PEOPLE'SDEMOCRATIC REPUBLIC OF

ALGERIAMINISTRY OF HIGHER EDUCATION AND

SCIENTIFIC RESEARCH

FACULTY OF FOREIGN LANGUAGES

DEPARTMENT OF ENGLISH

Literature and Civilization

A Case Study: American Conquest to Control Nuclear Power and the Result of Securing Such Power (1962 to 1996)

Submitted by: Zerouali Mahmoud

Members of the board:

Chairperson: Dr. Ghermoui

Supervisor: Dr. Khinèche

Examiner: Dr. Bekaddouri

Academic Year: 2019-2020

Abstract

It is undeniable that The United States of America has always been the leading nation when it comes to technological warfare. Starting off from small fire arms such as the Smith and Wesson 357, and Pistol all the way to the Carbine M14 in the late 1950s. But ever since, the human race came across the discovery of nuclear substances and atomic chain reactions in 1895. Countries all over the world wanted to adapt it into war and the U.S. was no different, sadly wherever there is a rivalry, there is conflict. This research aims to investigate the multiple adapted containment policies used by the United States on other countries to keep its hand on top of nuclear power even on itself. This conflict started off as mere race to who had the most Nuclear Warhead then escalated to who had the most powerful Nuclear Warheads all the way to full out threats between nations over Nuclear Warheads. The Western Hemisphere was almost completely eradicated over a conflict between the Soviet Union and the United States of America at the Caribbean waters. The conflict occurred because of a political crisis concerning Cuba. Indeed, the U.S. activated DEFCON 3 and the Soviet Union initiated ballistic missile deployment in Cuba with a confrontation that lasted 13 days, this event was also called the Missile Scare. On the other side of the globe, there was also an issue with the Korean Peninsula when the two Koreas wanted to join the Non-Proliferation Treaty (NPT) conditions were put by the International Atomic Energy Agency that revolved around restrictions on both countries. Admittedly, when it comes to the possession, manufacturing or researching, any and all nuclear substances in exchange of both the Soviet Union and the United States of America would retract all of their land and sea based Nuclear Warhead from the peninsula. Later on, the Democratic People's Republic of Korea (DPRK) also known as North Korea was accused of cheating on its safeguard's agreement; which sparked a wave of accusations and threats to its national security. However little did the U.S. know about the despair it was on the verge of bringing on its own people. multiple experimentations on the test site of Nevada failed, where they thought it had a low dispersal rate only to find out that even with such dispersal rate catastrophes still resulted from it. The United States of America used multiple adapted containment policies on other countries to keep its hand on top of nuclear power even on itself.

Key words: Technological warfare; USA; Nuclear substances; Atomic; Warheads; Dispersal rate; Western and Eastern hemisphere; DEFCON 3; DPRK.

Dedications

I dedicate this humble dissertation to first and foremost my teacher and my friend Professor soon to be a Doctor Tiguia Cherif who had been with me from the moment I decided to work on this topic. I also owe a massive thank you to my family who provided with the best environment to complete my work and my friend Abdel Rahim Nasri who had been the one I always relied on to give me a student's opinion over my work. As well as my Father may God rest his soul and my mother who gave me the tools and cared for me from the moment I opened my eyes.

Acknowledgements

I wish to give my thanks to the board of examiners who allowed me to share my ideas and had lent me their time and experience in evaluating my work. I would also like to give my deepest thanks to my teacher Mrs. Khinéche Souméya who went through restless days only to provide her students with safe passage to the Official life style. Mrs. Khinéche despite all her hardship and despite the sickness that rendered her bedridden for days, she still stood strong she still fought back and respected her occupation as a teacher and still fulfilled her job to the fullest. And to you Mrs. Khinéche Souméya I say you are a fighter whose fight is not over and your courage is still far from depleting.

Table of Contents

List of Figures

List of Maps

General Introduction

Did you know that the United States has enough fire power to destroy our planet19 times? Ever since the dawn of ages conquering nations was a practice of all leaders, knowing that weapons do not win wars and some soldiers may become unreliable in the battlefield, leaders turned to manufacturing. Of course, they cannot manufacture soldiers however they can manufacture weapons that would win them wars. In the middle ages the bow was the pinnacle of technological ware far allowing Alexander the Great to rule an empire that stretched from the Balkans to modern-day Pakistan.

