TORONTO MODEL UNITED NATIONS II

MANHATTAN PROJECT

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DIRECTOR'S LETTER

Dear Delegates,

My name is Jessica Wang and I have the honour of being the Director of the Manhattan Project for Toronto Model United Nations 2024. I am currently a sophomore at Semiahmoo Secondary School and entering my second year of Model United Nations. Serving alongside me as your Dais team are your Chairs, Arhant Karthikeyan and Arman Momeni. Additionally, Oscar Zeng and Cynthia Liu will be acting as Crisis Staff for our committee, helping to process all of your private directives. As your Dais for this committee, we sincerely wish to provide all delegates with the best conference experience possible and to lead a crisis that is fun, engaging, and enjoyable to all delegates.

Since I first joined Model United Nations almost two years ago, I have gained invaluable skills, experiences, opportunities, and friendships along the way. From doing my very best to treat the Geneva Convention as a checklist as the delegation of France to spending countless hours working on position papers to attempting to pound the Rules of Procedures into my brain, I have enjoyed every moment of time I've put into MUN. And, having said that, I hope that all delegates will be able to experience the thrill of debate over the weekend.

As a member of this committee, each delegate will represent scientists, officers, and administrators in the quest to resolve the fallout of the Manhattan Project. Topic A, *Radioactive Contamination and Cleanup* addresses the impact nuclear testing has on both the environment and humans for generations as well as dealing with the murky sociopolitical waters such impacts cause. Topic B, *International Diplomacy and Legacy,* will have delegates focus on the international fallout of the Manhattan Project, as well as deciding how they would like this part of history to be remembered.

Finally, if you have any questions about this backgrounder or committee, please do not hesitate to email me at **jessicayidi0852@gmail.com**. This is also the email to which you should submit your position papers. I'm excited to see you at TMUN 2024!

Sincerely,

Jessica Wang
Director of Manhattan Project | TMUN 2024

HISTORICAL DESCRIPTION

The Manhattan Project was a top-secret operation during the Second World War (1942–45). Taking place in the Jornada del Muerto or the Trinity Site, it was under this project that the first Atomic bombs were created.

In 1939, American scientists, many of them refugees from Europe, started to explore nuclear fission in a military setting. Nuclear fission, or the process in which a larger nucleus splits into two smaller nuclei was central to creating the atomic bomb. As a fission reaction occurs, the neutrons released create a chain reaction, resulting in the exponential release of energy. The rapid release of energy then creates the explosion, resulting in the atomic bomb. At the time, nuclear fission was still being explored, with German scientists Otto Hahn and Fritz Strassmann only discovering it in 1938. Both their discovery and the works of Lise Meitner and Otto Frisch would lay the foundation of our knowledge for nuclear physics.

The Manhattan Project started in earnest when physicist Albert Einstein sent a letter to Franklin Delano Roosevelt, warning about the development of nuclear weapons. Warning about the dangers if they were to fall into Nazi hands, Einstein used his influence as a scientist to urge the US to start developing their own weapons. In February 1940, $6,000 would be earmarked to start research on the potential of nuclear weapons, creating the Advisory Committee on Uranium in 1939, which eventually evolved into the Manhattan Project. Appointing J. Robert Oppenheimer and General Leslie R. Groves as the scientific and military directors respectively, together they would lead the research and development of the Manhattan Project.

During the Manhattan Project, two different approaches were used to obtain nuclear fission, working with uranium-235 enrichment and plutonium-239 production. Benefiting from Enrico Fermi's experiments regarding controlled nuclear chain reactions and the separation of isotopes, the Manhattan Project used uranium-235 to create the chain reaction. Occurring in both isotope 235 and 238, uranium enrichment was the process that aimed to increase the concentration of the fissile uranium-235 in samples. This was to collect enough uranium-235 to reach the supercritical mass, the amount of fissile material required to create a self-sustaining chemical creation. When the uranium has been enriched to the required level (typically around 90% or higher for weapons-grade uranium), it can be used as the core for an atomic bomb. The core of the bomb dropped in Hiroshima (code-named “Little Boy”) was made from this process, using its gun-type design to fire off one sub-critical mass of fissile material into another to create a supercritical mass, initiating a rapid chain reaction.

