dresden two days in a row. The second attack was, in fact, a follow-up strike at a secondary target, as the primary oil target was rejected due to poor visibility. Stewart H. Ross pointed out in *Strategic Bombing by the United States in World War II* that official AAF communiques simply cited the attack on Dresden as directed against the city's "railroad marshalling yards."⁶² Such verbiage was typically used in place of the real targets; i.e. populated city centers.⁶³ 8th AF reporting on Dresden from 14-15 February 1945 stated:

Eighth AF: Nearly 1,300 HBs (Heavy Bombers) attack M/Ys (Marshalling Yards) at Dresden, Chemnitz, Magdeburg, and Hof, road bridge at Wesel, Dulmen oil depot 2 A/Fs (Airfields), 10 town aras [sic], and numerous T/Os (Targets of Opportunity). 16 ftr grps escort HBs or fly area sweeps, strafe ground tgts, and battle over 75 ftrs, claiming 20 destroyed.⁶⁴

Eighth AF: Over 1,000 HBs attack Magdeburg synthetic oil plant, M/Ys at Dresden, Cottbus, and Rheine, and several T/Os. 9 ftr grps fly escort and strafe transportation tgts.⁶⁵

Looking back, Dresden was the result of what came to be known as the Spaatz-Bottomley Directive.⁶⁶ General Spaatz and RAF Deputy Chief of Staff Norman Bottomley, formalized a

⁵⁹ R. H. S. Crossman, "Apocalypse at Dresden: The Long-Suppressed Story of the Worst Massacre in the History of the World," *Esquire*, November 1963; Ross, 179-80.

⁶⁰ Ross, 180.

⁶¹ Ibid.

⁶² Ibid., 181.

⁶³ Ibid.

⁶⁴ Carter and Mueller, 571.

⁶⁵ Carter and Mueller, 572.

⁶⁶ Schaffer, 95, Note (3) "communications" listed but rather implies transportation facilities.

change in targeting priorities; (1) oil, (2) Berlin, Leipzig, Dresden and “associated cities,” (3) transportation, and (4) jet aircraft related targets.⁶⁷ In the event of poor weather, common in western European winter, aircrews would release on cities via area attacks.⁶⁸ This directive was one of the most evident changes in the character of strategic bombing. General Doolittle, 8th AF Commander, did not agree with the directive. Doolittle opined to Spaatz that Operation Thunderclap (attack on Berlin) and the bombings of Dresden “violate the basic American principle of precision bombing of targets of strictly military significance for which our tactics were developed and our crews trained and indoctrinated.”⁶⁹

The following line graph graphically displays the tonnage of bombs dropped by 8th AF. The data starts in November 1943, which will enable a comparison with the same metrics from 15th AF. While over sixty target types existed, seven sets of targets show the change in strategic bombing character. However, the most significant indicators to the more liberal bombing standards rest in the specific events like the bombings at Dresden and Berlin towards the end of 8th AF’s strategic bombing campaign.

⁶⁷ Schaffer, 95.

⁶⁸ Webster and Franklin, *Strategic Air Offensive* 3: 101-4; Kuter to Giles, Cricket 38, Feb. 1, 1944, box 288, Arnold Papers, quoted in Schaffer, 95.

⁶⁹ Schaffer, 96-7; McFarland, 184.

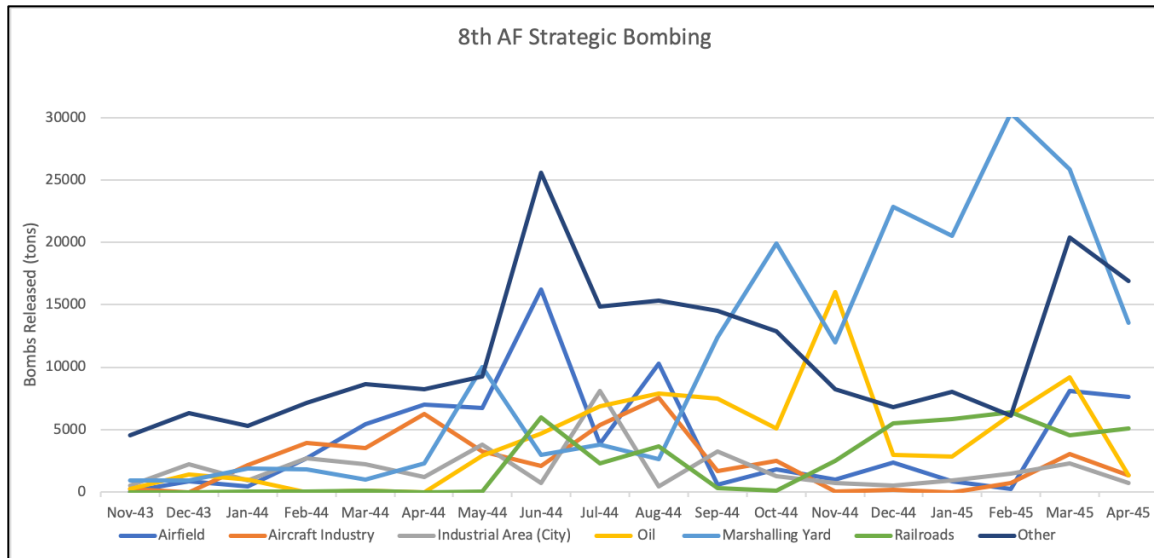


Figure 4. 8th Air Force Strategic Bombing November 1943 to April 1945: Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

Target set 1- “Airfield” includes, but is not limited to, airfields, landing strips, and airdromes.

Target set 2- “Aircraft industry” had numerous components, each relating to the production of aircraft at a specified plant or facility.

Target set 3- “Industrial Area” is more cryptic. 8th AF’s most comprehensive target summary, prepared in May 1945, does not acknowledge a single instance of city bombing from American aircraft.⁷⁰ City raids were systematically changed to other target categories, usually listed as industrial areas.⁷¹

Target set 4- “Oil” indicates all targets associated with the oil industry to include production and storage.

Target set 5- “Marshalling Yard,” as indicated in the Dresden bombing data, can also correlate with city areas.

Target set 6- “Railroads” include all facets of the rail industry.

⁷⁰ Davis, *Bombing the European Axis Powers*, Sheet Data, 7.

⁷¹ Ibid.

Finally, an “Other” category identifies targets that do not fit neatly into these specific categories.

Sources indicate some missions were described by the airmen that flew them as city raids in official reporting. These city raids held no specific military target therein and were rarely expressed as such. During the time frame of this research, 8th AF flew 111 such missions.⁷²

Attrition

By August 1943, the Luftwaffe and 8th AF were deep in battle with near daily contact. Though air defense was in its infancy, Germany used a network of early-warning radars and visual observers to cue ‘flak’ batteries around cities and industrial targets.⁷³ These systems would prove lethal to massive, concentrated daytime bomber raids striking into German territory. ‘Flak’ pressured Allied aircraft through the end of the war, even beyond the establishment of air superiority.

One month before the formation of 15th AF, the men of 8th AF fell on dark times. These dark times in October 1943, would become known as “Black October.”⁷⁴ Despite losses during the Regensburg and Schweinfurt raids, Eaker once again tasked 8th AF to make another unescorted raid into the heart of Germany. By mid-month, sixty bombers from a strike force of 230 were lost.⁷⁵ At this rate, 8th AF bomber crews were disappearing at a staggering 30 percent per month.⁷⁶ Even a nation fully mobilized for war, with tremendous depth in human and material resources, could not sustain losses at this rate. 8th AF attrition during October infuriated President

⁷² Davis, *Bombing the European Axis Powers*, Sheet Data and CD-ROM, 7. 1945 only included the first four months of the year as the strategic bombing campaign finished in April. Also, the few city raids included therein were extremely rare when compared to the other targets.

⁷³ McFarland and Newton, 196-7.

⁷⁴ Millett and Maslowski, 457.

⁷⁵ Ibid.

⁷⁶ Ibid.

Roosevelt.⁷⁷ He directed his anger at General Arnold and the AAF for not delivering on the months of promised decisive blows from the air.⁷⁸ Arnold, in turn, pressured Eaker to not miss any symptoms of impending German air collapse.⁷⁹

Thankfully, by 1944 aircrew attrition tapered off. As a result, airmen flew more combat sorties. The total mission count an airman needed to complete to be free from combat sorties was raised from twenty-five to thirty after 'D-Day,' and by the end of summer, the numbers increased to thirty-five.⁸⁰ While unpopular with aircrews, Doolittle explained that survival rates doubled from 35 percent in 1943, to 70 percent in 1944. Further, bombing accuracy increased to 47 percent accuracy of bombs landing within 1,000 feet of their aiming point.⁸¹

In summary, the character of 8th AF's air war was shaped by six different factors, five of which were covered in this section. Nevertheless, the *United States Strategic Bombing Survey* concluded that Germany was far more concerned with attacks against their basic industries and lines of communication rather than their armament industry or cities.⁸² Of note, no vital industry which sustained combat power was ever permanently destroyed by a single attack; thus, persistent application of airpower was necessary.⁸³

⁷⁷ Michael S. Sherry, *The Rise of American Air Power: The Creation of Armageddon* (Binghamton, NY: Vali-Ballou Press, 1987), 160.

⁷⁸ Ibid.

⁷⁹ Ibid., original quote is rather obtuse "not (repeat) not [to] miss any symptoms of impending German air collapse."

⁸⁰ Jerry Scutts, *USAAF Heavy Bomber Units ETO and MTO, 1942-45* (London: Osprey Publishing, 1977), 41; McFarland and Newton, 213. Note: This change coincided with a similar change with fighter pilots who became eligible to rotate after accruing 200 combat flying hours rather than simply meeting the 200-combat hour threshold.

⁸¹ Scutts, 41.

⁸² D'Olier et al., 108. Basic industries equate to oil, chemical, and steel per the source material.

⁸³ Ibid.

The Forgotten 15th Air Force

The same factors that influenced the 8th AF shaped the 15th AF.⁸⁴ While these factors varied, 15th AF maintained steady organizational leadership. Major General Nathan Twining led nearly from the start of the unit until the end of the war.⁸⁵ The mission sets allocated to 15th AF affected the way the unit tasked missions across the command. 15th AF was founded in Italy in November 1943, and was initially tasked to strike military targets within the national borders of its home airfield in Foggio, southern Italy. From its inception, geographic location played a significant factor in the character of 15th AF's bombing campaign. Simply put, 15th AF had an area of operations that included a "home game," and a plentitude of oil targets within its operational reach; unlike the 8th. While geography played a vital role defining the character of the 15th AF strategic bombing campaign, strategic leadership yielded the most significant influence.

