

Manhattan Project

Developing the Atomic Bomb

Standard

- US.56 Describe the Manhattan Project, and explain the rationale for using the atomic bomb to end the war.

A black and white photograph of a massive atomic bombing mushroom cloud. The cloud is thick and billowing, with a dark, dense column rising from the ground and a large, white, cloud-like top that spreads out. The background shows a hazy sky and some faint structures on the ground.

- This was a project to develop the first atomic bomb during World War II.

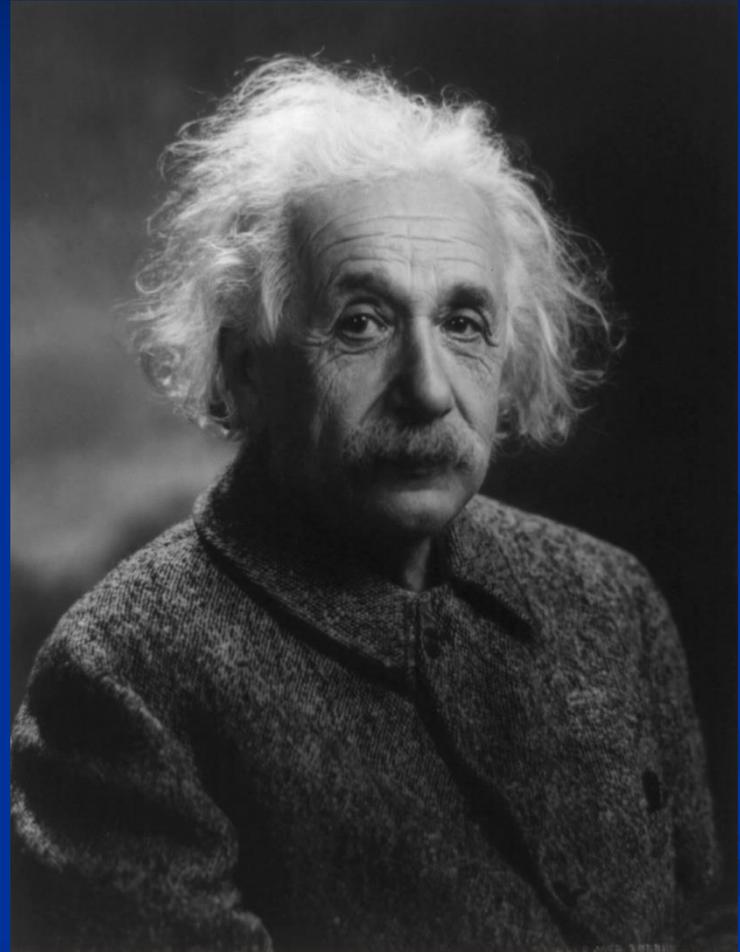
- “Manhattan Project” was a code name to keep the project concealed.

- The project involved roughly 125,000 people and cost more than \$2 billion, yet it remained top secret throughout WWII.

- Project research and production sites took place all across the United States.

Why did we build the atomic bombs?

- In 1939, Albert Einstein wrote a letter to President Franklin Roosevelt warning that Germany was secretly trying to develop an atomic bomb and urged U.S to do likewise.



Einstein's Letter

Albert Einstein
Old Grove Rd.
Nassau Point
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,
President of the United States,
White House
Washington, D.C.

Sir:

Some recent work by E.Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable - through the work of Joliot in France as well as Fermi and Szilard in America - that it may become possible to set up a nuclear chain reaction in a large mass of uranium, by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable - though much less certain - that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

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The United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is Belgian Congo.

In view of this situation you may think it desirable to have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an unofficial capacity. His task might comprise the following:

a) to approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States;

b) to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weizsäcker, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated.