Experiments conducted by a German scientist Wilhelm Röntgen led to the discovery of a new type of energy different from Hydraulic and steam energy yet it produced electricity. This discovery was later carried on by scientist to produce Nuclear Reactors to power up entire cities and a fleet of submarines.

Following Alexanders footfalls, the United States sought to harness this new power and developed a new weapon. A weapon that would leave cities devastated and inhabitable such as the case with the two U-235 Bombs dropped on the Japanese cities of Hiroshima and Nagasaki that lead to the death of over 200.000 Japanese citizens on impact. Naturally the United States was not alone in this field of weaponry the Soviet Union also competed with the U.S. which resulted in a heated conflict, as well as the Korean Peninsula.

The United States came to learn the effect of such weapons through testing in its own property. These tests revealed that the technology of nuclear fission is not to be tampered with and this led to the created of internal problems in the United States. So, how did the United States climb to such a high position with Nuclear Power? And what are the approaches that the U.S. used to face the competition and treat the issues that rose in the U.S.?

To answer these questions, we focus on the following hypotheses:

- The use of personal laboratories into the research and development of nuclear weapons.
- Adapting Richard Nixon’s containment policy on weaker countries.
- Implementation of Treaties and contract with rivalling countries.
- Using its financial background to silence the opposing parties.

This research is aiming to not only shed light on the evolution of nuclear power but to also clarify what holding such power means for a nation being as strong as the United stated of America or as mediocre as North Korea.

In this research we are going to deal with three chapter, each chapter has a title.

The first chapter tackles the discovery of Nuclear energy and the evolution of nuclear energy from a mere accident to a source of power, to be later on used to power up cities and submarine. Moreover, the chapter will be dealing with weaponization of nuclear power and its first recorded use.

The second chapter deals with the rivalries that occurred between the United States and other countries, more specifically with the Soviet Union and North Korea, in which, the world was on the verge of nuclear war, and how this nuclear war was averted.

The third and last chapter will shed light on the most notable nuclear tests conducted by the U.S. Military that resulted in catastrophes to the American nation, and how the American government dealt with such immense failures towards its people.

Chapter One: Rise of Nuclear Power

Introduction

This chapter tends to shed light on the events that led to the discovery of Nuclear Power and its evolution. The Nuclear Power as we know it today has been discovered by mistake on the hands of a German scientist called Wilhelm Röntgen back in the late 19thcentury. This initial discovery was later on continued by scientist all over Europe since Wilhelm's experiment wasn't hard to replicate until a French physicist by the name of Henri Becquerel discovered new things about Radiation and which elements that can cause it. In 1989 the couple Pierre and Marie curie who were colleagues of Becquerel discovered a new element that would aid in further understanding and producing Radiation which will later lead into Producing power from it.

The Studies conducted by the scientists made way for Enrico Fermi to come up with the First ever self-sustaining nuclear Reactor in 1942 in Chicago, United States. But the United States had other plans concerning this newly found power, weaponization was a priority of the U.S. A facility was formed and a researching program was funded called the Manhattan Project that will result in an unforgettable event in human History

1. Discovery of Nuclear Power

By Kevin Jaquith's words, the History of Nuclear energy goes all the way back to the late years of 19th century. At that time a German scientist who goes by the name of Wilhelm Röntgen who was in his low lightened Laboratory noticed a sparkling coming out from between a cathode tube and a luminescent screen, he knew that the tube was too far for its rays to affect the screen, so what was happening? He theorized that the sparkling of the screen was caused by some unknown ray. In math equations the unknown is symbolized by an X, hence the name "X-ray" came into existence. The results of this accident scattered around Europe fast and scientists replicated the experiment since it was easy to be put together again, which resulted in the confirmation of Röntgen's discovery. The image on Figure 01 displays the first X-Ray that was taken by Wilhelm Röntgen for his wife's hand while wearing her wedding ring. Little did all the scientist tampering with X-Rays knew, the radioactivity effects the human health and leads to death, which is what happened to many of those scientists who developed cancer from all the exposure.

