

An Investigation into the End of World War Two:  
What impact did the B-29 Bomber have on the end of World War II.

History Internal Assessment (HL)

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Table of Contents

A. Plan of Investigation .....3

B. Summary of Evidence .....3

C. Evaluation of Sources .....6

E. Conclusion .....9

F. Bibliography .....10

## A. Plan of Investigation

The B-29 Bomber was a technology advancement that changed the way World War Two was fought in the Pacific Theater. Therefore, this investigation will evaluate the impact the B-29 Bomber had on the ending of World War II from its creation to deployment. In my research I will look at modern sources in addition to sources from the time period. These include: records of bombs dropped, the aircraft specifications, and personal accounts of the workings of the B-29. These sources will be looked at in order to accurately judge the impact and efficiency the aircraft had.

## B. Summary of Evidence

### Design

The B-29 bomber was designed and developed Boeing between 1940 and 1942 as an update to the B-17 and B-24, which were used in the European Theater for heavy city bombing (Craven). While the B-29 was ready at the end of 1943, the military commanders decided against deploying them in Europe so that they could better surprise the Japanese with the new capabilities of the planes. The B-29's final models had a range of 5,830 miles, 365 mph top speed, four 2,200-horsepower engines and a 20,000-pound bomb load. Comparatively, the B-17 had a range of 3,750 miles, 287mph top speed, four 1,200-horsepower engines, and a 9,600-pound bomb load (Boeing).

### Deployment of B-29

Discussions to first deploy the B-29 in China began at the Casablanca Conference in January 1943. The Anglo-American Combine Chiefs of Staff later agreed to a campaign to take the Mariana Islands to construct bases for the B-29's there

(Haulman). With their increased range, the B-29 bases in the Mariana Islands would have access to everything except the northernmost parts of the Main Island, still including all major military targets (Frank). While also being able to make use of a direct supply line which could not be sent to China. President Roosevelt first established the Chinese bases in order to assist their war effort. These B-29s consisted of the XX Bomber Command and would train for their primary mission, Operation Matterhorn (Craven). The first operation on June 15-16 targeted coal plants and used 68 B-29 however only one bomb hit the target. Immaturity and logistical problems in China were the main causes for the failure. In August of 1944 the commander of the XX Bombing Command was replaced by Major General Curtis LeMay (Frank). General Henry H Arnold introduced the B-29's early in talks and was put in command of a new Twenty-first Bomber Command that would operate out of the Mariana Islands (Frank).

General Curtis LeMay, was responsible for the creation of new effective bombing strategies. The classic American Air Force (AAF) doctrine, used in heavy bombing in the European Theater, consisted of high altitude, daytime raids on targets. Japanese city's were more vulnerable to incendiary attacks, due to their high density in urban areas, than Germany had been. LeMay used B-29's in the XXI Bombing Command based in the Mariana Islands to deliver "a series of maximum-effort incendiary strikes, delivered from low altitudes" as a night raid. These would come on the 9/10<sup>th</sup> of March 1945 targeting the industrial section of Tokyo. 334 B-29 bombers left, carrying 2,000 tons of bombs. "Lead squadron B-29's carried 180 x 70-pound M<sub>47</sub>'s, napalm-filled bombs" while other's carried 24 x 500-pound clusters of M<sub>69</sub>'s. The loss ratio for the mission was 4.2 per cent. 15.2 square miles was burned, including 18% of industrial

areas, 63% of commercial area and much of the high-density residential area. 267,171 buildings were destroyed, consisting of about one-fourth of the total in Tokyo. Official death count was 83,7793 and wounded 40,918. (Craven)

On February 3, 1945, a total of 937 B-17's hit Berlin with 2,266 tons of bombs. On February 13-14, 805 B-17's dropped 1,1478 tons of high explosives and 1,182 tons of incendiaries on Dresden with an estimated number of 60,00 deaths. (Frank)

### Problems of the B-29

Among problems with the weapons system and engine malfunctions, one design flaw is that "it's front and rear rows of engine cylinders were to close for efficient cooling" (Haulman). Many of these problems would be fixed in modification centers require planes to go there directly off the assembly line. Many pilots refused to fly the B-29 at first due fearing engine failure and crashing. Colonel Paul Tibbets, who would later fly the Enola Gay, showed the pilots it was safe to fly by teaching two women to pilot the plane (Tibbets).