Yours very truly,

A. Einstein
(Albert Einstein)

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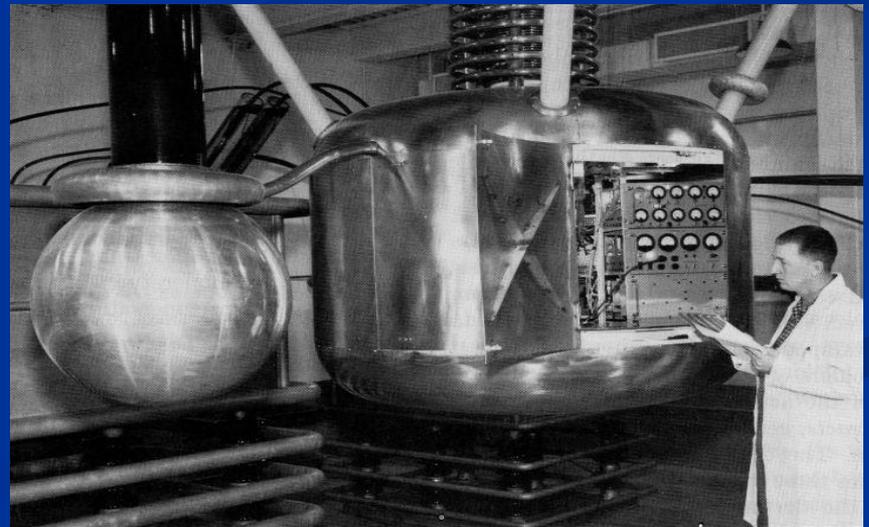
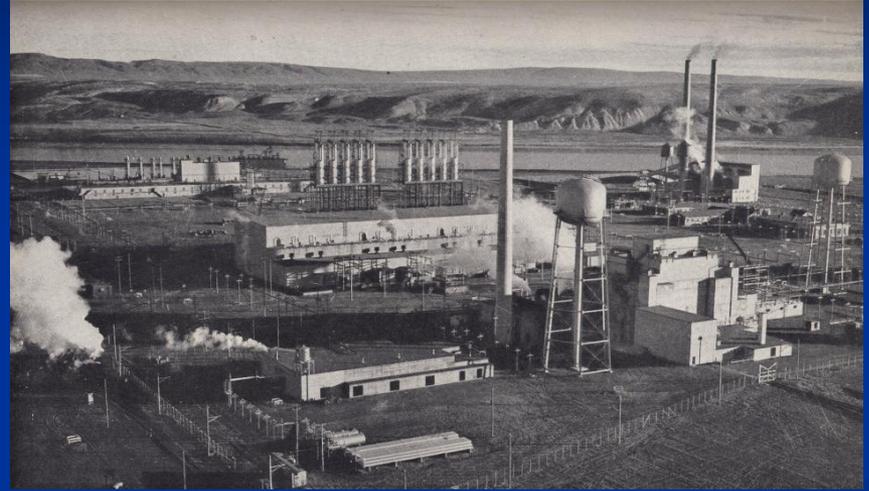
President Franklin Roosevelt



- Roosevelt wrote Einstein back informing him that he immediately set up a committee to begin atomic research.
- FDR believed the United States could not take the risk of waiting and allowing Hitler to have the power of developing the first atomic bomb.

Locations

- Research and production sites of the Manhattan Project were located all across the United States.
- Laboratories and manufacturing facilities were secretly constructed just for project.