Leadership and politics would affect 15th AF akin to the 8th. Both numbered air force commanders felt increasing pressure to end the war despite variances in other operational influences. Case in point, attrition, also profoundly impacted the 15th AF. Not even a year after the 15th AF flew its first missions it sustained twice the casualty rate of the 8th AF. This is a significant metric for a force half the size of the more seasoned 8th AF. While casualty rates varied from month to month, 15th AF paid above their fair share of losses despite only participating in the last half of the air campaign in Europe.

Mission Sets

15th AF divided their groups, the senior echelon to a squadron, by task after the introduction of radar-bombing sets like H2X. Accordingly, each bomber group therein was

⁸⁴ The use of 'Forgotten 15th AF' is a direct nod to Barrett Tillman's *Forgotten Fifteenth*.

⁸⁵ Doolittle commanded 15th AF from November 1943 until January 1944 before handing over command to Twining and moving up to commander, 8th AF.

assigned as either a “Red” or “Blue” Force.⁸⁶ “Red Forces” primarily targeted major German targets with the assistance of pathfinder aircraft, whereas “Blue Forces” focused on visual strikes within Italy.⁸⁷ “Red Forces,” flying as groups, some of which equipped with radar-bombing equipment, would strike major targets supported by escort fighters.⁸⁸ “Blue Forces” flew less complex missions, attacking targets visually, without the support of escort fighters.⁸⁹ Later in the war this allocation of forces meant bomber groups would routinely fly two missions in a single day, to different targets, thus maximizing combat power.⁹⁰

By late 1944, “Mickey” equipped bombers with H2X-radar carried out their own missions, flying in smaller formations rather than leading a larger force.⁹¹ While 8th AF was providing air interdiction to delay the German’s attack into the Ardennes, 15th AF was making accurate strikes on oil centers, enabled by radar-bombing equipment on 80 percent of its winter missions.⁹² The result was a two-fold increase in accuracy compared to 8th AF, as the 15th AF concentrated “blind bombing” missions to specialists within the organization rather than the usual broad spread across various groups.⁹³

Like the 8th AF, 15th AF also supported many named operations, albeit, on a much lesser scale. Case in point, Operation Frantic, the shuttle missions into and out of the Soviet Union, while a short-lived yet bold effort led by 8th AF was only supported once by the 15th AF.⁹⁴

⁸⁶ Scutts, 43.

⁸⁷ Ibid. Pathfinders were aircraft associated with bombing-radar sets that provided targeting for other aircraft.

⁸⁸ Kevin A. Mahony, *Fifteenth Air Force Against the Axis: Combat Missions over Europe during World War II* (Lanham, MD: Scarecrow Press, 2013), 413. Groups would number typically about 24 bombers per mission.

⁸⁹ Mahony, 413.

⁹⁰ Ibid.

⁹¹ Scutts, 44.

⁹² Ibid., 43.

⁹³ Scutts, 43.

⁹⁴ Barret Tillman, *Forgotten Fifteenth* (Washington, DC: Regency History, 2014), 101.

Similarly, 15th AF only flew a pair of missions against Operation Crossbow on 3 and 16 August 1944.⁹⁵ More significantly, 15th AF supported Operation Anvil-Dragoon, the Allied land invasion of southern France via the French Riviera. This operation became synonymous with “D-Day South,” and began 15 August 1944, just two months after Overlord.⁹⁶ 15th AF provided shaping efforts by striking various targets in southern France. Before the landing, 15th AF provided interdiction strikes along the shoreline before naval bombardment.⁹⁷ However, throughout the war, many French civilians fell victim to the Allied bombing campaign as a result of collateral damage. In May 1944, 15th AF attacked rail yards near the Mediterranean coast at Marseille which resulted in 1,700 civilian casualties.⁹⁸ Nonetheless, despite the civilian casualties, such interdiction efforts contributed to the low Allied casualties due to the destruction of the German defensive positions on the shore.⁹⁹

Time

15th AF’s first bombing mission was on 2 November 1943. The primary targets were the Messerschmitt airframe plants at Wiener Neustadt, in eastern Austria.¹⁰⁰ This was the most devastating attack on the Messerschmitt plants to date as the target area was beyond the operational reach of 8th AF. Accordingly, this target nested within the orthodox parameters of both traditional strategic bombing and Operation Pointblank objectives. However, the establishment of the Mediterranean-based air force was severely handicapped by the fall and winter weather. During the winter of 1943 some of the most lucrative strategic targets in Austria

⁹⁵ Cate and Craven, 532.

⁹⁶ Tillman, 137.

⁹⁷ *Ibid.*, 139.

⁹⁸ Stephen A. Bourque, *Beyond the Beach: The Allied War Against France* (Annapolis, MD: Naval Institute Press, 2018), 177.

⁹⁹ Tillman, 139.

¹⁰⁰ Cate and Craven, 25.

and southern Germany were constantly obscured by clouds.¹⁰¹ The poor weather around the target areas restricted 15th AF operations. This was in addition to poor weather around 15th AF's home base, Foggio airfield as well.¹⁰² This weather at the 15th AF's base of operations took planners by surprise as the Mediterranean-based air force was forecasted to have had more favorable weather. Time was also a factor regarding equipment and manpower. Shortages in equipment and trained aircrew restricted any robust radar-bombing campaign until spring of 1944.¹⁰³ Meanwhile, 15th AF spent a great deal of its combat power fulfilling an interdiction role in support of the landings at Anzio, Italy and strategic bombing accordingly took a backseat.¹⁰⁴

Geography

Figure 5 is a graphic from Richard Davis' *Bombing the European Axis Powers* which indicates the operational reach of the 15th AF by 1945. Unlike the previous 8th AF graphic, this 15th AF graphic shows the perpendicular attack axis from the Mediterranean. While some overlap did exist between both strategic air forces, it is worth noting that the 15th had many targets south of the Alps in Italy and targets in the Balkans.

¹⁰¹ Cate and Craven, 25.

¹⁰² Ibid.

¹⁰³ Ibid., 26.

¹⁰⁴ Cate and Craven, 26.



Figure 5. 15th Air Force Target Area, 1945: Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

Targets

Unlike the 8th AF, 15th AF had relatively few controversial targets which could directly point to a shift in character. However, the destruction of the Benedictine Abbey at Monte Cassino, Italy, stands out. This abbey was ninety miles west of the airdrome at Foggio, home of 15th AF. The monastery was viewed as standing on a strategic point which dominated the Rapido River laying along Route Six which lead to Rome.¹⁰⁵ Due to the poor translation of enemy radio communication, the culturally significant sixth-century monastery was targeted.¹⁰⁶ Field Marshal Albert Kesselring, the German commander in Italy, attempted to notify both the Vatican and Allied forces that the Wehrmacht did not intend to occupy the site. Before its destruction on 15 February 1944, 15th AF tried to mitigate civilian casualties with a leaflet drop.¹⁰⁷ This is a action nested with the American aim to mitigate civilian fatalities. Additionally, many squadrons

¹⁰⁵ Tillman, 36.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

excused some of their aircrew from the mission due to religious concerns among their Catholic personnel. Nevertheless, most fliers continued with the mission on the belief that the abbey was sheltering German troops, thus satisfying the justification for its destruction.¹⁰⁸ After the attack Eaker was profoundly embarrassed and he issued Twining a reprimand demanding that either Twining or 15th AF staff be present during the next planned strike where Allied forces were in proximity.¹⁰⁹ As a result, Twining launched an investigation and concluded a lack of bombardier training, poor airmanship, technical malfunctions, and smoke further impaired the attack.¹¹⁰ In retrospect, Eaker admitted to Supreme Allied Commander Mediterranean, Field Marshal Sir Henry Maitland Wilson, that the bombing of Monte Cassino had the lasting consequence of exposing the limitations of strategic bombers like the B-17. The attempt to fulfill a role out of line with the aircraft design failed in this case, and reinforced the fact that such missions were better suited for tactical medium bombers.¹¹¹ As expected, the source reporting on the destruction of Monte Cassino merely states:

Around 100 B-17s bomb Monte Cassino Benedictine Abbey. 60-plus B-24s attack Poggibonsi M/Y (Marshall Yard), Campoleone, and Porto d' Ascoli. Heavy cloud cover causes numerous aborts. All missions are unescorted.¹¹²

The bombing of Monte Cassino was actually the second controversial target after the attacks on Florence, Italy.¹¹³ Although the culturally important home of many masterful artworks was off limits, adjacent marshalling yards were attacked.¹¹⁴ Three of the bombers during the raid dropped their loads on the city center, prompting Eaker to warn Twining against “promiscuous

¹⁰⁸ David Hapgood and David Richardson, *Monte Cassino: The Most Controversial Battle of World War II* (Cambridge: Da Capo Press, 2002), 199, quoted in Tillman, 36.

¹⁰⁹ Tillman, 37.

¹¹⁰ Brian Hutchins, “General Nathan Twining and the Fifteenth Air Force in World War II” (Master’s Thesis, University of North Texas, May 2008), 44, quoted in Tillman, 37-8.

¹¹¹ Eaker to SACMED, 12 Apr 1944, Letter; Cate and Craven, 370.

¹¹² Carter and Mueller, 272.

¹¹³ Schaffer, 52.

¹¹⁴ *Ibid.*

attacks.”¹¹⁵ These warnings show that the negative publicity sparked from the attacks on Monte Cassino and Florence impacted 15th AF. Monte Cassino garnered global visibility as the outcry from the Vatican, and other church sources quickly grew.¹¹⁶ Expectedly, the Nazis seized the narrative prompting US officials to defend the abbey’s destruction.¹¹⁷ America even went as far as soliciting statements from American Roman Catholic leaders approving the operation.¹¹⁸ President Roosevelt stated to the world press that the bombing was an unfortunate military necessity on the premise that German artillery was suspected of being within the walls.¹¹⁹ The biggest takeaway from the bombing of Monte Cassino was the influence of outside authorities to limit the destruction of cultural treasures via airpower.¹²⁰ Figure 6 is a line graph displaying 15th AF’s target sets throughout the war.

