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(Updated Extract)

The B-29, 'The Bomb', The Last Crewman of Enola Gay, & 2 postscripts.

The Milton Keynes Branch of Air-Britain
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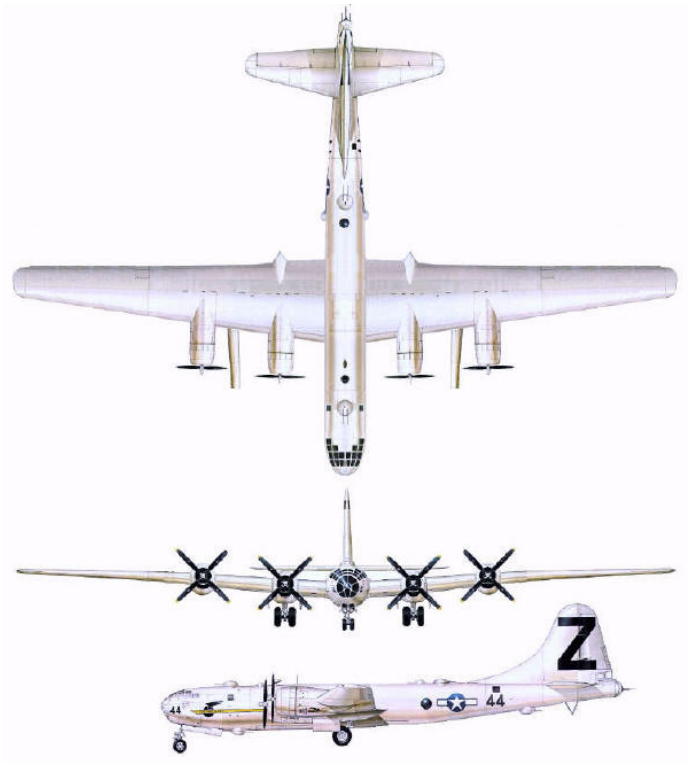
This is a slightly revised version of the original article in the September 2014 Newsletter. Postscript 1 followed in the October edition: Postscript 2 was added when this document was put on the archive in August 2015. Regrettably I cannot credit the source of these notes on the B-29 as I have forgotten where I found them.

Editor

The B-29

Boeing's B-29 Superfortress was the most sophisticated propeller-driven bomber to fly during World War II, and the first bomber to house its crew in pressurized compartments. Boeing installed very advanced armament, propulsion, and avionics systems into the Superfortress. In the late 1930s, U. S. Army Air Corps leaders recognized the need for very long-range bombers that exceeded the performance of the B-17 Flying Fortress. Several years of preliminary studies paralleled a continuous fight against those who saw limited utility in developing such an expensive and unproven aircraft but the Air Corps issued a requirement for the new bomber in February 1940.



This described an airplane that could carry a maximum bomb load of 2,000 lb at a speed of 400 mph a distance of at least 5,000 miles. Boeing, Consolidated, Douglas, and Lockheed responded with design proposals. The Army was impressed with the Boeing design and issued a contract for two flyable prototypes in September 1940. In April 1941, the Army issued another contract for 250 aircraft plus spare parts equivalent to another 25 bombers, eight months before Pearl Harbour and nearly a year-and-a-half before the first Superfortress would fly.

Among the design's innovations was a long, narrow, high-aspect ratio wing equipped with large Fowler-type flaps. This wing design allowed the B-29 to cruise at high speeds at high altitudes but maintained comfortable handling characteristics during slower airspeeds necessary during takeoff and landing.

More revolutionary was the size and sophistication of the pressurized sections of the fuselage: the flight deck forward of the wing, the gunner's compartment aft of the wing, and the tail gunner's station. Flying at altitudes above 18,000 feet became much more comfortable for the crew as pressure and temperature could be regulated in their work areas. To protect the Superfortress, Boeing designed a remote-controlled, defensive weapons system.

Engineers placed five gun turrets on the fuselage: a turret above and behind the cockpit that housed two 0.5 calibre machine guns (four guns in later versions), and another turret aft near the vertical tail equipped with two machine guns; plus two more turrets beneath the fuselage, each equipped with two .50 calibre guns. One of these turrets fired from behind the nose gear and the other hung further back near the tail. Another two .50 calibre machine guns and a 20-mm cannon (in early versions of the B-29) were fitted in the tail beneath the rudder.

