

“Battle of Kansas” and the Birth of the Superfortress

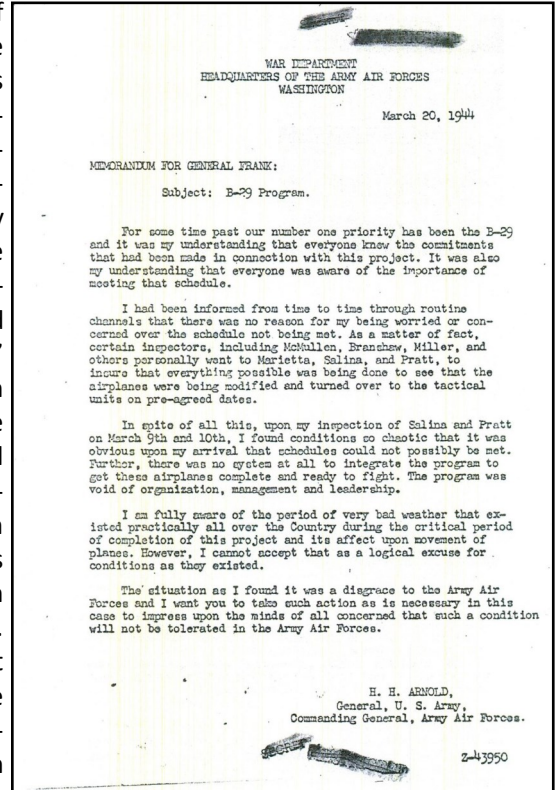
By: R. Ray Ortensie, Director, History & Heritage Directorate



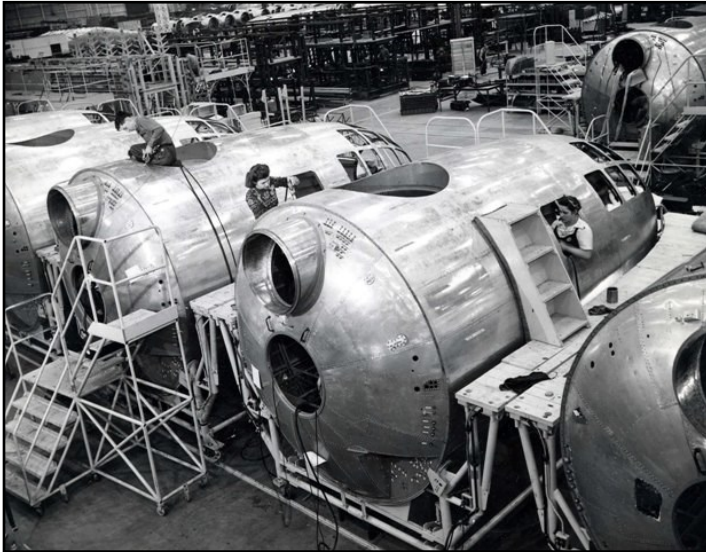
Paths to the Present FLASHBACK

Following a trip out to Kansas in March 1944 to witness first-hand the Boeing B-29 *Superfortress* production at the Boeing plant due to missed deadlines, General Henry “Hap” Arnold, Commander Army Air Force, sent a message to Major General Walter Frank, Commander Air Service Command here at Patterson Field, expressing to him the importance of the B-29 as the “number one priority” and the “importance of meeting the schedule.” Arnold went on that he had been informed through various channels that he should not be concerned of the production schedule not being met but after his inspection at Salina and Pratt, he found the conditions “so chaotic that it was obvious upon my arrival that schedules could not possibly be met” and the program was “void of organization, management, and leadership.” He found the situation a “disgrace to the Army Air Force” and charged General Frank with taking action “as is necessary in this case to impress upon the minds of all concerned that such a condition will not be tolerated in the Army Air Forces.”¹ Arnold was determined to push the B-29 Program at all costs with Washington columnist Marquis Childs stating: “He [Arnold] bullied the program through. He risked everything on its success... He drove himself too hard.”² But how did it come to the point that the Commander of the Army Air Force had to visit the production facility in Kansas and how did the B-29 Program come to realization?