Figure 01: Wilhelm Conrad Röntgen First X-Ray taken 22 December 1895

Source: www.Alamy.com Keystone Press/Alamy stock photo March 27 ,2012

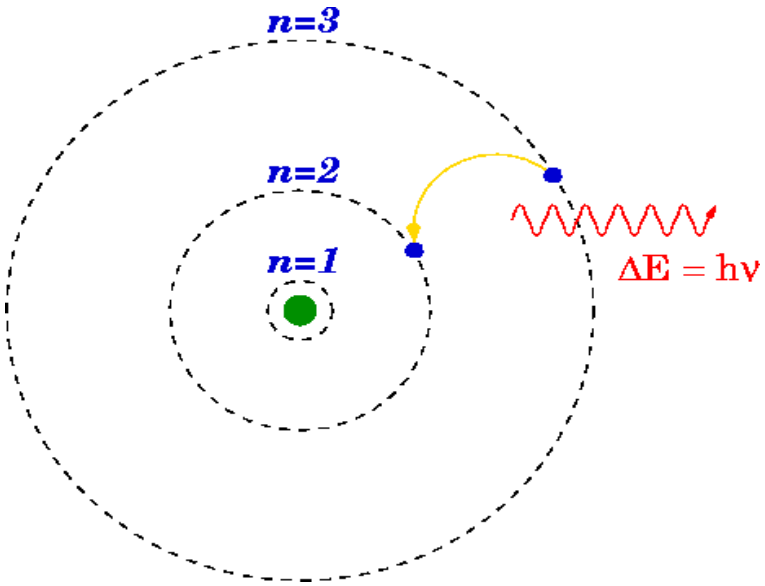
Once Röntgen had discovered X-rays, scientists all over Europe began to experiment in the field. Most notable is Antoine Henri Becquerel, a French physicist and scientist born in December 15, 1852 and deceased in August 25 1908(Henri Becquerel). His Golden Egg was the discovery of Radioactivity that won him a Noble prize in Physics in 1903.In 1896 and 1897, Becquerel discovered that:

- Uranium was a strong source of radiation.
- Radiation was independent from any other source such as light, heat, or electrical current.
- The rate that the radiation was released is constant and not decaying.
- The energy let off by Uranium had similar properties to X-rays but remained still different.
- The energy that Becquerel discovered is now known as alpha and beta rays of radiation, and by acting alone he discovered radiation.

In 1898, Pierre and Marie Curie a married couple were also physicists and worked with Becquerel receiving the Noble Prize in physics along with him in 1903. They first used the term *radiation* to describe the effects that they were observing from Uranium (Marie and Pierre Curie). The Curies' also discovered Radium which they used to try to cure cancer, a process that is still used today. The Curies' also postulated that the element Polonium must was present but they could not prove its existence. The Curies would later die from radiation poisoning Pierre in April 19th, 1906 and Marie in July 04th, 1934 after having spent much of their time experimenting with radiation without using appropriate protection (Marie and Pierre).

In order to further experiment on uranium scientist needed to understand how the atom worked and, in 1913 Niels Henrik David Bohr a Danish physicist published his model of the atom (Hydrogen Pictured).

Figure 02: Bohr Model of the Atom



Source: ThoughtCo.com/ Evan Polenghi October 01,2004

This atom is still taught in schools today. Bohr's model was perfected in 1932 by James Chadwick a British physicist who discovered the neutron and made Bohr's model work. The neutron is an important component in the working of nuclear fission.

Lastly, in 1935 an Italian physicist named Enrico Fermi discovered that new sub-products result from the bombardment of a radioactive element such as Uranium by Neutrons. These sub-products are different from Uranium and are lighter than their original state, but since fission was yet to be discovered further experimentations were not possible. Not until 1938 when it was discovered by the two German chemists Otto Han and Fritz Strassman as they also discovered that the sub-products of Neutron bombardment on Uranium released energy proving Albert Einstein's theory that was ahead of this experimentation by thirty-three this theory being: $E=mc^2$ translating to : Kinetic Energy of a Body (E) equals its increased relativistic mass (m) times the speed of light squared (c^2) (Enrico Fermi). Making it the first time where all the components of the chemical fission were known and under control. Following the start of World War II that was ignited by the invasion of Poland by the German Nazi leader Adolf Hitler, scientist all around Europe sent petitions to their governments to fund Nuclear Fission programs for both energizing and weaponizing it.

2. Turning it into a Power Source

> "*An integral and necessary step in the development of the nuclear bomb was the establishment of a stable nuclear reaction. This dream was realized for the first time on December 2, 1942 when Enrico Fermi established the first self-sustaining nuclear reactor on a squash court underneath the stadium at Chicago University Fermi and his partner, Leo Szilard were working under the assumption that if enough uranium and graphite were placed together in a cube, then a fission reaction would happen automatically and be self-sustaining. This is what prompted them to build Chicago Pile-1 with an addition of Cadmium control rods to slow down the reaction and make sure it would not get out of hand. At 3:25 PM, the reactor reached critical mass and began to produce energy*". (Enrico Fermi).