Gunners operated these turrets by remote control, a true innovation. They aimed the guns using computerized sights, and each gunner could take control of two or more turrets to concentrate firepower on a single target.

Boeing also equipped the B-29 with advanced radar equipment and avionics. Depending on the type of mission, a B-29 carried the AN/APQ-13 or AN/APQ-7 Eagle radar system to aid bombing and navigation. These systems were accurate enough to enable relatively accurate bombing through cloud layers that completely obscured the target.

The B-29B was equipped with the AN/APG-15B airborne radar gun sighting system mounted in the tail to assist in providing accurate defence against enemy fighters attacking at night. B-29s also routinely carried as many as twenty different types of radios and navigation devices.

The first XB-29 took off at Boeing Field in Seattle on September 21, 1942. By the end of the year the second aircraft was ready for flight. Fourteen service-test YB-29s followed as production began to accelerate. Building this advanced bomber required massive logistics. Boeing built new B-29 plants at Renton, Washington, and Wichita, Kansas (where 'DOC' was built), while Bell built a new plant at Marietta, Georgia, and Martin built one in Omaha, Nebraska.

Both Curtiss-Wright and the Dodge automobile company vastly expanded their manufacturing capacity to build the bombers powerful and complex Curtiss-Wright R-3350 turbo supercharged engines. The program required thousands of sub-contractors but with extraordinary effort it all came together, despite major teething problems.

By April 1944, the first operational B-29s of the newly formed 20th Air Force began to touch down on dusty airfields in India. By May, 130 B-29s were operational. In June, 1944, less than two years after the initial flight of the XB-29, the U. S. Army Air Force (AAF) flew its first B-29 combat mission against targets in Bangkok, Thailand. This mission (longest of the war to date) called for 100 B-29s but only 80 reached the target area.

FIFI – The only B-29 currently flying

The AAF lost no aircraft to enemy action but bombing results were mediocre. The first bombing mission against the Japanese main islands since Lt. Col. "Jimmy" Doolittle's raid against Tokyo in April 1942, occurred on June 15, again with poor results.

With the fall of Saipan, Tinian, and Guam in the Mariana Islands chain in August 1944, the AAF acquired airbases that lay several hundred miles closer to mainland Japan. Late in 1944, the AAF moved the XXI Bomber Command, flying B-29s, to the Marianas and the unit began bombing Japan in December. However, they employed high-altitude, precision, bombing tactics that yielded poor results. The high altitude winds were so strong that bombing computers could not compensate and the weather was so poor that rarely was visual target acquisition possible at high altitudes.

In March 1945, Major General Curtis E. LeMay ordered the group to abandon these tactics and strike instead at night, from low altitude, using incendiary bombs. These firebombing raids, carried out by hundreds of B-29s, devastated much of Japan's industrial and economic infrastructure.

***STRANGE CARGO*, Silverplate Project B-29, 393d BS, 509th Composite Group (disguised with 497th BG markings), Tinian.**

Yet Japan fought on. Late in 1944, AAF leaders selected the Martin assembly line to produce a squadron of B-29s codenamed 'Silverplate'. Martin modified these Superfortresses by removing all gun turrets except for the tail position,

removing armour plate, installing Curtiss electric propellers, and modifying the bomb bay to accommodate either the "Fat Man" or "Little Boy" versions of the atomic bomb.

The AAF assigned 15 Silverplate ships to the 509th Composite Group commanded by Colonel Paul Tibbets. As the Group Commander, Tibbets had no specific aircraft assigned to him as did the mission pilots. He was entitled to fly any aircraft at any time. He named the B-29 that he flew on 6 August 'Enola Gay' after his mother. In the early morning hours, just prior to the August 6th mission, Tibbets had a young Army Air Forces maintenance man, Private Nelson Miller, paint the name just under the pilot's window.

Enola Gay is a model B-29-45-MO, serial number 44-86292. The AAF accepted this aircraft on June 14, 1945, from the Martin plant at Omaha (Located at what is today Offut AFB near Bellevue), Nebraska. After the war, Army Air Forces crews flew the airplane during the Operation Crossroads atomic test program in the Pacific, although it dropped no nuclear devices during these tests, and then delivered it to Davis-Monthan Army Airfield, Arizona, for storage.