Main project research locations of the United States

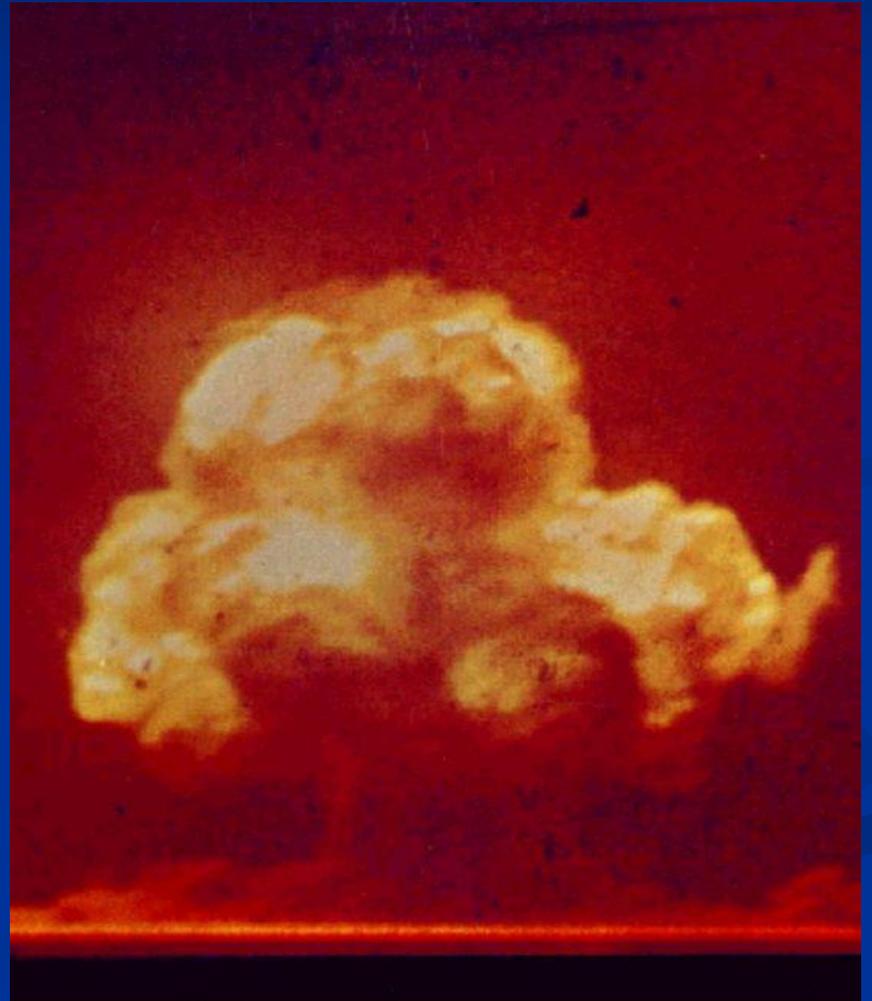
J. Robert Oppenheimer

- Scientific director of the Project.
- Referred to as the “father” of the atomic bomb
- Managed all of the sites
- “I am become death, the destroyer of worlds.”
Quotation from Bhagavad Gita, recalled by Oppenheimer as he watched the first atomic explosion at Trinity.



The Trinity Test

- On July 16, 1945, the first atomic bomb was exploded at the Alamogordo air base near Albuquerque, NM.
- A ball of fire rose rapidly, followed by a mushroom cloud extending to 40,000 feet and 2,400 feet wide.



Success

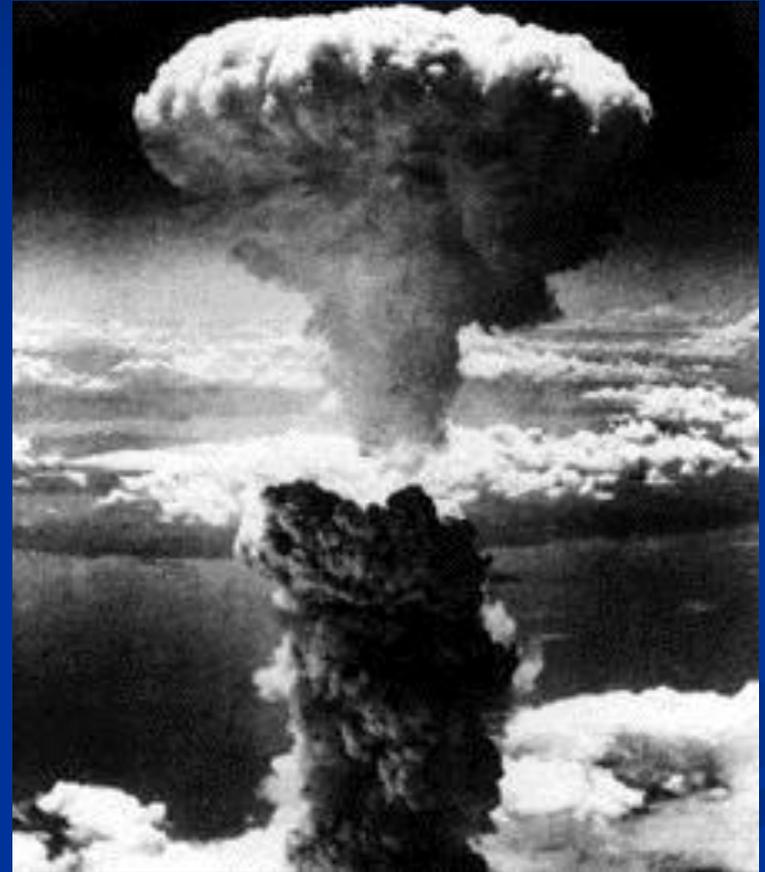


Truman in Potsdam, Germany after receiving word that the Trinity Test was a success.