During the late 1930s, “Hemispheric Defense” was a popular phrase when the war in Europe began to arouse public opinion in the United States to the dangers of Axis aggression. The Hemispheric Defense was the entire western half of the Atlantic Ocean that President Franklin D. Roosevelt had declared part of the Western Hemisphere and thus neutral with the U.S. Navy patrolling the area to disclose locations of German submarines to the British. However, here in Dayton, Ohio at Wright Field, a young captain with Materiel Command, Donald Putt,³ interpreted the phrase “hemispheric defense” in aggressive terms by drawing up a statement of military characteristics which envisioned a bombardment airplane with greater bomb capacity and longer range than any airplane ever conceived before.⁴ At the same time, while in Minnesota in September 1938, Roosevelt listened in detail to Hitler’s Nuremberg speech where he clearly indicated that he was determined to go to war to achieve his objective of a greater Europe under the hegemony of the Fatherland.⁵ Following this speech, Roosevelt sent Harry Hopkins, his Secretary of Commerce, secretly to the western United States to determine the readiness of the aircraft industry to generate large quantities of airplanes. During the Munich Conference in September, Hitler intimidated the British and French into giving Germany the Sudetenland with Winston Churchill, then a member of British Parliament, subsequently noted “the blackmailing power of air-bombing.” But Roosevelt noted Hitler’s confidence was due to his buildup of the Luftwaffe and was convinced that America must do the same, and fast. This set the stage for what has been called the “momentous White House meeting of 14 November 1938.” It was during this meeting,⁶ led by Roosevelt, that discussions centered around the vital necessity to significantly hasten aircraft manufacture, especially bombers, thus marking the beginning of a major buildup of US airpower.⁷



In response to the 14 November meeting and at the recommendation from Secretary of War Henry Stimson, Hap Arnold on 5 May 1939 established the Kilner Board (named after Brig Gen Walter Kilner and included Charles Lindbergh, Lt Col Carl Spaatz, Lt Col Earl Naiden, and Maj Alfred Lyon) to make recommendations for future development and procurement programs. The Board returned in June recommending aircraft and equipment to be acquired by 1944, which included a very long-range (VLR) heavy bomber – the beginnings of the B-29 program.⁸ The B-29 would ultimately become the largest operational aircraft during the War and featured state-of-the-art technology from the first pressurized cabin, dual-



wheeled, tricycle landing gear, and an analog computer-controlled fire-control system that directed four remote machine gun turrets operated by a single gunner and fire-control officer. The B-29 was the single-most expensive weapons project during the war, exceeding the cost of the Manhattan Project.

In January 1940, the Materiel Division at Wright Field circulated a formal Request for Data to which four manufacturers – Boeing, Lockheed, Douglas, and Consolidated – replied back with preliminary engineering information and bid data on designs for a long range heavy bombardment aircraft that fit within Captain Putt's military characteristics; however, the Division was disappointed with the bids due to none paying adequate attention to fire control installation, armor plate requirements, and leak proof tanks, all items which the European theater had shown to be of single most importance. Also of note, none of the manufacturers paid attention to

delivery requirements with some unrealistic as to the design upon the engines that were still in experimental stages. With the threat of war increasing, the Materiel Division wanted more than just promises.⁹

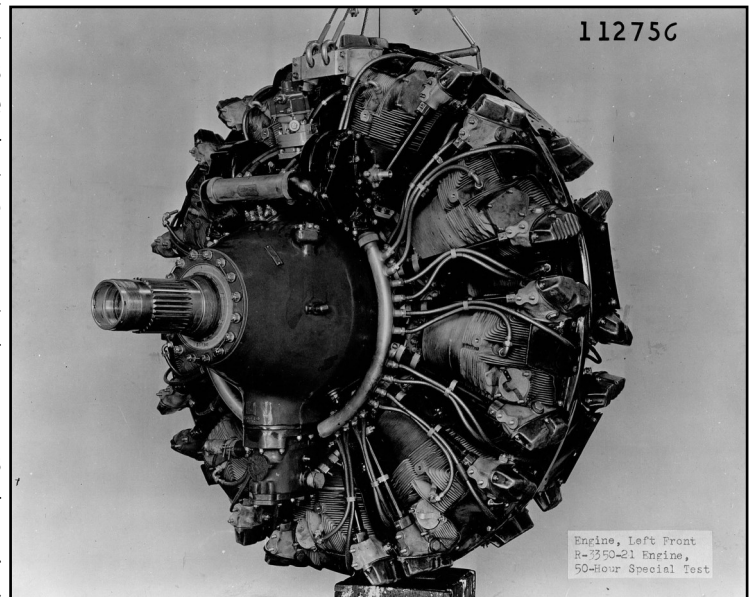
The four manufacturers resubmitted their bids with Boeing and Lockheed recommended for contracts for wind tunnel models and mockups in May 1940 and a formal approval of the contracts by Acting Secretary of War on 27 June. Boeing's Model 345 was given the Air Corps designation XB-29 and by the end of August, Arnold was ready to forward a contract for two XB-29s for a total of just over \$3.6 million to the Secretary of War for formal approval. It was during this time that Lockheed decided to abandon bombardment airplanes to specialize in pursuit types with the Chief of the Experimental Engineering Division at Wright Field requesting the extra funds be utilized to request a third XB-29; however, Arnold decided against the service test procurement due to the pressure of existing bomber production programs.¹⁰