Later, the U. S. Air Force flew the bomber to Park Ridge, Illinois, then transferred it to the Smithsonian Institution on July 4, 1949. Although in Smithsonian custody, the aircraft remained stored at Pyote Air Force Base, Texas, between January 1952 and December 1953. The airplane's last flight ended on December 2 when the Enola Gay touched down at Andrews Air Force Base, Maryland.

The bomber remained at Andrews in outdoor storage until August 1960. By then, concerned about the bomber deteriorating outdoors, the Smithsonian sent collections staff to disassemble the Superfortress and move it indoors to the Paul E. Garber Facility in Suitland, Maryland.

ENOLA GAY: *the B-29 that dropped the Atom Bomb on Hiroshima on 6 August 1945. Her navigator died 28 July 2014. (Obituary below)*

The staff at Garber began working to preserve and restore Enola Gay in December 1984. This was the largest restoration project ever undertaken at the National Air and Space Museum and the specialists anticipated the work would require from seven to nine years to complete. The project actually lasted nearly two decades and, when completed, had taken approximately 300,000 work-hours to complete. The B-29 is now displayed at the National Air and Space Museum, Steven F. Udvar-Hazy Centre.

FIFI, Boeing B-29A-60-BN Superfortress, is one of only a few surviving in existence and the only one currently flying. It is owned by the Commemorative Air Force, currently based at Midland, Texas. *FIFI* tours the U.S.A. and Canada, taking part in air shows and offering flight experiences.

Built by Boeing at the Renton factory in Washington this was delivered to the USAAF in Kansas in 1945. Modified to a TB-29A standard, it served as an administrative aircraft before being placed in "desert storage". It was returned to active duty in 1953.

Following retirement in 1958 Boeing this B-29A, as part of a group of 36 B-29s, was placed at the US Navy Naval Weapons Centre and bombing range at China Lake Naval Air Weapons Station, California. The Commemorative Air Force, then known as the Confederate Air Force, acquired it in 1971 and registered it as a civilian aircraft. It was flown to CAF headquarters at Harlingen, Texas on 3 August 1971 and re-registered as N529B in August 1981.

DOC, in May of 2000, this B-29 was rescued and transported from California to Wichita. The B-29 was designed and built by Boeing in Wichita in March 1945 and flown primarily by the U.S. Air Force at the end of World War II and then during the Korean War.

DOC was rescued by a group of historians in 1987 after sitting more than 40 years in the Mojave Desert. After years of restoration back at Wichita, Kansas, DOC is due to fly again by the end of 2014 and appear at Oshkosh in 2015.

B-29 'DOC', Being restored in Wichita, Kansas, where she was built Doc is due to fly again by the end of 2015.

'The Bomb'

Loading 'Thin man' into Enola Gay before Hiroshima. The bomb is first lowered into the pit, the B-29 moved over it and the bomb raised by a large vertical hydraulic ram. See http://tinyurl.com/mrgtmau for many more photos.

Fat Man' the bomb for Nagasaki carried by BOCKSCAR. Credit: Richard Lambert

'Thin Man' was a Uranium bomb with a 'gun' at one end to fire a uranium projectile into further Uranium at the other end. This created a 'critical mass' and a nuclear explosion. 'Fat Man' had a hollow sphere of Plutonium which was imploded to create the critical mass in the middle. Hence the different shapes of the two bombs.

LAST CREW MEMBER OF ENOLA GAY

Obituary for Theodore Van Kirk (from The Times)

Theodore Van Kirk was born on February 27, 1921. He died on July 28, 2014, aged 93. Van Kirk was the navigator and last surviving member of the crew that dropped the atomic bomb on Hiroshima in 1945. Decades later he recalled, "Even though you were still up there in the air and no one else in the world knew what had happened, you just sort of had a sense that the war was over, or would be soon."

A United States Army Air Forces navigator with 58 sorties under his belt, he had served with *Enola Gay*'s pilot, Colonel Paul Tibbets (died, Nov 2, 2007), in Europe and North Africa. Then in late 1944 the two were reunited at Wendover Field, Utah, to train for months for a highly secret sortie that was to have world-shaking consequences.