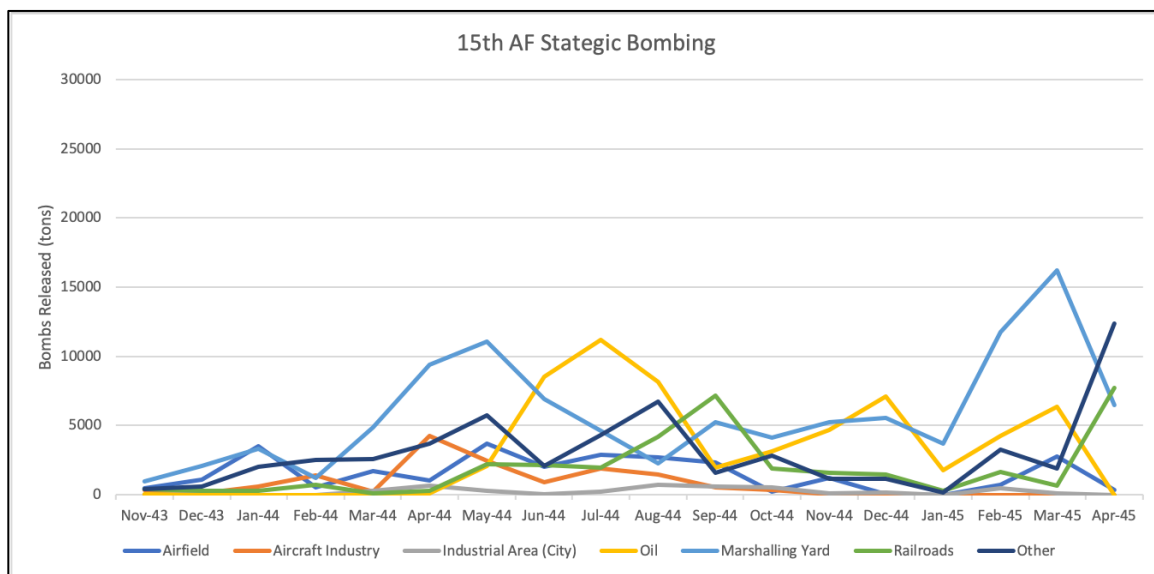


Figure 6. 15th Air Force Strategic Bombing: Richard G. Davis, *Bombing the European Axis Powers*. (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

¹¹⁵ Schaffer, 52.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ Schaffer, 52.

¹²⁰ Ibid., 50.

The comparison between the 8th and 15th AF targets will be synthesized in the section on 15th AF character. However, some highlights must be addressed out beforehand. Referencing marshalling yards indicate target sets typically located inside cities. However, 15th AF only cited city raids thirty-seven times throughout its bombing campaign.¹²¹ Figure 6 depicts some escalations in the first quarter of 1945. In Kevin Mahony's *Fifteenth Air Force Against the Axis: Combat Mission over Europe World War II*, the author claims that the 15th AF did not carry out extensive area bombing.¹²² Furthermore, 15th AF rarely utilized incendiary weapons, a prime choice for area bombing.¹²³ Practically all incendiary missions were flown in the fall and winter of 1944, and most targeted marshalling yards.¹²⁴ Utilizing Davis' European theater bombing statistics of the same period, 15th AF dropped approximately 7,000 tons of incendiary bombs compared to the 8th AF's 94,000 tons; a 13-fold difference. Despite the limited employment of incendiary weapons, 15th AF did report increases through 1945 of marshalling yard attacks, these did not decrease until the last month of the strategic bombing campaign.

Attrition

Even though the 15th AF did not have to endure the first few difficult years of the war, their time in Italy was fraught with plenty of challenges and losses. In July 1944, 15th AF lost 317 heavy bombers making it the costliest month in its history.¹²⁵ While many of the targets that the 15th AF attacked, such as oil, were outside of Germany, they proved to be exceptionally difficult to destroy.¹²⁶ 'Flak' batteries extended beyond the borders of Germany and were prevalent around many strategic targets. For example, at the strategically significant oil targets at

¹²¹ Davis, *Bombing the European Axis Powers*, CD-ROM.

¹²² Mahony, 405.

¹²³ Ibid.

¹²⁴ Mahony, 405.

¹²⁵ Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Government Printing Office, 1992), 440.

¹²⁶ Ibid.

Ploesti, 15th AF losses show the tremendous impact that ‘flak’ had against their bombers. To put losses into perspective, by July 1944, 15th AF had less than half (1,407) of the 8th AF (3,492) heavy bombers, yet at that time, the Mediterranean-based AF had twice the casualty rate.¹²⁷ Additionally, as cities and targets were destroyed, the associated ‘flak’ systems could be reallocated to other areas, thus offering stiffer coverage as more ‘flak’ pieces had fewer targets to defend.¹²⁸

What Role Did Leadership Play?

Conrad C. Crane in *Bombs, Cities, and Civilians* stated that loose doctrinal and command directions resulted in a bombing policy shaped primarily at the operational level and below.¹²⁹ However, the evidence in this section shows issues at the strategic level as well. Though, the defeat of Axis powers “ends” was not cleanly the summation of how best to properly execute strategic bombing “ways” via massive strikes “means.” Specifically, the concept of strategic bombing was interpreted very differently at the strategic level of leadership. Many commanders eschewed the concept of “terror bombing,” but some leaders at the highest levels, including President Roosevelt, were more open to purposeful morale bombing.¹³⁰ In contrast, Secretary of War Henry L. Stimson opposed the intentional targeting of civilians. Stimson opined that only General George C. Marshall shared a similar viewpoint.¹³¹ However, while reviewing into the bombings of Dresden, Stimson assessed that the results from America’s bombing of the city “were practically unobserved.”¹³² Stimson asked that the city be photographed so the “actual facts

¹²⁷ Davis, *Carl A. Spaatz and the Air War in Europe*, 440.

¹²⁸ Data discerned during a visit to The Mighty 8th Air Force Museum in Savannah, GA, 27 December 2018.

¹²⁹ Conrad C. Crane, *Bombs, Cities, and Civilians* (Lawrence, KS: University of Kansas, 1993), 7.

¹³⁰ *Ibid.*, 32.

¹³¹ *Ibid.*, 35.

¹³² Schaffer, 100.

made known,” but he did not follow up with an independent investigation and the matter was dropped.¹³³ Moreover, General Arnold, America’s senior ranking airman, expressed views which significantly varied between his personal and public personas. In private, an aide noted that Arnold maintained “an open mind” on terror bombing.¹³⁴ In public, however, Arnold cited terror bombing as “abhorrent to our humanity of decency.”¹³⁵ Unsurprisingly, strategic bombing policy lacked clarity. In the aftermath of Dresden’s destruction, Arnold responded to Stimson’s concern over the character of the objective.¹³⁶ Arnold replied, “We must not get soft. War must be destructive and to a certain extent inhumane and ruthless.”¹³⁷

The records, intentional or not, on US bombing policy are sparse.¹³⁸ Despite good intentions, e.g., precautious target identification, alternate targets, and approach angles directed away from populated areas, visual bombing with the Norden bombsight up until September 1943 was inconsistent at best.¹³⁹ However, Brigadier General Fred Anderson, commander of VIII Bomber Command, amended 8th AF actions with the June 1943 “Bombardment Directive” in support of Operation Pointblank. This directive stated that “any target in Germany is cleared for attack at any time.”¹⁴⁰ This direction from leadership within the War Department resulted in more liberal targeting of cities with the 8th AF’s first attack on the German city, Bonn, was in August

¹³³ Schaffer, 100.

¹³⁴ Lawrence Kuter to F. L. Anderson, 8 August 1944, file 145.161-7, April 1944-May 1945, misc. correspondence of Anderson and Kuter, Air Force Historical Research Agency (AFHRA), Maxwell AFB, AL; Crane, 33.

¹³⁵ Henry H. Arnold, “Precision Blows for Victory: A Report to the Nation,” text of planned speeches scheduled for Soldiers Field, Chicago, on 16 May 1943, Box 9A, Anderson Papers. This wording was typical of Arnold’s rhetoric. Quoted in Crane, 33.

¹³⁶ Schaffer, 103.

¹³⁷ Ibid.

¹³⁸ Davis, *Bombing the European Axis Powers*, 449.

¹³⁹ Ibid., 450.

¹⁴⁰ Chauncy, to commanding general, VIII Bomber Command, and commanding general, VIII Fighter Command, memorandum, “Bombardment Directive,” 27 June 1943; AF/HSO microfilm, reel A5885, fr. 615, quoted in Davis, *Bombing the European Axis Powers*, 452.

1943. This directive was a clear shift in the character of the strategic bombing campaign that fundamentally departed from the prewar doctrine developed in the interwar period.

This change coincided with the introduction of the RAF's H2S radar-bombing device.¹⁴¹ In September 1943, the 8th AF would conduct its first intentional area bombing by targeting the city of Emden.¹⁴² Henceforth, 8th AF's city bombing would become more frequent. This shift was similar to the shift in character of the RAF's bombing campaign as cited in the "Butt Report." The British shift towards terror bombing was the result of their abysmal accuracy at night, leading to the deliberate targeting of German cities in a Douhetian act of desperation.¹⁴³ The American shift toward more liberal bombing was a direct result of leadership. In January 1944, Arnold relieved Eaker from command of the 8th AF and replaced him with Doolittle, citing his unhappiness with the bombing campaign against Germany not having been as effective as desired.¹⁴⁴

An additional change was encouraged by Anderson to intensify the war. Anderson was responsible for the 8th AF's increased use of incendiary weapons. The use of area bombing and incendiary weapons escalated the brutal character of the maturing 8th AF's air campaign.¹⁴⁵ As pressure built up in December 1943, with Overlord six months away, Arnold issued the following New Year's message to his field commanders, "It is a conceded fact that Overlord . . . will not be possible unless the German Air Force is destroyed. Therefore, my personal message to you--this

¹⁴¹ Davis, *Bombing the European Axis Powers*, 453.

¹⁴² Ibid.

¹⁴³ Miller, 54.

¹⁴⁴ Harry S. Laver and Jeffrey J. Matthews, eds., *The Art of Command: Military Leadership from George Washington to Colin Powell* (Lexington, KY: University Press of Kentucky, 2010), 170.