During the early years, Arnold opposed President Franklin Roosevelt over the specific allocation of aircraft production, the President's plan to give the British more planes, which put him in a precarious position with the president. Arnold was determined to build up the air forces when it seemed inevitable that America would ultimately enter the conflict but, as one historian put it, "American air power was getting strangled in the cradle by an excess of Presidential generosity."¹¹ At one point during these early years, Arnold noted that "it was the rosy dream of some Americans that we could save the world and ourselves by sending all our weapons abroad for other men to fight with...thus depriving our own air power of even its foundation stones."¹² The Secretary of Treasury, Henry Morgenthau Jr., remembered during a mid-March 1940 meeting when Roosevelt admonished Arnold about the "airplane thing" that "when people can't control themselves or their people under them, you know what we do with those kind of people? We send them to Guam."¹³ In April 1942, Secretary of War wrote Roosevelt to say that a "complete reorientation of our thoughts" on airplane production had to be done with all requests for aircraft "not essential to our own plans" being refused.¹⁴



Between September and December 1942, test flights indicated trouble with the aircraft's engine (2,200-horsepower Wright Cyclone R-3350 turbo-supercharged), which frequently failed or caught fire. Then, on 18 February 1943, disaster struck when fire broke out in two of the engines of the second prototype plane and spread into the wings, killing Boeing test pilot Edmund Allen and his entire crew of ten as well as nineteen people in the meat-packing plant he crashed into and one fireman there in Seattle. Through investigations ordered by both Arnold and Senator Harry Truman, it was ascertained that the engines were defective and the manufacturer's quality control was unacceptable. This development led Arnold to create the B-29 Special Project Team, with Brig Gen Kenneth Wolfe and Col Leonard Harman supervising all testing, training, and production.¹⁵

During this same period, the Joint Chiefs and Combined Chiefs were in the early stages of planning of offensives against Japan and counted on conducting "an overwhelming bombing offensive against Japan" from bases in China. During each of their conferences throughout the year, air planners focused on the B-29 and an air offensive against



Japan from bases in China but the dates flexed, reflecting production issues.¹⁶ However, the first production models came off the B-29 Boeing lines in July 1943 and Arnold proposed deploying them to central China, putting them well within the 1500-mile operational range to strike at Japan's war industry. At the same time, Roosevelt sent a request to Chiang Kai-shek to build five bomber fields around Chengtu to be ready by the end of March 1944 stating that "I am personally convinced we can deal the Jap a truly crippling blow, so close to our hearts, by this sudden, surprise attack."¹⁷ In October, Lieutenant General George C. Kenney, Commander of Allied Air Forces in the Southwest Pacific, continued to push Arnold on deploying B-29s to northwestern Australia stating that all-weather runways were readily available to accommodate the *Superfortresses*. Having the B-29s in northern Australia supported Kenney's "operational concept" for targeting Japan's oil production and refining operations in the Netherlands East Indies as he stated that oil was Japan's single commodity needed "to carry on the war" and destroying their resources would remove them "as a serious opponent in a few months."¹⁸ At the same time, Roosevelt was irritated with delays with the B-29 when Arnold relayed that the B-29s were not operational yet stating to General Marshal: "The last straw was the report from Arnold that he could not get the B-29s operating out of

China until March or April next year. Everything seems to go wrong. But worst thing is that we are falling down in our promises every single time. We have not fulfilled one of them yet."¹⁹ Prior to the Cairo Conference in November 1943, Roosevelt again received news from Arnold that the B-29 would not be deployed to China by January 1944, stating that difficulties with engine production meant deployments would be delayed to March or April 1944. Roosevelt was upset with Arnold pointing out that "due to labor troubles which had held up engine production, the 'bugs' inherent in any new airplane and the logistical problems involved" had caused issues with getting the B-29 into theater. This led Robert Patterson, Under Secretary of War, and Harry Hopkins to suggest to Roosevelt that he should address all officials involved with the B-29 program to "expedite their actions."²⁰