Without at first knowing much about the technical details of the weapon they were to drop —the word "atomic" was uttered only late in the programme — Van Kirk and his fellow crew members were impressed by one detail given to them, namely that their aircraft would need to be 11 miles away from the point of the bomb's detonation if it was not to be destroyed by the explosion. The momentous nature of their mission became clear to them.

The role of the navigator and his communication with *Enola Gay*'s bombardier, Tom Ferebee, with whom Van Kirk had also served in Europe, would be vital to the success of the attack, which was to be executed at the end of an 1,800-mile flight from the island of Tinian in the northern Marianas.

After the final briefing on the evening of August 5, 1945, the crew was ordered to snatch some sleep before *Enola Gay* — so christened by Tibbets after his mother — took off from Tinian at 02.45 the following day.

Van Kirk recalled using up much of this time playing poker with the bombardier. "I mean, they tell you were about to go out and drop the first atom bomb that night, and then tell you to get some sleep! It was beyond me."

Remarkably, navigation to the target was done by time-honoured methods. Van Kirk shot star sights by bubble sextant from a dome on top of the aircraft. Equally remarkably, at the end of a 13-hour flight at high altitude, *Enola Gay* arrived at its aiming point only 15 seconds after its ETA. "Fifteen seconds was damn good — that's all I can say," Van Kirk liked to recall.

Released at a height of 31,000ft, the uranium bomb, code-named "Little Boy", detonated 43 seconds later at 1,900ft above the just-waking city with a yield of approximately 13 kilotons. The explosion was the equivalent of 13,000 tons of TNT, more than 1,300 times the size of the Grand Slam, the heaviest bomb dropped by the RAF and USAAF to that point in the Second World War.

Estimates of the number of casualties in the city beneath have varied, but it is accepted that some 80,000 died almost immediately with perhaps a similar number perishing in the aftermath from the effects of radiation, wounds and disease and perhaps an equal number more in the longer term, from cancers caused by the radiation.

Suddenly unburdened of the 8,800lb weight of Little Boy, *Enola Gay* lurched upwards before Tibbets caught her and hauled her into a steep 150-degree turn to get his crew as far away as possible as the bomb exploded.
In every interview since, Van Kirk was asked what he witnessed. "All we saw was a bright flash, like a photographer's bulb going off in the plane," Van Kirk recalled. The shock wave that followed seconds afterwards he remembered as "a hell of a jolt".

Then he turned to where he could look out and see the cloud. He added: "The entire city was covered with smoke and dust and dirt. I describe it looking like a pot of black, boiling tar. You could see some fires burning on the edge of the city." He felt, he said, "a sense of relief".

The accompanying B29s, *Necessary Evil* - the camera plane, photographed the destruction caused by the bomb, while *The Great Artiste*, the instrumentation aircraft, measured the magnitude of the explosion and the blast created.

With no intimation of a Japanese willingness to surrender, a second nuclear device, the plutonium Fat Man, was dropped on the port of Nagasaki on August 9. Although the yield was more than 20 kilotons, the loss of life in Nagasaki was much lower — 40,000 killed immediately — since the hilly terrain gave more protection.

Having recorded a radio message of surrender the previous day, Emperor Hirohito broadcast his announcement of his country's surrender to the Japanese people on August 15, which remains 'VJ Day'. In the meantime *Enola Gay* had returned to her Tinian base to a great fanfare over what was without doubt a tactically flawless mission. They were greeted, Van Kirk said, by "more generals and admirals than I had ever seen in one place in my life."

Enola Gay *(right) after Hiroshima mission, entering hard-stand. It is in its 6th Bombardment Group livery, with victor number 82 visible on fuselage just forward of the tail fin.*

Theodore Van Kirk, nicknamed "Dutch", was born in Northumberland, Pennsylvania in 1921. He recalled a "Huckleberry Finn" childhood. His father was a coal digger and Van Kirk — who described himself as a "river rat" — recounted rowing flats of coal up and down the river as a boy.

It was while at college that he saw recruitment ads for the air force and, aged 19, joined the aviation cadet programme, two months before the Japanese attack on Pearl Harbour. After gaining his commission and navigator's wings in April 1942 he was posted to the 97th Bomb Group — the first B17 unit to operate from airfields in England — where he joined the

crew of the B17 Flying Fortress *Red Gremlin*, captained by Tibbets, with Ferebee as its bombardier. Between August and October 1942 the group flew 11 sorties over targets in occupied Europe.