¹⁴⁵ Davis, *Bombing the European Axis Powers*, 454.

is a must—is to, ‘Destroy the Enemy Air Force wherever you find them, in the air, on the ground and in the factories’.”¹⁴⁶

Another example of leadership’s influence on the 8th AF was evident in June 1944. General Eisenhower, in opposition to both Spaatz and Doolittle, directed the 8th AF to area bomb French towns to impede German reinforcements in response to the Allied D-Day invasion.¹⁴⁷ This example highlights the struggle operational USAAF leadership and pressure from strategic leaders who demanded that airpower speed up the destruction of the German state. 8th AF’s area bombings would recede again by August 1944 as they refocused on air targets and oil in Germany rather than cities.¹⁴⁸ Conversely, in November 1944, Robert Lovett, Assistant Secretary for Air under Secretary of War Stimson, insisted that the Air Forces in Europe seize a “second chance” to end the war via a climactic campaign of terror bombing.¹⁴⁹ Strategic directions, fueled the USAAF’s need to enhance their reputation by achieving victory, were inseparable from the objectives of strategic bombing.¹⁵⁰

The latter half of 1944 also included pressure from British leadership to participate in Operation Thunderclap, an apocalyptic Anglo-American air assault on Berlin designed to kill over a quarter-million people and destroy the heart of the Nazi government.¹⁵¹ Expectedly, Spaatz and other American air commanders and leaders opposed the purposeful targeting of civilians.¹⁵² However, the Douhetian application of airpower was supported at the strategic levels by both

¹⁴⁶ Letter Arnold to Doolittle and Twining, 27 December 1943, USSTAF Section, Air University, quoted in Robert M. Johnson II, “Strategic Endeavor: 8th Air Force Effectiveness over Europe 1942-1945” (diss., Georgia State University, 1984), 149; and McFarland and Newton, 213.

¹⁴⁷ Davis, *Bombing the European Axis Powers*, 460-1.

¹⁴⁸ *Ibid.*, 461.

¹⁴⁹ Sherry, 183.

¹⁵⁰ *Ibid.*

¹⁵¹ Miller, 411.

¹⁵² *Ibid.*

Arnold and Eisenhower, as both hoped that such a vicious assault could end the conflict.¹⁵³ Major General Laurence Kuter, Assistant Chief of Air Staff for Plans (and AWPD co-author), stated, it “[is] contrary to our national ideals to wage war against civilians.”¹⁵⁴ Further, Brigadier General Charles P. Cabell, a tactical planner, denounced the idea as a “baby killing” scheme.¹⁵⁵ Despite these feelings at the operational level, Eisenhower pressed Spaatz not to let an opportunity pass and be “prepared to take part in anything that gives real promise to ending the war quickly.”¹⁵⁶ Spaatz slowly agreed to an amended version of Thunderclap and approved an 8th AF attack centered on Berlin, with the caveat that these targets be struck only if poor weather ruled out attacks on oil targets.¹⁵⁷ This change can be tied to the immense pressure from Arnold levied upon Spaatz to end the war faster.¹⁵⁸ Spaatz accepted the necessity of this attack as a supporting effort to the Russian ground offensive from the east.¹⁵⁹

15th AF had the same strategic leadership pressures as the 8th AF. However, they had an additional layer of complexity that went further against American values, increasing airpower destruction beyond the early raids on Florence and Monte Cassino. Air raids in the Balkans reached Presidential visibility as the fallout from attacks like those in Sofia, Bulgaria, were exploited by the Soviets.¹⁶⁰ John G. Winant, US Ambassador to Great Britain, expressed that while Russian bombing was primarily confined around military targets, 85 percent of aircraft that

¹⁵³ John M. Curatola, “No Quarter Given: The Change in Strategic Bombing Application in the Pacific Theater During World War II” (Master’s Thesis, Army Command and General Staff College, Fort Leavenworth, KS, 2002), 23.

¹⁵⁴ Miller, 412; Schaffer, 80-1.

¹⁵⁵ Miller, 412; Schaffer, 83.

¹⁵⁶ Miller, 413.

¹⁵⁷ *Ibid.*, 414.

¹⁵⁸ *Ibid.*

¹⁵⁹ *Ibid.*, 415-6.

¹⁶⁰ Schaffer, 58.

struck Sofia, Budapest, and Bucharest were American.¹⁶¹ Such attacks made for poor optics. The persistent attacks on marshalling yards were proving futile as they could be repaired quickly, but the continued bombardment was strengthening the Soviet position.¹⁶² Most alarmingly the target selection for these raids was not American, but rather British. Earlier in 1944, the Combined Chiefs of Staff had given Charles Portal, RAF Chief of Air Staff, the authority to direct American actions over the Balkan cities.¹⁶³ Consequently, Secretary of State Cordell Hull recommended to President Roosevelt a change in policy as the primary psychological effect of the Allied bombings had been achieved with the Balkan people. Hull stated, “civilian losses would then be attributed to accidents of war, rather than to deliberate and indiscriminate destruction.” The Joint Chiefs of Staff agreed, and the Combined Chiefs of Staff adopted the change in late July 1944.¹⁶⁴ By November 1944, 15th AF refocused to striking oil and transportation targets, with 35 percent of sorties directed at oil (4,690 tons) and 51 percent directed at transportation targets (6,817 tons).¹⁶⁵ In summary, one can conclude that the input from US leadership, prompted by the political fallout from civilian casualties, refocused 15th AF actions.

The Character of 15th AF, Did It Change?

In a word – yes – Looking back at the character evolution of strategic bombing during the period between November 1943 and V.E. Day, change did occur. However, the change was much subtler than the 8th AF. Richard Davis succinctly states that the 15th AF fought a much different war than either the 8th AF or RAF.¹⁶⁶ This point could not be clearer as based on the evidence. In

¹⁶¹ Schaffer, 58.

¹⁶² Ibid.

¹⁶³ Winant to the President, 23 April 1944, file CCS 373.11 (5-12-44), RG 218, NA; Schaffer, 58.

¹⁶⁴ Cordell Hull to Admiral Leahy, 11 July 1944, Ibid.; Memorandum by the United States Chiefs of Staff, “Integration of Political Considerations with Military Decisions in Bombing Europe” (CCS 626), 20 July, 1944, file ABC 384.5 (25 May, 1945), RG 319, NA; Fifteenth Air Force Missions to Budapest, Nov. 27, 1944, file 670.4231, Nov. 1943-Oct. 1944, AFSHRC, quoted in Schaffer, 58-9.

¹⁶⁵ Davis, *Bombing the European Axis Powers*, 470.

¹⁶⁶ Davis, *Bombing the European Axis Power*, 566.

the end, 15th AF expended only 40 percent of its energy against Germany.¹⁶⁷ In total, 15th AF allocated slightly more than half of its missions against rail targets, 19 percent to oil targets, 14 percent to aircraft targets, and 8 percent to ground forces.¹⁶⁸ 15th AF surpassed the mighty 8th AF in bombing accuracy by the summer of 1944, which was quite an organizational feat.¹⁶⁹ The 15th AF developed fast as they quickly endured unsustainable losses during the Regensburg raids of February 1944. In one mission, the 15th combated four times the enemy fighters (200) compared to the 8th AF (50).¹⁷⁰ Accordingly, the 15th AF lost nearly one-quarter of its bombers during the raid.¹⁷¹ Thankfully, the Allies secured air supremacy that same month. However, “Ultra” intelligence intercepts revealed that the Germans were reorganizing their defenses to protect their southern flank from air attacks, leading to catastrophic results for Twining’s men.¹⁷² Surprisingly, when the 15th AF eclipsed 8th AF in bombing accuracy, they also took the lead in combat losses, with 340 aircraft (the vast majority of which were heavy bombers) loses in July 1944.¹⁷³ These two events together are indicative of the professionalism and airmanship of America’s Mediterranean-based aircrews.

Nevertheless, both air forces equally felt the pressure from leadership at the highest levels. The strain originated both within and above the War Department as the need to finish the war in Europe increased. The greatest source of this pressure was the strategic requirement to reallocate resources to the Pacific theater. Despite years of strategic attack from Allied bombers via a variety of methods and operations, the Axis powers in Europe endured. Leadership had, above all, the most direct impact on the character of both air force’s bombing campaign. This

¹⁶⁷ Davis, *Bombing the European Axis Power*, 566.

¹⁶⁸ Mahony, 401.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid., 55.

¹⁷¹ Ibid., 56.

¹⁷² Ibid.

¹⁷³ Ibid., 165.

broad influence was held at the highest levels of both civilian and military command and reflected the emergent politics that demanded a conclusion to the war in Europe. Prophetically, this move towards Clausewitzian “absolute war” so late in the campaign was not surprising, but rather a doctrinally forecasted shift. Before the Pearl Harbor attacks American leadership ranging from senior airmen like Spaatz and Arnold to leaders at the highest echelon of strategic influence like Marshall, Stimson, and President Roosevelt all endorsed AWPD-1.¹⁷⁴ APWD-1 stated:

Timeliness of attack is most important in the conduct of air operations directly against civilian morale. If the morale of the people is already low because of sustained suffering and deprivation and because the people are losing faith in the ability of the armed forces to win a favorable decision, then the massive and continuous bombing of cities may crash that morale entirely. However, if these conditions do not exist, the area bombing of cities may stiffen the resistance of the population, especially if the attacks are weak and sporadic. . . . It is believed that the entire bombing effort might be applied to this purpose when it becomes apparent that the proper psychological conditions exist.¹⁷⁵

In execution, US strategic bombing policy strove to only attack targets of military value. However, while Eisenhower insisted that USAAF bombers use precision targeting, he claimed he was “always prepared to take part in anything that gives real promise to end the war quickly.”¹⁷⁶ Eisenhower’s statement was in line with AWPD-1, which further cited that “it may become highly profitable to deliver a large scale, all-out attack on the civil population of Berlin. In this event, any or all the bombardment forces may be diverted for this mission.”¹⁷⁷ By the late summer of 1944, after the Allied land invasion, this perspective could easily be understood. Strategic bombing reached an inflection point when bombing areas like cities became less effective, ton for ton, after mid-1944.¹⁷⁸ Also in August of that year, President Roosevelt was thinking long-term about the fate of the German people. In a communication to Secretary of the

¹⁷⁴ Davis, *Carl A. Spaatz and the Air War in Europe*, 436.