Once World War II was over, the world was free to use what Fermi had learned to pursue nuclear power as an energy source. The US government supported nuclear power as an energy source and created a special type of reactor called a breeder reactor. Experimental Breeder Reactor I (EBR1), was completed on December 20, 1951 in Idaho. EBR-I produced the first electricity from nuclear energy, but in very small amounts. (U.S. Department of energy. p.8)

At this point, the Soviet Union was not far behind the US. In June of 1954 the USSR completed the world's first nuclear powered electricity generator in Obninsk, Soviet Union. Another important early nuclear reactor was Calder Hall which opened in England in 1956(Breeder reacter). Calder Hall was the first nuclear power plant to produce nuclear power commercially. The first commercial nuclear power plant in the US was built in Shippingport, Pennsylvania in 1957. Once Shippingport was up and running, utility companies all over the US started to build nuclear power plants to sell energy to their customers; the first of such plants was the one constructed in Dresden, Illinois which was constructed entirely without any government funds (Breeder reacter).

While nuclear reactors were being installed all over the world for commercial purposes, the US was adapting the nuclear reactor for military purposes, most notably, nuclear powered submarines. Nuclear powered submarines are submarines that use a nuclear reactor for propulsion, rather than a

diesel engine. The benefit of using a nuclear reactor in this way is that the submarine has almost never to refuel, can maintain high speeds for longer periods of time, and only needs to surface when running low on provisions. The first nuclear vessel was built in 1955 and was named the USS Nautilus (Breeder reacter).

1. Weaponization of Nuclear Power

With the signs of war breaking out in Europe and the Pacific, many American scientists got together to maximize efficiency and work on the creation of fissionable materials for a nuclear bomb. In 1942, Vannevar Bush an American engineer advised the US Army into taking a straightforward initiative in the construction of a nuclear bomb. The Army decided to take over the project under command of General Leslie Groves with research lead by J. Robert Oppenheimer (Manhattan Project).

> *"The US Army formed the project under the name "The Manhattan Project" because much of an original work had been done in and around Manhattan, New York. When the Army took control, they decided to move the development of the nuclear bomb to three principle areas, Oak Ridge, Tennessee, where the enriched Uranium was made; Hanford, Washington, where Plutonium was created; and Los Alamos, New Mexico, where the final assembly was done and a majority of the lead scientists were located"* (Manhattan Project).

With the deep pockets funding it, The Manhattan Project decided to try to work on two different types of bombs at once, a Uranium bomb and a Plutonium bomb. The Uranium bomb was a gun type bomb where a "bullet" of Uranium-235 (which is an isotope of uranium that is known to be the most prominent uranium isotope to sustain nuclear fission) is fired into a mass of U-235, causing a critical mass and explosion, this bomb was primarily produced at Oak Ridge. And the Uranium type of bomb in the later stages of the projects was mostly abandoned, after proving to be very hard to produce and extremely unstable.

Most of the work on the Manhattan project was put into the development of a Plutonium bomb. The Plutonium bomb uses a mass of Plutonium surrounded by conventional explosives. When the explosives go off, the force directs all of the energy inward, toward the mass of

Plutonium which forces it into a sphere. The explosion causes the Plutonium in the middle to reach critical mass and explode. The Plutonium bomb yields a greater explosion using less fissionable materials.

Due to the uncertainty of the operation of the Plutonium bomb, a test was required to ensure that it would work. On July 16, 1945 the first nuclear bomb went off at the Trinity test site in New Mexico. Shortly after on August 6, 1945 a Uranium bomb, *Little Boy* and on August 9, 1945 a Plutonium bomb, *Fat Man*, were dropped on Japan. The dropping of these two bombs ended World War II and it was the big event of Hiroshima and Nagasaki.

Conclusion

The development of nuclear energy went through many phases to reach its current state and it comes as a surprise for many to know that its discovery was by mistake. The discovery was made by a German Scientist Wilhelm Röntgen in 1895 and was carried by Antoine Henri Becquerel to discover its properties. All the way to the married couple Pierre and Marie who discovered Radium and used it in medical applications such as curing cancer which is a method still being used today in some regions. But it did not stop there and was used in other applications as well.

