

equipment), sooner, than to the Fifteenth, which ended up with a greater proportion of less-capable aircraft (B-24s and P-38s) and less ECM. In this way the AAF clearly differentiated between its bombing forces. [3] Despite prewar AAF doctrine, wartime publicity, and postwar boasts, 40 percent of the bombs dropped by the AAF in the strategic air war were aimed by non visual means. As non visual accuracy was measured in miles, and visual bombing accuracy at best averaged one-quarter of a mile, U.S. strategic bombing resulted more in area, than in precision, bombing. [4] Only a portion of the bomb load, perhaps 54 percent, fell on, or at least was aimed at, strategic targets. Combining these two aspects, the amount of visual bombing and the amount of bombs aimed at strategic targets, the overall portion of the bombs dropped effectively on strategic targets was certainly less than 50 percent, perhaps half that. In conclusion, I believe that a comparative approach reveals much about the bombing and points out both what we do and do not know. It is for others to press forward from here.

1. An earlier version of this paper was presented at the Missouri Valley History Conference, Omaha, Nebraska, in March 1991.

2. See Werrell, "The Strategic Bombing of Germany in World War II," *Journal of American History* 73 (December 1986).

3. A. Munday, *Fifteenth Air Force Combat Markings, 1943-1945* (London: Beaumont, n.d.), 3; Statistical Story of the Fifteenth Air Force, 20 [all archival material is from the USAF Historical Research Center, Maxwell AFB, Alabama]; Frank Craven and James Cate, eds., *Title Army Air Forces in World War 11, vol. 2, Europe: TORCH to POINTBLANK* (Chicago: University of Chicago Press, 1949), 564-667, 723-28, 746-47, 751.

4. Statistical Summary of Eighth Air Force Operations, European Theater, 17 August 1943-8 May 1945, 12; 15AF SS, 27.

5. The average flying time of crew members completing their mission quota in the 301st Bomb Group (15AF) in early 1944 was about seven hours per mission, those finishing late in 1944 was about eight hours. "Who Fears?": The 301st in War and Peace," is scheduled for publication in the summer of 1991. One airmen who flew with both air forces averaged six hours (on 25 missions) with the Eighth between April 1943 and February 1944 and eight hours

(on 33 missions) with the Fifteenth between July and December 1944. Lawrence Pierson to author, June 1990.

6. The B-24 was less weather worthy, more affected by weather, than the B-17, as it could not fly as high and was more susceptible to icing. While Eighth Air Force B-17s suffered 9.2 percent weather aborts during the period January 1943 through April 1945, its B-24s suffered 12.8 percent. The figures for the Fifteenth between November 1943 and April 1945 were 11.6 percent and 13.5 percent. USSBS, Weather Factors in Combat Bombardment Operations in the European Theater, 1945, 10, 20, 21, 23, appendixes IXc and Xc.

7. 353BS History, 1394-95; John Muirhead, *Those Who Fall* (New York: Morrow, 1988), 6; Frank Fitzpatrick interview; Frederick Biggs to author, 11 June 1990.

8. N. Roger Mellor to author, 5 September 1990; Jay Mueller to author, n.d., c. June 1990.

9. Diary, John Comer, 46; Fitzpatrick interview; interview, Vance Heavilin, 5 April 1990; Lyman Whitney to author, 1 April 1990; Mellor to author; Biggs to author.

10. USSTAF, "Combat Comparative Analysis of B-17 and B-24 Airplanes in the Fifteenth Air Force," April 1944.

11. United States Strategic Bombing Survey, "Daylight Bombing Accuracy of the 8th, 9th, and 15th Air Forces," 1946, 3.

12. Carl Fritsche, "B-24 Liberator," chap. in Robin Higham and Carol Williams, eds., *Flying Combat Aircraft of the USAAFUSAF*, vol. 2 (Ames: Iowa State University Press, 1978), 45.

13. The B-17 had the lowest stateside accident rate of all U.S. bombers and fighters. Army Air Forces Statistical Digest, World War 11, 1945, 308, 310. In England, the B-17 also had a lower accident rate than the B-24. 8AF SS, 57. B-24 accidents were also more serious. Headquarters First Central Medical Establishment, Aircraft Accidents, 8 September 1944.

14. In addition, the B-17 performed better under adverse runway conditions and required less time to rearm and perform average maintenance. In the Fifteenth, the Forts had a higher in commission rate and lower abort rate than the Libs. "Combat Comparative Analysis"; 15AF SS, 12, 14, 23; 15AF Statistical Summary, March 1945, 32.

15. Perhaps 11 percent of the Eighth Air Force's bombers lost went into the sea; the Fifteenth's sea losses may have been somewhat less. 8AF SS, 54, 65. My research

of one Fifteenth Air Force B-17 unit (301BG) revealed a 9 percent ditching rate. In a survey of six months of bomber ditching in both the ETO and MTO, 22 percent of the B-17s broke up, compared with 62 percent of the B-24s; 6 percent of the B-17 crews drowned, while 24 percent of the B-24 crews drowned. Overall, 38 percent of Eighth Air Force B-17 crew members who ditched survived, compared with 27 percent of B-24 crew members. 8AF SS, 54; "Ditching of the B-24 and B-17," 1.

16. In the Fifteenth, the B-17's advantage was quite clear as 1.49 B-17s were lost per one hundred effective sorties compared with 2.02 B-24s on a like basis. 15AF SS, 12; "Combat Comparative Analysis"; Alan Palmer, "Directional Density of Flak Fragments and Burst Patterns at High Altitudes," chap. in James Beyer, ed., *Wound Ballistics* (Washington: Office of the Surgeon General, 1962), 639. Also see A. H. Peterson, R. E. Tuck, and D. P. Wilkinson, "Aircraft Vulnerability in World War 11," Rand memorandum RM-402, rev. July 1950, fig. 11.

17. S. A. Stouffer, et al., *The American Soldier*, vol. 2, *Combat and Its Aftermaths* (New York: Wiley, 1949), 326, 393.

18. Frank Craven and James Cate, eds., vol. 6, *Men and Planes* (Chicago: University of Chicago Press, 1958), 206-8, 360; AAF Statistical Digest, 118, 134, 310.

19. The more precise figures are 2.66 times the total (credit) sorties, 2.82 times the sorties flying escort operations, 2.99 times the claims, and 2 times the losses. 8AF SS, 23; 15AF SS, 15, 18.

20. The only breakdown I could find (create) for Eighth Air Force fighters by type was "fighter group months": 53 percent P-51, 37 percent P-47, 8 percent P-38, and 2 percent Spitfires. Because the P-51 flew most of its missions later in the war when unit capabilities were higher than earlier, I expect that this figure understates the percentage of P-51 sorties. 8AF SS, 4, 8-13, 21, 47, 48; 15AF SS, 24; 15AF Statistical Summary, November 1943-Nov 1944, 43; 15AF Statistical Summary, April 1945, 2, 10, 12.

21. Put another way, the P-38s logged 51.3 percent of the encounters and 55.6 percent of the losses, and 38.4 percent of the claims. These percentages refer only to the P-38 and P-51 as the P-47 figures are not broken out. 15AF SS, 15, 18.

22. VIII Fighter Command, Comparative Combat Performance [Nov. 1943-Mar. 1944]; VIII Fighter Command Ratio of Claims to Losses [Mar.-May 1944]. Other Eighth Air Force statistics indicate that the