¹⁷⁵ *Ibid.*, 435-6.

¹⁷⁶ *Ibid.*, 437.

¹⁷⁷ AWPD-1, p.7, tab 1, p. 9, tab 2, p.5, quoted in Pape, 262.

¹⁷⁸ MacIsaac, *The United States Strategic Bombing Survey*, 74.

Treasury, Henry Morgenthau Jr., Roosevelt stated, “We have to be tough with Germany, and I mean the German people, not just the Nazis. We either have to castrate the German people, or you have got to treat them in such a manner so they can’t just go on reproducing people who want to continue the way they have in the past.”¹⁷⁹ This audacious viewpoint from the top of the American chain of command would ripple down to the bomber crews by spring 1945. It was believed that attacks aimed at terrorizing enemy civilians were acceptable to the President.¹⁸⁰

This shift to a more aggressive approach influenced Air Force leadership’s more liberal application of air power through policies like the Spaatz-Bromley Directive. However, the 15th AF did not use incendiary weapons in area bombing attacks.¹⁸¹ Nor did 15th AF’s city bombing rate of 4 percent compare to either the 8th AF’s 13 percent, or the RAF’s 51 percent.¹⁸² By both design and location, the 15th AF specialized in striking transportation and oil targets, and thus these strategic, militarily relevant targets consumed two-thirds of Twining’s bombs.¹⁸³

The best method to capture the evolutionary and emergent application of airpower is to compare the respective targets of each air force by type. Oil targets stand out specifically for the 15th, as referenced in figure 7. In total, 15th AF flew 19 percent of its missions against oil. Also, 15th AF had much more accurate strikes against oil centers compared to 8th AF. 15th AF effectively used radar on 80 percent of its winter missions. 15th AF’s decision to concentrate its blind-bombing specialists in one part of its bomber force rather than spread expertise across its groups resulted in a double accuracy rate over the 8th AF.¹⁸⁴

¹⁷⁹ Schaffer, 88.

¹⁸⁰ Ibid., 89.

¹⁸¹ Davis, *Bombing the European Axis Powers*, 566.

¹⁸² Ibid.

¹⁸³ Ibid.

¹⁸⁴ Scutts, 43.

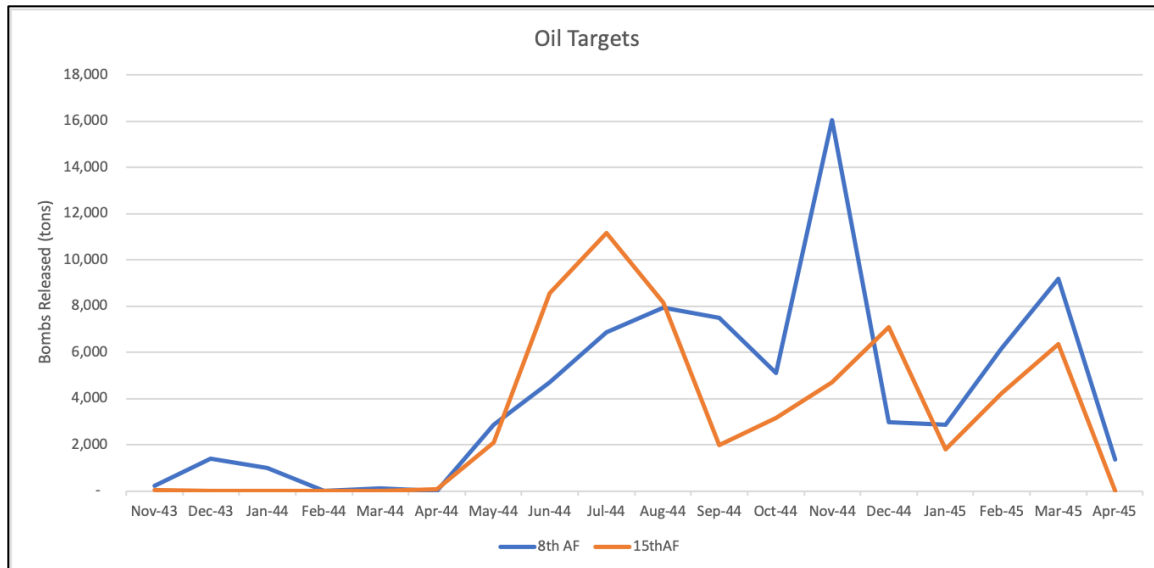


Figure 7. Strategic Bombing of Oil Targets: Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

Marshalling yards and industrial areas were less distinct compared to oil targets, as often both coexisted in urban environments and caused civilian casualties. Similarly, railroads also blurred the lines of distinction for targeting. However, multiple bombings of an area reduced inflammability which forced the employment of even larger proportions of high explosive bombs to make the same effect as incendiary bombs.¹⁸⁵ Thus, precision weapons dropped against a specific target like marshalling yards covered a wide area and were often recorded as attacks against the transportation system.¹⁸⁶ In turn, the accuracy rates for such a large target set were high. Both air forces had similar amounts of marshalling yard targets relative to their respective size and structure. However, cities attacks remained relatively low for the 15th. It can be deduced that while the change in the overall character of the air war shifted due to leadership, it could not change the fact that the 15th AF was a smaller force. 15th AF was a supporting effort to open a southern attack axis against the enemy's abundant amount of oil targets in the Balkans, Austria, and southern Germany. This included also included railroads, such that on multiple occasions

¹⁸⁵ MacIsaac, *The United States Strategic Bombing Survey*, 74.

¹⁸⁶ *Ibid.*, 72.

15th AF exceeded the tonnage dropped compared to 8th AF. This fact is not surprising seeing the background and location of the 15th AF.

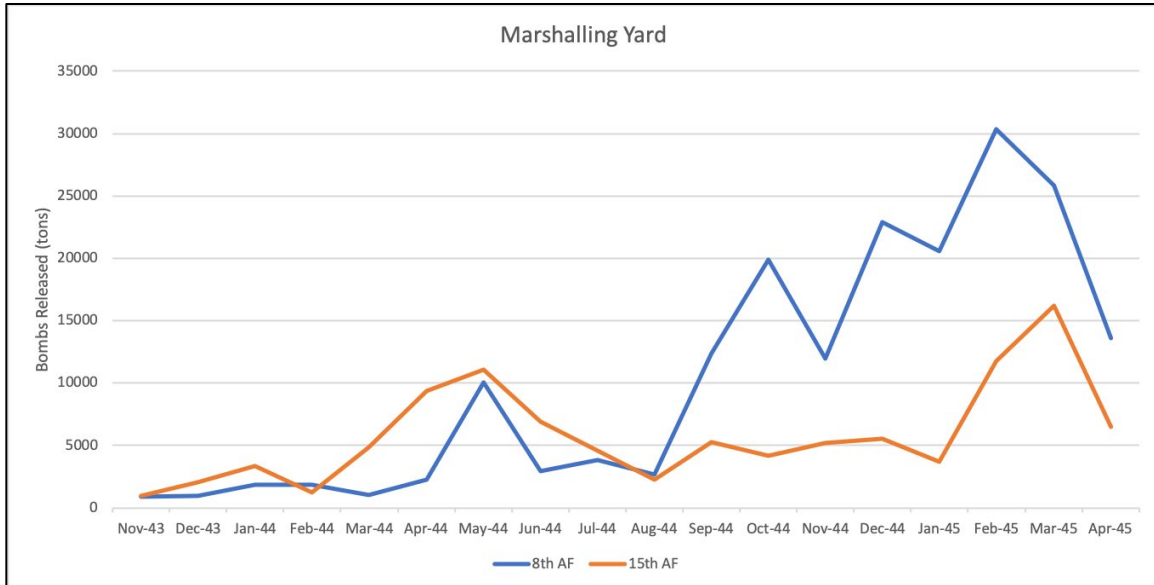


Figure 8. Strategic Bombing of Marshalling Yards: Richard G. Davis, *Bombing the European Axis Powers*. (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

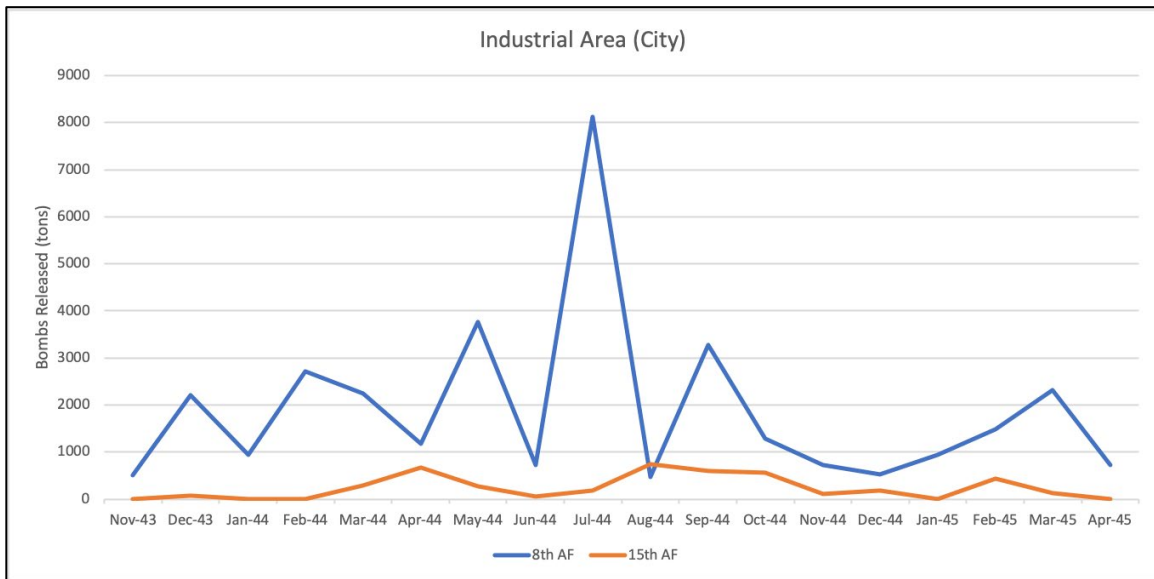


Figure 9. Strategic Bombing of Industrial Areas (City): Richard G. Davis, *Bombing the European Axis Powers*. (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