Red Gremlin, still captained by Tibbets and navigated by Van Kirk, was then detailed to fly Eisenhower's deputy Mark Clark to Gibraltar for his secret discussions on North Africa with French Vichy leaders. The aircraft also flew Eisenhower to take up his command of US forces for Operation Torch, the Anglo-American landings in Morocco and Algeria. On November 16, 1942 the crew participated in the campaign when they bombed the Sidi Ahmed air base at Bizerta as German reinforcements began pouring into the city.

Van Kirk returned to the US where he served as a navigator instructor before being posted to Wendover, Utah, where he found himself again flying with Tibbets and Ferebee with the 509th Composite Group in late 1944. He had married his high-school sweetheart, Mary Jane Young, a year earlier.

Van Kirk remained in the US Army Air Forces until 1946, retiring with the rank of major, and being decorated with the Silver Star and the Distinguished Flying Cross. He decided to study chemical engineering and joined the chemical company DuPont with which, over the next 35 years he held technical and managerial positions. He sold profitable wartime memorabilia and often spoke to school groups.

Van Kirk was not prone to dwelling on the destruction, regarding it as a necessary part of war. "The war ended on August 14. I don't know when it would have ended if we had not dropped the atomic bombs."

[Six days after the second atomic bomb, on Nagasaki, the broadcast of surrender by Emperor Hirohito was the first time his voice had been heard by the nation. His speech included a masterpiece of understatement when he said, "….the war situation has developed not necessarily to Japan's advantage…..". Editor]

Postscript 1: Enola Gay & Bockscar

"Following last month's article on Enola Gay I am delighted to draw on Richard Lambert's travels and experiences in his follow-up article. The second bomber is variously called Bockscar and Bock's Car. The name came from its commander prior to the Nagasaki raid, Captain Frederick C. Bock. – Editor"

I first saw the *Enola Gay* in 1982 in the Smithsonian National Air and Space Museum's Gerber storage and restoration facility at Silver Hills in suburban Washington DC. At the time it was in a dismantled state, covered in dust and looking neglected. By 1995 the forward fuselage had been restored, and was the centrepiece of a major exhibition marking the 50th anniversary of the end of World War II at the NASM building in the Mall in Washington.

However, mounted at the height of the era of political correctness that swept through the States at the time, the exhibition's theme was essentially that the Japanese were nice people, who now made good little cars and televisions, and perhaps the bomb need not have been used on them after all.

Needless to say, such a perspective did not go down too well with the many US WWII veteran and ex-prisoner of war organisations. Then came the involvement of a number of conservative Washington politicians, with an end result of several "retirements" by senior NASM staff and the exhibition being taken down.

Controversy over the use of the atom bomb on Japan, and the role of the Enola Gay as an icon of the event, did not end there. When I visited the new Udvar-Hazy Centre extension of the NASM near Dulles Airport in late December 2003 the splendid new facility had been open only three days. But in that time the fully restored Enola Gay had been defaced with red paint as it hung above the visitors, and already a Perspex shield had had to be put in place between the adjacent viewing walkway and the aircraft. Old memories and animosities still lingered!

With the focus on the *Enola Gay* and Hiroshima, the details of the dropping of the second bomb, code named *Fat Man*, are often overlooked. On August 9th 1945 B-29A-40-MO 44-27297 *Bock's Car* flown by Major Charles Sweeney dropped the US's second nuclear weapon on the city of Nagasaki, with a 21 kilotons yield airburst. This compares to the 16Kt yield of the *Little Boy* dropped on Hiroshima four days previously.

Nagasaki was not in fact the primary target, but smoke clouds and bad weather forced the mission to be diverted from the intended city of Kokura. Five days after that second event the Japanese then surrendered and WWII ended. The allies had just one operational nuclear bomb left.

Bock's Car still exists, in the Air Power Hall at the National Museum of the United States Air Force in Dayton, Ohio. Exhibited by the B-29 is a casing for the *Fat Man* bomb.

[A recent addition to the above]. In the B-29 section earlier it is said, 'In the early morning hours, just prior to the August 6th mission, Tibbets had a young Army Air Force maintenance man paint the name (of his mother) just under the pilot's window'.