Paul Tibbets modified his plane, the Enola Gay in a couple of different ways. First he had an engineering friend, who built him B-29s with fuel-injected engines, to solve fuel problems and electrical propellers. In addition all the guns, except for the rear ones, and armor were removed. This lightened the plane by 7,200 pounds. This allowed for better altitude and speed. Pneumatic operated bomb bay doors were also installed to allow a fast release of the bomb. (Tibbets)

### C. Evaluation of Sources

*The Army Air Forces In World War II: The Pacific: Matterhorn to Nagasaki* is an in-depth history of the actions of the Air Force during World War Two in the Pacific Theater. The origin of this comes from the Office of Air Force History in the government for the purpose of sharing its version of events. This source is most valuable in its range of topics as so many tactics and decisions are explained. It is also both a strength and a limitation in the area of discussion. By limiting the history to the Air Force it goes into much more detail in those regards but does not provide as many reasons for circumstances that may have been caused by the Army or other powers.

*Paul Tibbets Oral History* is an interview with Paul Tibbets by Dawn Letson for the Women Air Force Service Pilots, WASP, who are the origin of it. The purpose of the interview came for looking at Tibbets involvement in World War Two and with the WASP. The interview is most valuable in that it gives a close look at what Tibbets thought of the B-29 the troubles for men to fly the plane, and the specific modifications he made in order to fly the planes that dropped the atomic bombs. One limitation of the interview is that it took place in 1997, about 54 years after 1944 when the events in question took place. This may question some of the reliability but should still be trusted upon for its importance.

#### D. Analysis

During wartime there are always advancements seen all throughout society, but most directly in that of the military. The B-29 bomber is one example of an advancement of technology that had a large impact on the end of World War Two. This can be seen in it's improved use over the B-17, new tactics, and ability to carry the atomic bomb.

The B-29 is the product of a pushed technology that was needed for the war effort. Therefore the B-29 bomber was designed and developed Boeing between 1940 and 1942 (Craven). At the beginning of the war, the first heavy bombers available to the Allies were the Boeing B-17s (Boeing). The new technology of the B-29 would allow the allies to accomplish goals that were not possible before with the B-17.

The first deployment of the B-29s was chosen to be in the Pacific Theater because by the time they were ready the war in Europe was winding down and the heavy bombers there could be used. In 1943 when the war in the pacific was picking up steam, the only location suitable to deploy the heavy bombers was in china. The Anglo-American Combine Chiefs of Staff constructed bases for the B-29's along the Mariana Islands (Haulman). The increased range of the B-29's would be critical in reaching mainland Japan as the B-29 could had a range of 2,080 miles longer than the B-17 (Boeing). This would allow them to reach all the major military targets in Japan, including Tokyo (Frank).

The main mission of the B-29s was Operation Matterhorn. In this operation the XX Bomber Command would change must of the course of the war in the Theater (Craven). To train for project Matterhorn, the bomber command conducted other raids in

Japan. The first operation using the B-29 was on June 15-16 and targeted coal plants coal in Japanese occupied china and Okinawa (Frank).

It was not until General Curtis LeMay's new bombing strategies that fully made use of the B-29's full capacities. The classic American Air Force (AAF) doctrine, used in the European Theater, consisted of high altitude, daytime raids on targets. LeMay's deviation from these traditional tactics used allowed the B-29's to do much more destruction than the B-17's, all with fewer planes (Craven). The B-29's had over twice the carrying capacity of the B-17's and made better use of that fact by flying at the low altitudes. It was critical to have this larger carrying capacity as the space on the Mariana Islands was much less than that in Europe. On the raid on 9/10<sup>th</sup> of March on Tokyo the B-29's were able to drop about the same tons of bombs with about one-third of the planes than a similar attack by B-17's on February 3 on Berlin did. The attack on Tokyo burned 15.2 square miles including 18% of total industrial areas, 63% of commercial area, and much of the high-density residential area (Craven). The effects of this attack and others like it contributed a lot of the pressure on Japan and result of the war that the B-17 would not have accomplished.

The specifications of the B-29 allowed it to be the only plane able to deliver the atomic bombs at the time. Without them, a different strategy would have had to been developed or may not have even been possible. Many of the B-29s, however, had other manufacturing problems and had to be modified (Haulman). Colonel Paul Tibbits prepared his own B-29 to drop the atomic bombs and flew the first plane. He modified the B-29 by lightening the plane by 7,200 pounds to carry the extreme weight of the atomic weapons and installed fuel-injected engines to solve fuel problems and electrical



propellers (Tibbets). His experiences with the B-29's lead him to be successful in one of the most, if not the most, important bombing runs during the war.

#### E. Conclusion

Through its use in the Pacific Theater, the B-29 played a crucial role in the outcome of World War Two. Its specifications and use was far superior than anything that was accomplished by it's predecessors. The ability for the B-29 alone to be able to drop the atomic bombs was critical in the ending of the war. This provides a fair assessment to say the B-29 greatly impacted the war enough that without it the end of the war would have been very different.

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