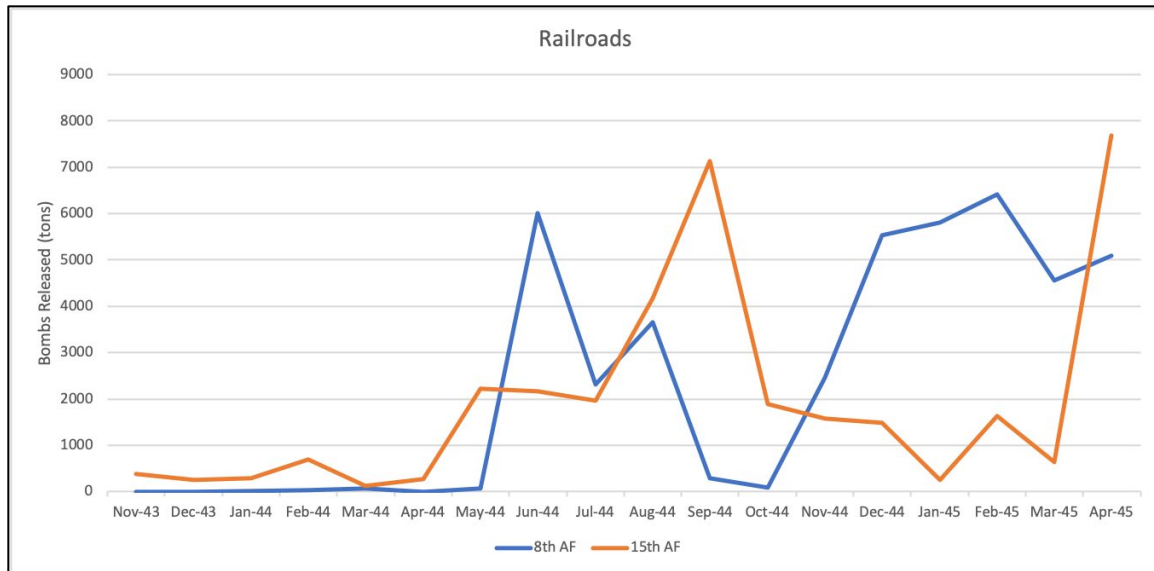


Figure 10. Strategic Bombing of Railroads: Richard G. Davis, *Bombing the European Axis Powers*. (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

15th AF conducted only 18 percent of its sorties with radars like the H2X.¹⁸⁷ However, while the relatively light use of H2X can be a bit deceiving, 15th AF used radar in much higher numbers during the last six months of the war as it increased attacks on marshalling yards and their associated cities.¹⁸⁸ Specifically, the city of Linz required a 65 percent H2X rate thus leading the Anderson to conclude such cities sustained, “an area type of bombing.”¹⁸⁹ Despite its steady character, the 15th AF’s bombing campaign changed in the last stage of the war.

How much did radar-enabled bombing contribute to the character shift? The poor winter visibility greatly affected strategic bombing. The introduction of radar-bombing, a technology in its infancy, greatly accelerated American daylight bombing yet tended to shift the attention away from precision results.¹⁹⁰ The use of radar to acquire targets allowed the bombers to continue mission despite the numerous environmental impediments to accuracy with precision easily being

¹⁸⁷ Davis, *Bombing the European Axis Powers*, 544.

¹⁸⁸ Ibid, 546.

¹⁸⁹ Ibid.

¹⁹⁰ Cate and Craven, 18.

one of the most significant tradeoffs. However, radar was not useless as radar-guided bombing allowed aircrews to continue mission despite poor weather or smokescreens while still increasing accuracy.¹⁹¹ Though, the use of radar-assisted bombing was given the nickname of “blind bombing” for a reason. Senior Air Force leadership was intimately aware of the limitations of radar. Case in point, Spaatz told Arnold that 80 percent of 8th AF and 70 percent of 15th AF missions were flown conducting blind bombing in late 1944 due to poor weather and heavy rain.¹⁹²

Per J. F. C. Fuller’s *The Conduct of Warfare, 1789-1961*, strategic bombing contributed to the continued dehumanization of warfare which traced its way all the way back to the French *levee en masse* of 1793.¹⁹³ Strategic bombing is just one of many leaps in warfare lethality, one that was quickly eclipsed by nuclear weapons. Unfortunately, this leap had an exponential higher civilian casualties as a result.

In Ronald Schaffer’s *Wings of Judgement*, he notes that the last year of the war in Europe, one of the obstacles to direct attacks on Germany – a shortage of aircraft – no longer constrained the limits of bombing.¹⁹⁴ In July 1944, the British Chiefs of Staff of the Air Ministry put together an analysis of proposals that could end the war via terror raids.¹⁹⁵ This plan suggested the bombings of small towns, several larger cities, strafing attacks on civilian objectives, and a single attack on Berlin.¹⁹⁶ This conclusion was grounded in a pragmatic analysis that leaned towards Douhetian warfare. However, Kuter received the plan in Washington and concluded that direct attacks on German civilians would not affect Nazi policy, as citizens of a

¹⁹¹ Mahony, 164.

¹⁹² Davis, *Bombing the European Axis Powers*, 439.

¹⁹³ J. F. C. Fuller, *The Conduct of War, 1789-1961* (New Brunswick, NJ: Rutgers University Press, 1961), quoted in MacIsaac, *The United States Strategic Bombing Survey*, xxi.

¹⁹⁴ Schaffer, 80.

¹⁹⁵ Ibid.

¹⁹⁶ Ibid.

police state had far less influence on their government.¹⁹⁷ The USSBS noted that an increase in political dissidence correlated with more bombings, little could be done. The USSBS concluded, “in a determined police state, however, there is a wide difference between dissatisfaction and expressed opposition.”¹⁹⁸ This counter by Kuter was in fundamental opposition to Douhet’s theory that war could end more quickly via the direct attack on the civilian population and resulting pressure on the government to end the conflict. However, despite Kuter’s objections, Arnold directed the air staff planners to continue planning efforts that would break the German morale.¹⁹⁹ In the American tradition of a reluctance to shed civilian blood, Kuter pushed forward with a plan which invoked terror without killing, echoing the 1926 Air Service Manual.²⁰⁰

A pair of bold plans, the latter of which saw full execution, could have had an even more significant impact on the character of the air war. First, Operation Aphrodite was a plan to use “War Weary” bombers packed with explosives and flown remotely to a target area. Ultimately, the project failed despite being the “pet project” of Arnold. Spaatz pushed back, but it is an additional indicator of Arnold’s acceptance to the loose employment of airpower in late 1944.²⁰¹

Next, Operation Clarion, drafted in December 1944, was a proposal for systematic terror raids. It called for a vast series of low-altitude attacks by small groups of aircraft across all of Germany.²⁰² Both commanders of 8th and 15th AF, Doolittle and Twining, opposed the plan.²⁰³ Doolittle countered that the attacks on civilians could lead to retaliation against Allied prisoners of war and such an operation would boost Nazi propaganda efforts.²⁰⁴ Twining offered that an

¹⁹⁷ Schaffer, 81.

¹⁹⁸ MacIsaac, *The United States Strategic Bombing Survey*, 4.

¹⁹⁹ Schaffer, 82.

²⁰⁰ Ibid.

²⁰¹ Schaffer, 85.

²⁰² Ibid., 91.

²⁰³ Ibid.

²⁰⁴ Ibid.

ethical stateside response about civilian casualties should be considered as well.²⁰⁵ Clarion went into action after the destruction of Dresden. Interestingly, in the immediate wake of Dresden, 8th AF flew raids without a significant number of incendiary weapons.²⁰⁶ The week following the destruction of Dresden nearly 1,400 bombers struck transportation targets in forty small cities and towns as yet untouched by bombing.²⁰⁷ Specifically, on 21 February 1945, the day before Operation Clarion, 8th AF flew a “maximum effort” against the city of Nurnberg’s marshalling yards. This raid included almost 1,200 bombers who employed nearly 2,900 tons of ordinance, almost 40 percent of which were incendiaries.²⁰⁸ While Spaatz would embrace Clarion, it was not well received by either Anderson or Eaker. Eaker stated, “It will absolutely convince the Germans that we are the barbarians they say we are. . . Of all the people killed in this attack, over ninety-five percent of them can be expected to be civilians.”²⁰⁹ Nevertheless, Clarion proceeded with Eisenhower’s support.²¹⁰ Both 8th and 15th AF flew their Clarion missions at unusually low altitudes, some aircraft released their ordinance as low as 6,000 feet.²¹¹ Thus, very few of Clarion’s bombs fell on the civilian population as accuracy was remarkable.²¹² They had one-third as many gross errors, down to 8 percent. Twenty-six percent of the bombs fell within 500 feet of their aiming point thus a positive reflection of low altitude release, clear visibility, and no ‘flak.’²¹³ Interestingly, 8th AF loaded less than one-fifth of one percent of incendiary weapons on the Clarion missions indicating that the raids were not designed to have broad civilian

²⁰⁵ Schaffer, 91.

²⁰⁶ Davis, *Bombing the European Axis Powers*, 506.

²⁰⁷ McFarland, 184.

²⁰⁸ Davis, *Bombing the European Axis Powers*, 506.

²⁰⁹ *Ibid.*, 507.

²¹⁰ *Ibid.*, 506.

²¹¹ *Ibid.*, 508.

²¹² *Ibid.*, 509.

²¹³ *Ibid.*

casualties.²¹⁴ 15th AF had limited impact on Clarion as they were not as fortunate with the weather and thus were unable to hit many of their primary targets.²¹⁵ In the end, Clarion was not repeated as the operation needed a particular set of weather conditions for low-altitude employment and the results were not easily quantifiable.²¹⁶

As mentioned, the character change for 15th AF was subtler than that of the 8th AF. Both air forces fought very different wars despite sharing the same objective and leadership influences at the highest levels. Yet, the escalated use of radar-guided bombing and default to secondary targets which blurred the lines of distinct strategic importance was unexpected before the start of research.