Researchers all over the globe wanted to experiment on the new discovery and produce something new out of it. And in the mid-20th century scientist Enrico Fermi made the first self-sustaining nuclear reactor underneath the stadium at Chicago University. This inspired the government to build the first commercial energy producing nuclear reactor named EBR-1 in 1951. However, the United States had already begun working on weaponizing the nuclear energy, and in August 9,1945 two bombs were dropped on the Japanese cities of Hiroshima and Nagasaki as a means to test the bombs that were developed by the Manhattan Project.

Chapter Two: Race and Rivalries of Nuclear Power

Introduction

With the rise of the tremendous power of nuclear Energy and nuclear bombs being right on the next corner rivalries were destined to appear, the most notable ones were that of the United States of America with The Soviet Union and the Korean peninsula more specifically North Korea. The U.S. government was not fond of the idea of the Soviet Union supporting the Cuban official Fidel Castro which resulted in a Mexican showdown between the two nations using Nuclear missiles. The U.S. would rise victorious to the public but in reality, it was a win for both nations.

In the Korean Peninsula however. The U.S. was forced to withdraw all of its sea based Nuclear stations from the area as a condition from North Korea to join the NPT, but North Korea was also forced to follow certain conditions that were put by the IAEA as safeguard agreements that would limit the North Korea's contact with any radioactive substance, in which North Korea was cheating in. There were multiple inspections conduct by special investigators sent by the IAEA, and after many arguments between the U.S. and North Korea the two nations agreed on a solution that would benefit both, but the U.S. received a massive blow below the belt and critics from all over the NPT were discussing the failure of the United States to contain the situation correctly.

1. Race to Nuclear Power "Russia"

1.1. Cuban Missile Crisis October 16, 1962 to October 28 ,1962

On January 1st1959, the Cuban government fell to communist revolution armies, boosting into power Fidel Castro(born August 13, 1926, near Birán, Cuba-died November 25, 2016, Cuba)who was a Cuban revolutionary, served as Prime minister from 1959 to 1976 and became President from 1976 to 2008 (Missile Crisis). The Soviet Union was on Castro's side as they supported and praised him. Furthermore, the new Cuban government was recognized by the Soviet government on January 10th. At the same time when the United States began withdrawing Cuban sugar, the Soviet Union began purchasing large quantities of it to support the Cuban economy, and in return the Cubans would deliver fuel and eventually placing nuclear ballistic missiles on Cuban soil. These missiles were intercontinental, making the trip from Cuba to the U.S. a very quick one. On October 14, 1962, an American spy plane discovered these nuclear missile sites under construction in Cuba. (Missile Crisis)

Upon hearing this, President John F. Kennedy immediately called for meetings with his officials to see about the situation and how will it be handled. The meeting's end result ended

up split between two solutions, a military solution and a diplomatic solution. Shortly after, President Kennedy ordered a naval blockade all around Cuba as well as Ordering military forces to DEFCON 3 (the defense condition of U.S army force, varies from level 1 to level5 according to the situation the USA is currently at and in this case, it means Armed forces readiness increased above normal levels and the Air Force is ready to mobilize in no more than 15 minutes). As tensions increased, Kennedy eventually ordered U.S. military forces to DEFCON 2 (Armed forces are on high alert and ready to deploy in six hours). This incident almost cost the world the western hemisphere as this was the closest the world has been to a nuclear war. Even though the U.S. military was on DEFCON 2, nuclear war was still a mere possibility. Despite the fact that the two countries had mutual feelings of hate and an intent to destroy one another, resulting to nuclear warfare was being avoided by the two at all times since it would end both countries no matter what happens. While the public at the time was on its toes by the mass destruction that is on the horizon, the leaders of the two Nations were working behind the sight of the public eye in order to come to a peaceful conclusion.

Premier Khrushchev wrote to President Kennedy in a telegram on October 26th, 1962 saying that, "Consequently, if there is no intention to tighten that knot and thereby to doom the world to the catastrophe of a thermonuclear war, then let us not only relax the forces pulling on the ends of the rope, let us take measures to untie that knot". It is apparent that both men wanted to avoid nuclear war due to mutually assured destruction which pointed out just how close the world was from losing half the Planet.