In January 1944, of the ninety-seven aircraft that came off the production line, only sixteen were serviceable. In early March, it became clear to Arnold that the delivery schedule would not be met by the end of the month and he made a personal trip out to Salinas with Maj Gen Bennett Meyers. During the visit, he found the production in a shambles, "void of organization, management, and leadership" with

individuals unclear where missing parts and equipment were located. This prompted Arnold to order Myers to remain in Kansas to supervise the effort and reassigned the B-29 project as the top Army Air Force priority.²¹

What followed became known as "The Battle of Kansas," the effort to get 150 B-29s deployed to the China-Burma-India (CBI) Theater by mid-April. Contractors and subcontractors were directed to stop everything and get missing aircraft parts flowing immediately into the bases in Kansas. The "pell-mell" project finally turned around under General Meyers and in late March the first B-29 was turned over to XX Bomber Command and departed for India with roughly 150 planes departing for the CBI by the end of April and then moving into China. However, the deployment to India was marked by a number of crashes with five near Karachi in a two day period that was linked to the high temperatures in the India subcontinent, which caused engine failure. The Office of Flight Safety determined 14 out of 29 crashes by May 1944 were the direct result of power plant systems with 70 contributing factors of 23 different kinds observed. Of the examinations, half the accidents resulted in power system failures or malfunctions with 70-percent of that involving fires during operations and that 75 percent of the power



plant system materiel factors were associated with those fires. Due to this, a "drastic investigation" into the power plants within the B-29s was conducted by the Engineering Division back at Wright Field who pinpointed various issues with the engine. Many of the failures were linked to metallurgical faults in the valve materials caused during the fabricating processes by Thompson valves with both Thompson and Wright Aeronautical Corporation correcting the issue. Another issue was valve burning at the seats from loose valve seat inserts and were linked to faulty materiel resulting in what the Engineering Division attributed to "pressure that has been brought to bear on the contractor" to meet delivery expectations. These and other issues were subsequently solved by engineers here at Wright Field and the National Advisory Committee on Aeronautics and forwarded to both the operational units and the factory.²²

Air operations for B-29s were not based out India for a number of reasons but most significantly was due to flying over the Himalayas was exceptionally dangerous due to the lack of reliable charts, the lack of radio navigational aids, and the absence of information on weather conditions. *Superfortress* units based out of China received resupply efforts from operations out of India from Allied pilots flying the Hump; however, this mission was costly in both men and aircraft (President Roosevelt would award the Presidential Unit Citation in January 1944 to the men of the India-China airlift for their efforts and sacrifices) with "every 340 tons delivered cost[ing] the life of a pilot."²³ The first B-29 strikes against the Japanese home island from bases in China occurred on 15 June 1944 but was not successful due to operations suffered from maintenance and logistical difficulties; however, the Japanese did realize they could expect to be bombed. Of the sixty-eight B-29s that took off for this mission, only forty-seven made it to the Imperial Iron and Steel Works at Yawata in Kyushu and inflicted only slight damage was inflicted upon the target with seven planes lost, most from operational failures. Arnold wanted Wolfe to step up his attacks but Wolfe did not think Arnold's assessment of his maintenance and logistics issues were realistic with Arnold relieving him in favor of Major General Curtis LeMay. In October 1944, XXI Bomber Command began setting up on the newly captured Mariana Islands, which lay 1,500 miles from Tokyo, this not only put most of Japan within the B-29s striking range but also made it possible to supply and sustain hundreds of B-29s at once.²⁴



Questions to Think About:

How does the development and acquisition of the B-29 relate and/or differ to current weapon systems?

What were the lessons learned from the development and acquisition of the B-29? How were they applied?

Recommended Readings:

Air Technical Service Command History Office, *Historical Study No. 192 The B-29 Superfortress*, Wright Field, 21 April 1945.

Herman S. Wolk, *Cataclysm: General Hap Arnold and the Defeat of Japan*, Denton: University of North Texas Press, 2010.