Conclusions and Application

In conclusion, contemporary military planning must bear in mind the conflict's expected character and application of force. Even by modern standards it remains quite remarkable that the lead World War II air planners drafted AWPD-1 in less than ten days. This tremendous accomplishment was the result of four young men tasked to guide American airpower to victory.²¹⁷ However, the promise of airpower did not fully deliver as efficiently as expected. American airmen like 'Hap' Arnold, Ira Eaker, and Carl Spaatz thought that strategic bombing, not large-scale ground operations, would be the main instrument of Germany's defeat.²¹⁸ Simply put, they were wrong. Despite a noble effort to destroy military targets, strategic airpower gave way to an enormous number of civilian casualties and urban destruction in the wake of strategic bombing with some examples of Douhetian type attacks on cities like Dresden and Berlin.

²¹⁴ Davis, *Bombing the European Axis Powers*, 510.

²¹⁵ Mahony, 322.

²¹⁶ Davis, *Bombing the European Axis Powers*, 510.

²¹⁷ Gaston, 4.

²¹⁸ Pape, 265.

How did this character change in airpower occur? Precision bombsights like the Norden and the emergent use of airborne-radar to mass effects on a target area was indeed complex. Nonetheless, many airmen like Spaatz, Doolittle, and Twining desired only to target military objectives. The character of the air war changed primarily due to the shift in acceptable target definitions by strategic leadership. Yet, such change manifested itself in different ways for each of America's strategic air forces. Specifically, the major changes from the June 1943 Operation Pointblank, VIII Bomber Command "Bomber Directive" and the early 1945 Spaatz-Bromley Directive resulted in a more liberal employment of strategic bombing. These directives were a harsh result of senior leaders desperate to end the war in Europe with the latter directive a direct consequence from President Roosevelt's political pressure.

Nonetheless, in Hansell's memoir, the AWPD-1 planner noted that attacks on urban areas are an effective last resort measure.²¹⁹ Both hindsight and the published contemporary doctrine during World War II eluded to an escalation in the application of strategic airpower. Bounded by the limits of technology, strategic airpower escalation resulted in attacks which often turned precision bombing into area bombing.²²⁰ Nevertheless, this reality did not dissuade American Air Forces from their commitments to daylight precision strategic bombing.²²¹ Clearly, the character of the American strategic bombing campaign changed, but what were the most significant influences beyond leadership?

Mission Sets

8th AF flew a larger variety of operations compared to their counterpart. This factor reflected the 8th AF's role as the main effort in strategic American airpower. 8th AF was nearly double in size compared to 15th AF and had years more experience. However, 15th AF did not

²¹⁹ Haywood S. Hansell Jr., *The Strategic Air War Against Germany and Japan: A Memoir*, edited by Richard H. Kohn and Joseph P. Harahan (Washington, DC: Office of Air Force History, 1986), 272.

²²⁰ McFarland, 185.

²²¹ Ibid.

have post-mission fallout like the 8th AF, due to mass civilian casualties but incremental increases in attacks on marshalling yards were evident from both strategic air force. The decisive blows from 15th AF's "kidney shots" were indeed effective complementary efforts to the 8th AF's cross channel missions against the Axis powers. Yet, the lack of 15th AF's participation in the attacks on Dresden and Berlin along with its sparse use of incendiary bombs is noteworthy. As previously stated, the 15th AF's city bombing rate of 4 percent seems quite modest to 8th AF's 13 percent; yet the combined American tonnage of bombs aimed at cities was far less than "Bomber" Harris' RAF 51 percent.²²² As previously stated, both air forces fought two distinctly different wars.

Time

The time explored throughout the research focused on the latter half of World War II after the birth of 15th AF till V.E. Day. However, the context of what was going on within each strategic air force was unique. 8th AF was in some of their darkest days the month prior to establishment of the 15th AF known as "Black October." On the heels of the fruitless Regensburg and Schweinfurt raids 8th AF was still striking deep into Germany. Topping out at a 30 percent attrition rate for bombers the opening of a new axis of attack from the south would contribute, along with changes in escort aircraft and tactics, to less aircraft losses for the 8th AF enabling it to regain combat power. Likewise, 15th AF was a product of humble beginnings constructed part in parcel from various groups and wings moved to Italy. Unlike England, the 15th AF was home to an occupied nation. Accordingly, its initial bombing efforts were much more localized due to its vicinity to enemy forces.

²²² Davis, *Bombing the European Axis Powers*, 566.

Geography

Opening a new strategic axis of attack from Italy that would expand throughout the Balkans and up to Germany was a valid, albeit, controversial move. The proximity to oil targets in Ploesti and the Balkan region was a tremendous opportunity. These oil targets were beyond the operational reach of the 8th AF, however, some overlap in bomber radii existed just north of the Alps. Research revealed that the 15th AF prosecuted a variety of targets, not simply the oil-related objectives in the Balkans and Austria. More than half of the missions flown by the 15th were against rail targets.

Areas for further research could look more deeply into the types of ordinance used between the 15th AF compared to the 8th, beyond incendiary weapons. More interestingly, a comparison between the US and RAF weaponning may reveal unique differences between the two nations; one of which that was under the constant threat of attacks from V-series rockets or bombing and the other an Atlantic Ocean away. The air war executed by the RAF's "Bomber" Harris was different from the Americans. Despite these differences their causal factors warrant further research. Looking deeper within the 15th AF is probably the most interesting facet of World War II strategic bombing that should be expanded upon. The "Forgotten Fifteenth" had a fraction of the coverage compared to the 8th AF or RAF. Likewise, a comparison of the operations and missions shared across the bomber groups within each numbered air force could be revealing. Above all, a deeper study into specific targets and the sequencing of effects to end the war more quickly could be explored with greater fidelity.

Given these points, Hansell also noted in his memoirs the missed prioritization in the targeting of electric power systems. Electric power fell from first to thirteenth priority thus painfully indicating a missed opportunity.²²³ This lost opportunity was the result of a discounted systems approach which concluded that electric power was thought to be beyond the means of

²²³ Hansell, 260.

conventional military force to influence.²²⁴ This subject could be explored much more in-depth as modern day political and military leaders could garner important lessons from missed opportunities in history for future campaigns. Today, some of these targets can be attacked more effectively through non-kinetic effects like cyber. However, kinetic destruction via a strategic attack from bomber aircraft or long-range precision fires could realistically also support such an effort.

Contemporary operational planners should heed the emergent changes of strategic airpower in World War II Europe, the character of war changed due to many influences with leadership being one of the most pronounced influences. Early theories like those from Mitchell and Douhet were refined at ACTS and shaped a small foundational cadre of strategic-minded airmen. These airmen shaped early doctrine like AWPD-1 while it evolved through application its concepts endured. American planners were fortunate that the necessary industrial capacity and human capital supported their theories to establish and sustain strategic airpower. Large scale combat operations in the 21st century will not have nearly the same operational variables as World War II, yet the influence of politics on leadership and strategy will endure. How will bomber-based strategic attack support these efforts? Caroline Ziemke, in testimony after the Gulf War, noted “strategic bombing is not mere doctrine to the USAF; it is its lifeblood and provides its *raison d’etre*. Strategic bombing is as central to the identity of the Air Force as the New Testament is the Catholic Church.”²²⁵

Conversely, some modern historians contend this is not the case in 2019. The USAF had 10,000 bombers in the wake of World War II as it entered the Cold War era. Today the USAF has

²²⁴ Hansell, 260.

²²⁵ Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 265.

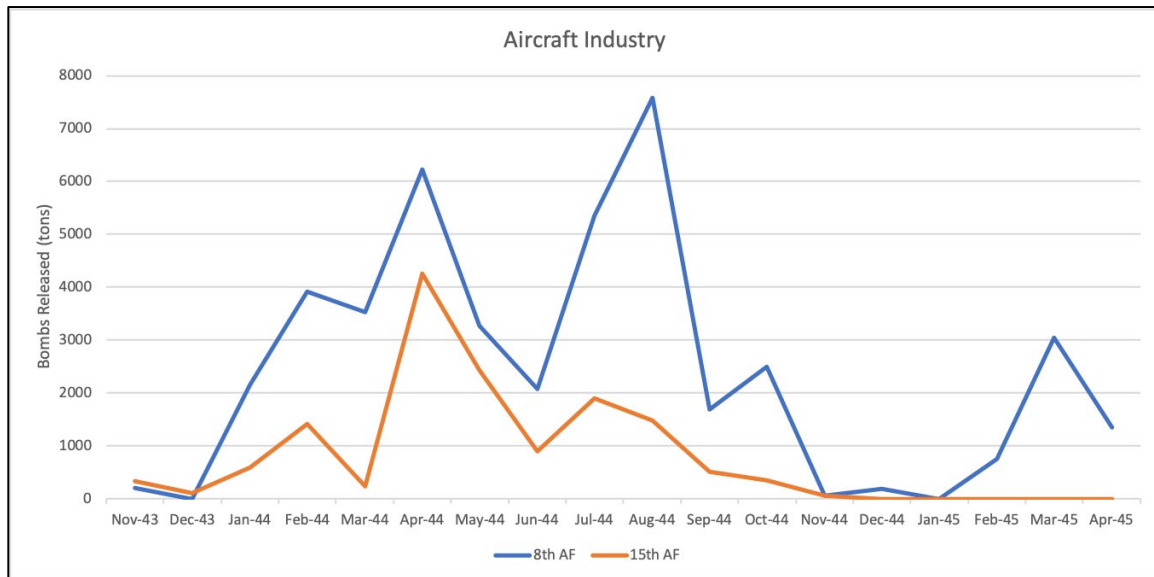
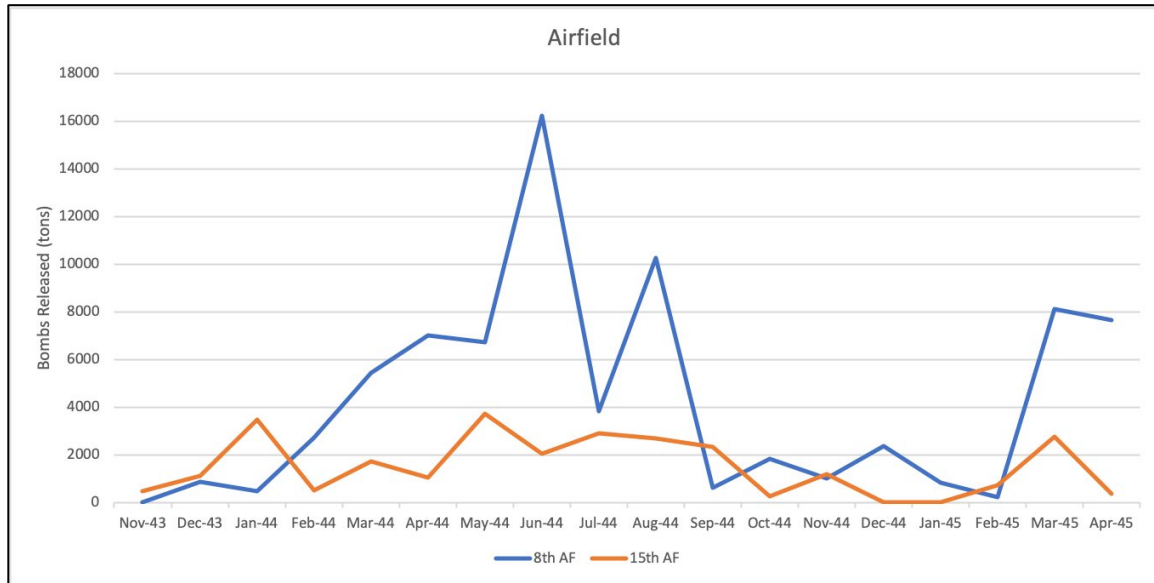
just 200 bombers; one-tenth the size of its 2,000 fighter force.²²⁶ The 21st century USAF will continue to depend upon strategic attack with weapons and capabilities that far exceed those of World War II. Future 21st-century battlefields could realistically ignite into a conflict between great power competitors as described in current national security documents. Such future battle will severely restrict America's strategic bomber force in the face of anti-access/area-denial capability like robust intergraded air defense systems. Penetrating these systems will demand both kinetic and non-kinetic effects like cyber synchronized with kinetic strategic attack. US Navy Captain Jerry Hendrix (Retired) contends in his recent article "How the Air Force Lost Its Way" that the United States lacks the resources to fight large, multi-front wars.²²⁷ Accordingly, even greater pressure will weigh upon the shoulders of strategic planners and operators who seek to achieve the effects needed as quickly as possible. The deliberate attritional wars that both the 8th and 15th AF fought over the skies of Europe in World War II cannot realistically be replicated in tomorrow's war based on current American industrial and economic capacities. Modern military officers should understand the history of America's reliance on strategic bombing and its viability on tomorrow's battlefield. Accordingly, understanding the influences on its associated character of warfare is important to the operational planner who will synchronize these capabilities in time and space to meet strategic objectives. While the nature of war remains constant, its character evolves.