Nose markings on both Enola Gay and Bockscar were removed at the time of the actual missions (though it is not clear about the black 'Enola Gay' lettering) - perhaps as a precaution against possible differential heat flash damage to the structure under any paint. (This was why RAF V-bombers were painted anti-flash white with low contrast pink and pale blue roundels and markings).

The B-29 markings were then restored, and probably improved, post-mission in the style seen in contemporary wartime colour photos, and in the current museum articles,

'BOCKSCAR' nose art (above). The Nagasaki B-29 (Nagasaki was not the intended target but an alternative one). Photo: Richard Lambert

Richard Lambert

Postscript 2: 'Boy, 16, saved his city but doomed Nagasaki'

[Credit 'The Times 8 August 2015]

It was a clear, hot morning in August, and when he heard the air-raid warning, Satoru Miyashiro, 16, knew that the Americans, and death, had arrived. "We all understood secretly that we couldn't win the war," he remembered. "We knew there would be no surrender and that we would all sacrifice ourselves. I thought that this was our turn."
He hurried outside and, following his boss's instructions, set fire to the barrels of coal tar lined up in the steel factory where he worked as a conscript.

Dense back smoke immediately billowed high into the air. Soon afterwards, from inside the air-raid shelter, he heard the distinctive drone of an American B-29 bomber overhead. For half an hour, the citizens of Kokura, in southern Japan, braced themselves for the onslaught — but nothing happened. It was August 9, 1945.

"It was a few hours later that we heard that Nagasaki had been hit by a new kind of bomb, like the bomb which hit Hiroshima three days before," Mr Miyashiro said. "I didn't light those barrels to save Kokura, I did it to save me and my colleagues. But when I think of Nagasaki, I cannot say that I don't feel guilty."

The B-29 was called Bockscar, and it had flown that morning from the American-occupied island of Tinian, in the central Pacific. Its target was a vast ammunition works at the centre of the city of Kokura, but, according to the account given by its crew, the bombardier's view was obscured by smoke and cloud.

After three passes over the city the B-29 was running low on fuel so it made for its secondary target — Nagasaki, 100 miles to the southwest. There, at 11.02am, it delivered a 25 kiloton plutonium atomic bomb, nicknamed 'Fat Man', which was detonated about 1,500ft above the ground. An estimated 74,000 people died; half on the day, the remainder in the months that followed. Nagasaki, a harbour city of temples and shrines, the "Naples of the Orient", immediately achieved a new and terrible kind of fame. Kokura continued in obscurity, unknown to the outside world.

Until last year, when Mr Miyashiro first told his story publicly, historians had another explanation for Kokura's salvation. According to US military records, the bombardier's view of the city was obscured by mist and smoke left by a conventional air raid on a neighbouring city the day before.

However, Japanese meteorological records, and local people, suggest that rain the previous evening had already quenched the fires from the raid. "It was a clear, sunny morning," Mr Miyashiro said. "Light cloud, but no smoke at all. When we heard the air-raid siren, I lit the coal tar, and then there was smoke. Everything went totally black — even on the ground, it was like night-time."

Mr Miyashiro, now a gruff, laconic man of 86, claims no glory for his actions; the price of Kokura's good fortune after all was the destruction of Nagasaki.

Historians believe that had Fat Man been detonated over Kokura it would have killed a minimum of 57,000 people, with more than 15,000 seriously injured. Many of the victims would have been children like Mr Miyashiro, conscripted to work in the industrial plants and ammunition factories.

He himself would have been on the edge of the blast zone. "I might have been OK, because I was out of the city centre and in a shelter," he said. "But my whole family would have been killed in the blast." Also in the city were Allied prisoners of war, including British soldiers captured in Singapore.

A Japanese newspaper that carried Mr Miyashiro's story last year was contacted soon after by the family of an American soldier, Millard Hileman, one of those PoWs in Kokura. After the war, he had three daughters, one of whom, Linda Litten, wrote to Mr Miyashiro to express her gratitude. Mr Hileman died in 1994 at the age of 80. "Because of that moment in history, we are here. We're very grateful," Ms Litten told Mr Miyashiro. "It's afterward you think, wait a minute, I'm here, but think of all the people who are not."