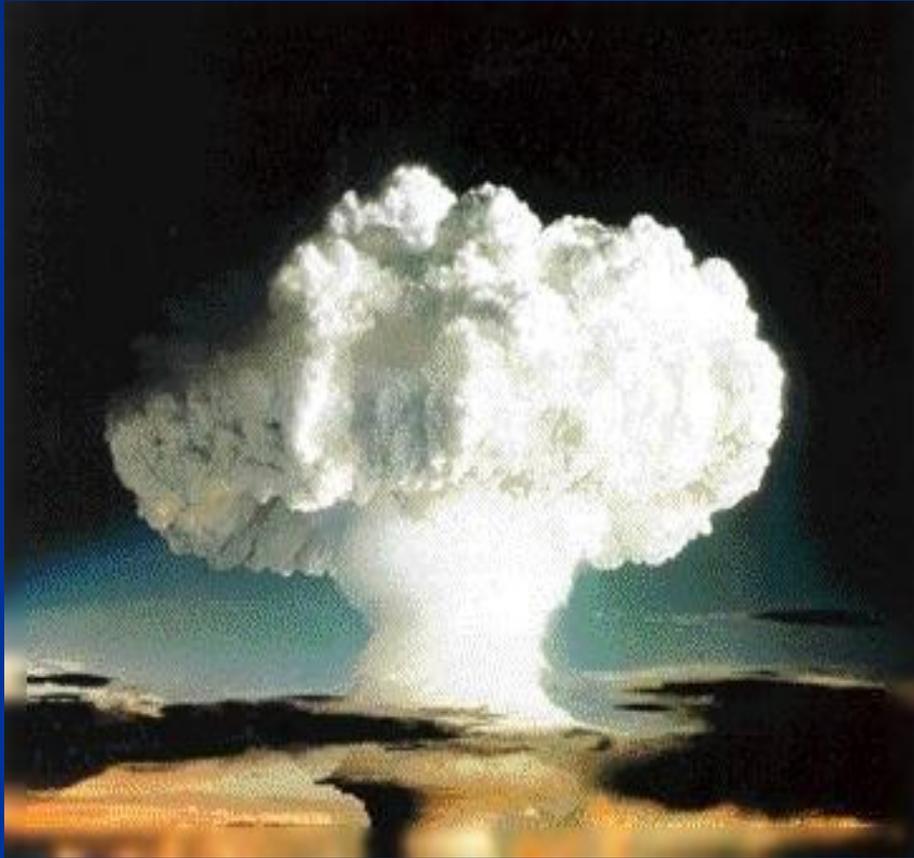
- The Trinity Test resulted in great success.
- This was the world's first ever atomic explosion.
- After President Harry Truman received the word, he knew the atomic bomb would create a great advantage in World War II.

Use of Atomic Bombs in WWII

- It was finally decided to use the atomic bomb in the war and two more atomic bombs were created by the project.
- The uranium “Little Boy” bomb was dropped on Hiroshima on August 6, 1945.
- The plutonium “Fat Boy” bomb was dropped on Nagasaki on August 9, 1945.



Conclusion



- President Harry Truman's decision to drop the atomic bomb is one of the most controversial issues in American History.
- The creation of the Atomic Bomb helped bring an end to World War II.
- it also advanced the knowledge of the atomic age and determined how future wars would be fought.

Turn and Talk:

- Do you support the use of the atomic bomb to end the war? Why or why not?

Writing Assignment:

Analyze President Harry S. Truman's decision to use the atomic bomb in World War II.

- How did President Truman justify the use of the bomb?
- What were the results of its use?
- How was this action different from other actions of war?