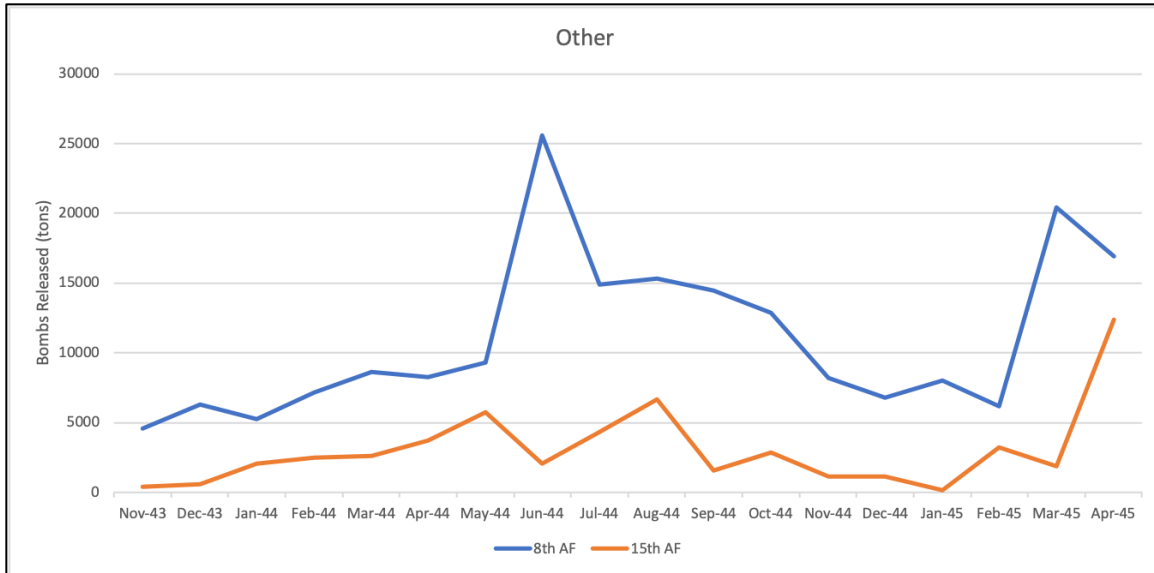
²²⁶ Jerry Hendrix, "How the Air Force Lost Its Way," *The National Review*, January 10, 2019, accessed January 17, 2019, <https://www.nationalreview.com/magazine/2019/01/28/how-the-air-force-lost-its-way/>.

²²⁷ Ibid.

Appendix

The following charts continue the comparison between the 8th and 15th AF targeting. As depicted 8th AF exceeded the 15th AF in bombing Airfields, Aircraft Industry, and Other targets.





Richard G. Davis, *Bombing the European Axis Powers* (Maxwell AFB, AL: Air University Press, 2006), CD-ROM.

Bibliography

- Bourque, Stephen A. *Beyond the Beach: The Allied War Against France*. Annapolis, MD: Naval Institute Press, 2018.
- Carter, Kit C., and Robert Mueller. *Combat Chronology 1941-1945*. Washington, DC: Center for Air Force History, 1991.
- Cate, James L., and Wesley F. Craven, eds. *The Army Air Forces in World War II*. Vol. 3, *Europe: Argument to V.E. Day January 1944 to May 1945*. Washington, DC: Office of Air Force History, 1979.
- Chun, Clayton K. S. *Aerospace Power in the Twenty-First Century: A Basic Primer*. Honolulu, HI: University Press of the Pacific, 2002.
- Clodfelter, Mark. *The Limits of Airpower*. New York, NY: The Free Press, 1989.
- Crane, Conrad C. *Bombs, Cities, and Civilians*. Lawrence, KS: University of Kansas, 1993.
- Curatola, John M. "No Quarter Given: The Change in Strategic Bombing Application in the Pacific Theater During World War II." Master's Thesis, Army Command and General Staff College, Fort Leavenworth, KS, 2002.
- Davis, Richard G. *Bombing the European Axis Powers*. Maxwell AFB, AL: Air University Press, 2006.
- _____. *Carl A. Spaatz and the Air War in Europe*. Washington, DC: Government Printing Office, 1992.
- D'Olier, Franklin, Henry C Alexander, George W. Ball, Harry L. Bowman, John K. Galbraith, Rensis Likert, Frank A. McNamee, Paul H. Nitze, Robert P. Russell, Fred Searls, Jr., Theodore P. Wright, and Charles C. Cabot. *The United States Strategic Bombing Survey: Over-all Report (European War)*. Washington, DC: Government Printing Office, 1945.
- Gaston, James C. *Planning the American Air War*. Washington, DC: National Defense University Press, 1982.
- Hansell Jr., Haywood S. *The Strategic Air War Against Germany and Japan: A Memoir*. Edited by Richard H. Kohn and Joseph P. Harahan. Washington, DC: Office of Air Force History, 1986.
- Hendrix, Jerry. "How the Air Force Lost Its Way." *The National Review*, January 10, 2019. Accessed January 17, 2019. <https://www.nationalreview.com/magazine/2019/01/28/how-the-air-force-lost-its-way/>.
- Johnson II, Robert M. "Strategic Endeavor: 8th Air Force Effectiveness over Europe 1942-1945." Diss., Georgia State University, 1984.
- Lambeth, Benjamin S. *The Transformation of American Air Power*. Ithaca, NY: Cornell University Press, 2000.

- Laver, Harry S., and Jeffrey J. Matthews, eds. *The Art of Command: Military Leadership from George Washington to Colin Powell*. Lexington, KY: University Press of Kentucky, 2010.
- MacIsaac, David. *The United States Strategic Bombing Survey*, Vol. 1. New York, NY: Garland Publishing, 1976.
- _____. "Voices from the Central Blue: The Air Power Theorists." In *Makers of Modern Strategy*. Edited by Peter Paret, 624-647. Princeton, NJ: Princeton University Press, 1986.
- Mahony, Kevin A. *Fifteenth Air Force Against the Axis: Combat Missions over Europe during World War II*. Lanham, MD: Scarecrow Press, 2013.
- McFarland, Stephen L. *America's Pursuit of Precision Bombing, 1910-1945*. Washington, DC: Smithsonian Institution Press, 1995.
- McFarland, Stephen L., and Wesley Phillips Newton. "The American Strategic Air Offensive." In *Case Studies in Strategic Bombardment*. Edited by R. Cargill Hall, 183-252. Honolulu, HI: University Press of the Pacific, 2005.
- Miller, Donald L. *Masters of the Air*. New York, NY: Simon and Schuster Paperbacks, 2006.
- Millett, Allan R. and Peter Maslowski. *For the Common Defense: A Military History of United States of America*. New York, NY: Simon and Schuster Paperbacks, 1994.
- Murray, Williamson, and Allan R. Millett, eds. *Military Innovation in the Interwar Period*. New York, NY: Cambridge University Press, 1996.
- Pape, Robert A. *Bombing to Win: Air Power and Coercion in War*. Ithaca, NY: Cornell University Press, 1996.
- Ross, Stewart Hasley. *Strategic Bombing by the United States in World War II: The Myths and the Facts*. Jefferson, NC: McFarland and Company, 2003.
- Schaffer, Ronald. *Wings of Judgement*. Oxford, NY: Oxford University Press., 1985
- Scutts, Jerry. *USAAF Heavy Bomber Units ETO and MTO, 1942-45*. London: Osprey Publishing, 1977.
- Sherry, Michael S. *The Rise of American Air Power: The Creation of Armageddon*. Binghamton, NY: Vali-Ballou Press, 1987.
- Tillman, Barrett. *Forgotten Fifteenth*. Washington, DC: Regency History, 2014.
- US Army. *Army Air Corps Field Manual 1-10, Manual Tactics and Techniques of Air Attack*. Washington, DC: Government Printing Office, 1940.