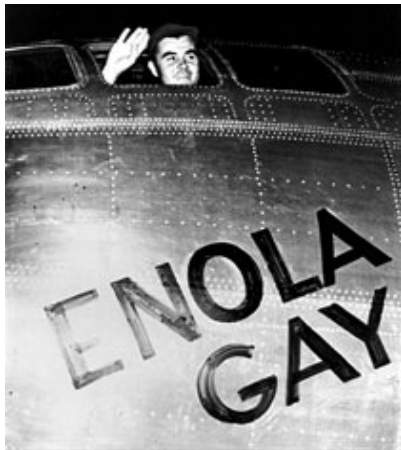


LEARN ABOUT NUCLEAR WEAPONS

Hiroshima



Towards the end of World War II, American air raids had destroyed most Japanese cities. Hiroshima was among the few cities still unharmed. The city also had an important harbour and many Japanese soldiers, military areas and military factories unharmed by US attacks. Since the city carried no signs of previous bombings, the American army expected to clearly see the effects of the use of the nuclear bomb.¹ So would the rest of the world.

Early in the morning of 6 August 1945, the aeroplane Enola Gay left the US occupied island of Tinian. Enola Gay was one of seven American aeroplanes heading for Hiroshima - but the only one equipped with a nuclear bomb. The bomb was more than three meters long, 75 centimetres in diameter and weighted close to four tonnes. It contained 60 kg Uranium-235 and carried the name Little Boy.

By 7 am, the Japanese radar net detected aircraft flying towards Japan and an alert was broadcast throughout the Hiroshima area. Soon afterward, a civilian plane circled over the city, but there was no sign of bombers. The people returned to their normal morning routines. When radio stations an hour later broadcast another warning for people to take shelter, many ignored it.

No one could believe what was about to happen. At 8:15 a.m., Little Boy exploded some 600 metres above the centre of the city. The burst temperature was estimated to reach over a million degrees Celsius, which ignited the surrounding air, forming a fireball some 250 metres in diameter. Eyewitnesses all talk about the flashing light with brightness exceeding the sun tenfold followed by intensive heat.²



The blast wave shattered windows for a distance of ten miles and was felt as far away as 15 kilometres. Over two-thirds of Hiroshima's buildings were demolished.

The hundreds of fires, ignited by the thermal pulse, combined to produce a firestorm that destroyed everything within about ten kilometres from ground zero.³ A small part of all buildings in the nearest zone survived – mainly due to the fact that Hiroshima is an earthquake prone area and many important buildings were built extra strongly.⁴

About half an hour after the explosion, heavy rain started falling in the area north east of Hiroshima. The “black rain” was full of dirt, dust, soot and radioactive particles that had been transported into the air by the explosion and fires. Because of the rain, areas far away from ground zero were contaminated by radioactive fallout.⁵

The soldiers aboard the Enola Gay looked down on Hiroshima after releasing the bomb from the plane. The city had disappeared from sight – all that was seen was a massive cloud of soot and raging flames. The co-pilot, Captain Richard Lewis, gasped “*Oh my God, what have we done?*”⁶ The crew returned to the camp and were received as heroes.

The confusion at the Japanese military headquarters was complete. People reported a “sinister cloud,” an “enormous explosion,” a “terrible flash,” a “heavy roar.” Reports were vague and created more bewilderment than alarm. Finally, from descriptions and a pilot’s report, the Japanese military began to realise that what had happened might have been the result of an atomic bomb. This came as a shock to them, since no one had thought the Americans’ progress in nuclear bomb development was more than in the “scientific investigation” stage.