AFMC/HO Outreach Site: <https://www.afmc.af.mil/History/>

Endnotes

- 1) Memo, Gen H.H. Arnold, Command General AAF, to Maj Gen Walter Frank, ASC/CC, "B-29 Program," 20 March 1944.
- 2) Marquis Childs, "Arnold's Air Victory," *The Washington Post*, 8 May 1945.
- 3) By mid-1944, now Colonel Putt was the Chief of the Engineering Division and commenting on the Safety Memorandum due to power plant issues of the first *Superfortresses* deployed to India for the war in the Pacific.
- 4) Air Technical Service Command (ATSC) History Office, *Historical Study No. 192: The B-29 Superfortress*, (Wright Field: ATSC, 21 Apr 1945), 3.
- 5) Herman S. Wolk, *Cataclysm: General Hap Arnold and the Defeat of Japan*, (Denton: University of North Texas Press, 2010), 30.
- 6) Principle members of the meeting were Roosevelt, Secretary of Treasury Henry Morgenthau, Harry Hopkins, Assistant Secretary of War Louis Johnson, Army Chief of Staff Gen Marlin Craig, Army Deputy Chief of Staff Brig Gen George Marshall, and Arnold, Chief of the Air Corps.
- 7) Mark S. Watson, *Chief of Staff: Prewar Plans and Preparations* (Washington: Center for Military History, 1950), 136, cited in Wolk, *Cataclysm*, 32.
- 8) Wolk, *Cataclysm*, 35.
- 9) ATSC, *B-29 Superfortress*, 3-4.
- 0) *Ibid.*, 4-5.
- 1) Wolk, *Cataclysm*, 37.
- 2) *Ibid.*, 37-8.
- 3) *Ibid.*, 38.
- 4) *Ibid.*, 45.
- 5) *Ibid.*, 79-80.
- 6) *Ibid.*, 68-9.
- 7) *Ibid.*, 82.
- 8) Kenney to Arnold, 29 October 1943, in *Kenney Diaries, Vol. VI*, (Washington: Center for Air Force History) cited in Wolk, *Cataclysm*, 81.
- 9) White House to Marshall, memorandum, 15 October 1943, cited in Alvin D. Coox, "Strategic Bombing in the Pacific, 1942-1945," in R. Cargill Hall, ed., *Case Studies in Strategic Bombing* (Washington: Air Force History & Museums Program, 1998), 277.
- 20) Arnold to President Roosevelt, 18 October 1943, in PSF, War Dept File, Chiang Kai-shek File, Container #2, FDRL, cited in Wolk, *Cataclysm*, 83.
- 2) Carl Berger, *B-29: The Superfortress* (New York: Ballantine Books, 1970), 55-57, cited in Wolk, *Cataclysm*, 85.
- 22) Wolk, *Cataclysm*, 85-6; Memo, Maj G.B. Speir, *R-3350 Engines*, 12 May 1944; Memo, Power Plant Laboratory, *Summary of R-3350 Engine Failures*, Engineering Division: Army Air Force Materiel Command, 7 June 1944; Memo, *Flying Safety Memorandum No. 7: Power Plant Failures in B-29 Accidents*, Office of Flight Safety: Headquarters AAF, 7 June 1944; Memo, Col J.M. Gillespie, Chief Power Plant Laboratory, to Col D.L. Putt, Chief Engineering Division, *Comments on Flying Safety Memorandum No. 7 – Power Plant Failures in B-29 Accidents*, Wright Field, 30 June 1944.
- 23) Francis Pike, *Hirohito's War: The Pacific War, 1941-1945*, (London: Bloomsbury Academic, 2016) cited in David Axe, "The Hump was One of the Deadliest Cargo Flights in History: A Third of Allied Aircrews Died Hauling Supplies to China in World War II," *War is Boring*, 18 June 2015 <https://medium.com/war-is-boring/the-hump-was-the-deadliest-cargo-flight-in-history-13fe4ff5a09>.
- 24) Arnold to Spaatz, 29 September 1944, quoted in Crave and Cate, *The Army Air Forces in World War II, Vol. 5: the Pacific: Matterhorn to Nagasaki, June 1944 to August 1945* (Washington: Office of Air Force History, 1983), 104 cited in Wolk, *Cataclysm*, 88-9.



AFMC History & Heritage Directorate

HQ AFMC/HO

4225 Logistics Ave, RM S133 - Wright-Patterson AFB 45433-5006 - DSN: 713-1797 - Comm: (937) 713-1797

For general inquiries, archives, and/or research questions, contact: R. Ray Ortensie

For heritage and exhibit questions, contact: Jack Waid

HQAFMC.HO@us.af.mil