The other type of bomb created was using plutonium-239, another fissile isotope. The process by which plutonium-239 was created involves the exposure of natural uranium-238 to radiation via a nuclear reactor. When loaded into the nuclear reactor, the natural uranium-238 absorbs

neutrons and through a series of nuclear reactions, goes through transmutation. Uranium-238 captures the neutron and becomes uranium-239, which then goes through beta decay (where a neutron is converted into a proton) and results in the creation of neptunium-239. It then captures a neutron and becomes the fissile plutonium-239, capable of sustaining nuclear reactions. The bomb dropped on Nagasaki (code-named “Fat Man”) used plutonium-239 as its core, using its implosion-type design to compress a sub-critical mass of fissile material into a supercritical mass, initiating the chain reaction.

The Manhattan Project involved the collaboration of numerous scientists, including notable figures like Enrico Fermi, Niels Bohr, and Richard Feynman. With research facilities everywhere, from Los Alamos Laboratory in New Mexico, Oak Ridge in Tennessee, and Hanford in Washington. Taking engineers and scientists from all of the Allied Nations, the first successful test was done on July 16, 1945. The Trinity site test is famous for proving the feasibility of the creation of nuclear bombs.

Although at the time, Nazi Germany had already surrendered, Japan had not. After refusing their unconditional surrender request in July 1945, the US government quickly looked for ways to end the war swiftly. As a result, both the uranium-235 and plutonium-239 bombs were dropped on Hiroshima and Nagasaki respectively. Leading to the surrender of Japan on August 15, 1945, no atomic bombs have been used since.

This committee will start on July 16, 1945 - the day of Trinity. Do your characters proud, and work to deal with the aftermath of the Manhattan Project as best you see fit.

TIMELINE OF REAL-LIFE EVENTS

August 1939: Physicists Leo Szilard and Albert Einstein write the Einstein-Szilard Letter, warning US President Franklin Roosevelt of the dangers of atomic weapons in the wrong hands and pushing the US to develop its own

September 1939: German dictator Adolf Hitler invades Poland, and WWII begins

December 1941: Japanese forces attack Pearl Harbor; the US declares war on Japan and Germany

January 1942: President Roosevelt officially authorizes the development of nuclear weapons

October 1942: Physicist Robert Oppenheimer is appointed to lead the Los Alamos laboratory site

May 1945: Nazi Germany surrenders

May 1945: The Target Committee convenes to decide on a list of atomic targets in Japan to produce the most destruction and psychological effects

July 1945: The first-ever detonation of a nuclear weapon, code named Trinity, occurs in New Mexico - **This is the point where the committee diverges.**

August 1945: Two atomic bombs are dropped over the Japanese cities of Hiroshima and Nagasaki

August 1947: The Manhattan Project officially ends

TOPIC A: RADIOACTIVE CONTAMINATION AND CLEAN-UP

After the bombs dropped, clean-up became a large concern. In the immediate aftermath of World War II, the focus shifted from wartime nuclear production to addressing the environmental consequences of the Manhattan Project. Due to the long half-life of isotopes, many would remain in the environment for significant portions of time. For example, plutonium-239, the main material in the core of the Nagasaki Bomb, has a half-life of 24,000 years. The sites involved in nuclear weapons development, such as Los Alamos in New Mexico and Oak Ridge in Tennessee, faced daunting challenges related to radioactive waste disposal. The urgency to dismantle and clean up these facilities was compounded by the realization that inadequate management could pose long-term risks to both human health and the environment. However, the scale and complexity of the cleanup efforts were unprecedented, requiring the development of new technologies and methodologies, especially the development of remote-handling technologies and decontamination techniques