Before the Little Boy, with the explosive substance U-235, was dropped on Hiroshima, protests came from unexpected sources. The scientist Leo Szilard at the Met Lab in Chicago started a petition against the use of nuclear weapons in Japan. Szilard had led the atomic research since 1939, but discontinued his engagement as the German nuclear weapon threat disappeared. 155 signatures were collected. The leader of the Manhattan Project, Leslie Groves, conducted a poll among scientists at the Met Lab to prove Szilard wrong. It turned out, however, that 83 percent favoured a demonstration of the US nuclear capacity before using A-bombs against Japan. Szilard’s poll was classified and not officially published until the 1960’s.⁷

Nagasaki

The atomic bombing of Hiroshima has always overshadowed that of Nagasaki. The Hiroshima bombing went exactly according to the plans of the US military leadership. Still, it had decided to drop two atomic bombs over Japan, with a few days in between to give the Japanese a chance to surrender. The second bomb was scheduled for 11 August over the Japanese city of Kokura. The second alternative

was Nagasaki. The US military leadership heard bad weather was blowing in and decided to speed up the process. The new date for the second atomic bomb over Japan would be 9 August 1945.

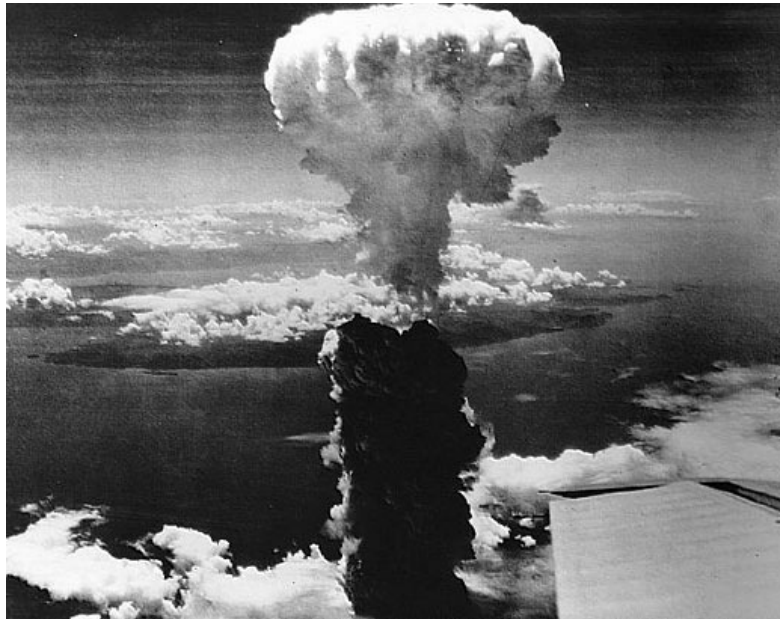
While the crew of Enola Gay was still being celebrated for its success in Hiroshima, the crew of the second mission ran into trouble after trouble. A typhoon threatened Iwo Jima, the proposed starting point, forcing the mission to take off from Yakushima instead. As the bomb, Fat Man, was loaded on board the plane Bock's Car, the crew realised only one of the fuel pumps were operating. This effectively cut Bock's Car's fuel supply, and the crew knew this could jeopardise a safe return. But there was no time to lose – to convince the Japanese that Hiroshima was not a one-time occurrence, it was decided to proceed.⁸

Fat Man was a very suitable name for the Nagasaki bomb. It consisted of a plutonium core surrounded by highly explosive material to create a heavy nuclear reaction. Fat Man weighted over 4,5 tonnes, was 3,25 meters tall and measures over one and a half meters in diameter – more than double as fat as Little Boy that detonated over Hiroshima.



Picture: after war replica of the Fat Man

When the bomber reached Kokura where the bomb was supposed to be dropped, the crew found haze and smoke obscuring the city as well as the large ammunition arsenal that was the reason for targeting the city. The crew had no other option than to turn towards option two: Nagasaki. Nagasaki was chosen as a target due to the two huge Mitsubishi war plants situated in the city. Clouds covered Nagasaki when the plane got there, but Bock's Car was running out of fuel and a decision was made to drop the bomb by radar. At the last minute a small window in the clouds opened just above the war plants. At 10:58 am Nagasaki time the bomb Fat Man was dropped.⁹



Fat Man exploded 43 seconds later at 469 metres above Nagasaki. The bomb detonated with an estimated force of 22 megatons of TNT, missing its target by almost 3 kilometres. The explosion in Nagasaki did not create a massive firestorm as in Hiroshima, but due to the explosive power and the fact that it was dropped over a valley, the destruction in the immediate surroundings of ground zero was worse than in Hiroshima. The destruction of Nagasaki was somewhat limited by the mountainous topography of the city, reducing the worst effects of the explosion.¹⁰

This in no way means the city was spared, as shown in the two pictures below. The first picture is shot from the air two days prior to the atomic bombing. The second picture shows the same place three days after the atomic bombing: a flat, bare landscape – a city no longer a city.



Picture 1

Source: Hiroshima Remembered/Atomic Archives



Picture 2

The area within one kilometre from ground zero was totally destroyed by the shock wave and the thermal pulse. Houses, buildings, plants and living creatures were pulverised. Within another one kilometre radius close to 80 percent of all buildings collapsed. Compared to the more modern Hiroshima, Nagasaki houses were mainly

old wooden houses and weaker constructions. As far as 15 kilometres from ground zero, windows and doors were broken.¹¹ Just as in Hiroshima, it is impossible to tell the exact number of injured and killed by the atomic bombing of Nagasaki. The Nagasaki municipal government has officially adopted the number “more than 70 000 death victims”.¹²

A few minutes later, the crew of the plane Bock's Car that dropped the bomb on Nagasaki saw an enormous fireball boiling skyward. The pilot banked sharply to avoid it. Five successive shock waves shook the plane and the radioactive cloud surged toward it. After a dramatic landing in Okinawa – no more than 25 litres of fuel left in the tank – the shaken crew was met by emptiness. No one was there to welcome them; no ceremony was waiting.¹³

Hibakusha – the survivors

Hibakusha is the term widely used in Japan referring to victims of the atomic bombings of Hiroshima and Nagasaki. The Japanese word translates literally as "explosion-affected people". The Atomic Bomb Survivors Relief Law defines hibakusha as people who were within a few kilometres of the hypocentres of the bombs; who were within 2 km of the hypocentres within two weeks of the bombings; who were exposed to radiation from fallout; and babies carried by pregnant women in any of these categories.

As of March 31, 2007, there were 251,834 living hibakusha certified by the Japanese government, with an average age of 74.6.¹⁴ Almost all live in Japan, but several thousand bomb-survivors live in Korea and elsewhere. Many of them are ill, all are old, but still many of them travel around the world to tell about their experience and help young people understand the horrors of nuclear weapons. At the website Voice of Hibakusha (<http://www.inicom.com/hibakusha/>) you will find testimonies from the terrible days after 6 and 9 August 1945 in Hiroshima and Nagasaki.

No more Hiroshima – No more Nagasaki

On 6 August every year, people all over the world gather to remember the American atomic bombing of Hiroshima. People get together, light lanterns, remember what happened and are reminded of the importance of working for elimination of all the world's nuclear arsenals.



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- 1 Hiroshima Peace Memorial Museum http://www.pcf.city.hiroshima.jp/index_e2.html
 - 2 Voice of Hibakusha <http://www.inicom.com/hibakusha>
 - 3 Hiroshima Remembered <http://www.hiroshima-remembered.com/history/hiroshima/page9.html>
 - 4 Trinity Atomic Web Site http://www.cddc.vt.edu/host/atomic/hiroshim/hiro_med.html
 - 5 Hiroshima Remembered <http://www.hiroshima-remembered.com/history/hiroshima/page9.html>
 - 6 Ibid
 - 7 The Atomic Heritage Foundation
http://www.atomicheritage.org/index.php?option=com_content&task=view&id=63
 - 8 Hiroshima Remembered <http://www.hiroshima-remembered.com/history/nagasaki/page3.html>
 - 9 Nagasaki Atomic Bomb Museum <http://www1.city.nagasaki.nagasaki.jp/na-bomb/museum/m2-1e.html>
 - 10 Atomic Archive <http://www.atomicarchive.com/History/twocities/nagasaki/page4.shtml>
 - 11 Nagasaki Atomic Bomb Museum <http://www1.city.nagasaki.nagasaki.jp/na-bomb/museum/m2-1e.html>
 - 12 Ibid
 - 13 Atomic Archive <http://www.atomicarchive.com/History/twocities/nagasaki/page5.shtml>
 - 14 Wikipedia http://en.wikipedia.org/wiki/Hibakusha#_note-0