Nuclear Waste Storage

Besides worker safety, nuclear waste storage also became a pressing issue in the aftermath of World War 2. The Hanford Site in Washington State was a pivotal location for plutonium production during the Manhattan Project, and emerged as a major focal point for nuclear cleanup efforts. The production processes at Hanford generated vast amounts of radioactive waste, leading to extensive contamination of the surrounding area. Initial cleanup measures involved the burial of waste in trenches, but the long-term implications prompted a reassessment of these practices. The Hanford Site set the stage for ongoing challenges in managing high-level nuclear waste and laid the groundwork for future remediation strategies. Radioactive contamination has a significant effect on the health of both humans and the environment, leading to an increased risk for cancer, health conditions, and more. The escalating tensions of the Cold War fueled a rapid

expansion of nuclear activities, resulting in an extensive network of facilities for weapons production and testing. The Nevada Test Site, utilized for atmospheric nuclear tests, faced cleanup challenges as fallout spread over the surrounding areas. These developments underscored the need for a comprehensive approach to nuclear cleanup, emphasizing both containment and remediation strategies to address the legacy of radioactive contamination. With the sheer volume of radiation released from the atomic bombs, many are at increased risk. This creates two main issues that need to be solved:

1. How can radioactive contamination be cleaned up without risking the safety of those who are a part of the effort?

2. How can radioactive waste be marked and stored in a way in which people can recognize the danger it poses even 48,000 years later?

TOPIC B: INTERNATIONAL DIPLOMACY AND LEGACY

The Manhattan Project would also influence global events for decades to come. As for right now, however, with WWII still raging in the Pacific and Japan unlikely to surrender, it is up to you to decide whether or not this newfound power should be used over civilian targets.

The Pacific War

The nuclear bomb was originally invented to end the war in Europe against Germany, but victory was achieved before the bomb was invented. However, war is still raging against Japan in the Pacific, and there are calls for the use of the nuclear bomb to force Japan to surrender.

The Japanese military government is calling for total resistance of an allied invasion, and if a naval invasion were to occur, casualties on both sides would likely amount to millions. Japan has also implemented the *Volunteer Fighting Corps*, where civilians have been equipped with bamboo spears and other rudimentary weaponry to combat allied forces. An invasion would result in the deaths of many of these civilians.

The decision of whether or not to use the bomb against Japan is a difficult one. On one hand, the bombs would likely result in less overall casualties, but they would reveal the existence of the technology to the Soviet Union. On the other hand, not utilizing the bomb would allow delegates to show their hand at a later date, such as in diplomatic negotiations with the USSR. However, this would force the U.S. military to directly invade Japan and would devastate the island for decades to come. There would be no chance of Japan becoming a strong ally in the Pacific, and much of the civilian population will be killed or injured.

The Union of Soviet Socialist Republics

The USSR, although currently our ally on paper, is likely to become the strongest rival of the United States after the end of the war. Although we are currently ahead in nuclear technology, there is no telling when the USSR might catch up or even surpass us. Soviet espionage is strong, and it is possible that they *may have even already infiltrated this committee.* Delegates must work on preventing an all out nuclear war, whether that be through threatening a direct attack on Moscow or through diplomatic negotiations with the Stalin regime.

Preventing Nuclear Proliferation

The other nations of the world, from China to Spain, are likely to begin nuclear research as soon as they know of the existence of the bomb. With each new nation in possession of nuclear weapons, the threat of a global nuclear holocaust increases. Therefore, it is important that this committee act to prevent nuclear proliferation by whatever means necessary.

CONCLUSION

Although the leadership of the United States is currently celebrating the invention of the nuclear bomb, the world will now have to grapple with the consequences of this destructive technology. Civilians, in America and the rest of the world, must be taken into consideration by Manhattan Project delegates, with radioactive waste and nuclear fallout being key concerns. There are also key foreign policy decisions ahead, from whether or not the bomb is dropped on Japan to how delegates interact with the Soviet Union. Will the nuclear bomb allow for American hegemony over the entire world, or will it lead to a global nuclear holocaust? That decision is up to you, delegates. Good luck.

FURTHER RESEARCH

1000 Days of Fear (Documentary)
Oppenheimer (Movie)

https://www.britannica.com/event/Manhattan-Project
https://www.osti.gov/opennet/manhattan-project-history/index.htm