Eventually, on October 28th, After the discussions between U.S and Soviet officials, Khrushchev announced that the Soviet Union would withdraw all missiles from Cuba (Missile Crisis). Shortly after, the U.S. followed with withdrawing all their nuclear missiles from Turkey. These missiles were kept secret as preparations for any DEFCON, which had threatened the Soviets. The catch was that the U.S.'s withdrawal of their Jupiter Missiles from Turkey was kept private causing the negotiations between the two nations to appear to the world as a major U.S. victory. This ultimately led to the downfall of Premier Khrushchev.

1.2. Strategic Arms Reduction Treaty July 31, 1991 (New START)

The United States and Russia hold nearly 90 % of all nuclear warheads of the world and with the advancements of nuclear technology and projectile science a nuclear missile launched from the United states aimed towards Russia can hit in as close as thirty minutes and

Russia's response would be just as aggressive and just as fast. A small misunderstanding, might cause the entire western hemisphere to be completely obliterated or even worse the whole planet.

The two countries have displayed efforts to negotiate the limits of power of such weapons ever since the cold war ended. The countries began in the late 1960s and produced the first strategic arms limitation treaty in 1972 (Salt 1) signed by President Richard Nixon and general secretary Leonid Brezhnev (SALT). However, this only worked on one agreement which was to freeze the strategic missile launchers on both sides at existing levels. Later on, in 1987 the American President Ronald Regan and Mikhail Gorbachev was leading the Soviet Union. Regan emphasized on not only limiting the nuclear weapon but also to start working on the reduction of nuclear weapons. Therefore in 1987, a new treaty was signed the Intermediate Range Nuclear Forces Treaty by the two eliminating an entire class of intermediate range missiles as one as the most important key element of this treaty each side was allowed to inspect the others nuclear facilities to make sure the other side was not cheating following Reagan's statement on the Russian proverb "Doveryai no Provryai", which meant "Trust but verify".

New START continues the bipartisan process of verifiably reducing U.S. and Russian strategic nuclear arsenals begun by former Presidents Ronald Reagan and then George H.W. Bush. New START is the first verifiable U.S.-Russian nuclear arms control treaty to take effect since START I in 1994 which resulted in the removal of about 80% of strategic nuclear weapons (New START).

> "*New START was signed on April 8, 2010, in Prague by the United States president Barack Obama and Russia President Dimitri Medvedev and entered into force on February 5, 2011. New START replaced the 1991START I Treaty, which expired on December 2009, and superseded the 2002 Strategic Offensive Reductions Treaty (SORT), but terminated when New START entered into force*". (New Start)

New START resulted in the reduction of both countries long range nuclear weapons from 2.200 to 1.550 each, 700 deployed intercontinental ballistic missiles (ICBMs), deployed submarine-launched ballistic missiles (SLBMs). Moreover, it deployed heavy bombers equipped for nuclear armaments, 800 deployed and non-deployed ICBM launchers, SLBM

launchers, and heavy bombers equipped for nuclear armaments. But Senator Chambliss said that this agreement put threat on US plans from missile defense system based in Europe. The Treaty does not restrict testing, development, or deployment of current or planned U.S. missile defense programs or long-range conventional strike capabilities (New Start).

The Treaty's duration is ten years, unless effected by a subsequent agreement. The Parties might agree to extend the Treaty for a period of no more than five years. The Treaty included a withdrawal clause that is standard in arms control agreements. The 2002 Moscow Treaty terminated when the New START Treaty entered into force.

It was rumored that current President of United States of America Donald Trump had no intentions of extending the New START treaty when asked by Fox News if the US would pull out of the treaty National Security Advisor Robert O'Brian replied "No! We are going to enter into good-faith negotiations with the Russians on nuclear arms control. On the meantime, Russia agreed to an extension, the Trump administration called for a new treaty that would include China. China, whose nuclear arsenal was a fraction of the size of Moscow's and Washington's, he claimed that he was not interested in participating in such talks.

2. Rivalries of Nuclear Power "The Korean Peninsula: North Korea and South Korea"

2.1. Non-Proliferation Treaty of Nuclear Weapons (NPT)

> *"The Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which entered into force in March 1970, seēks to inhibit the spread of nuclear weapons. Its 190 (191 with North Korea*) states-parties are classified in two categories: nuclear-weapon states (NWS)consisting of the United States, Russia, China, France, and the United Kingdom and non-nuclear-weapon states (NNWS). Under the treaty, the five NWS commit to pursue general and complete disarmament, while the NNWS agree to forgo developing or acquiring nuclear weapons. With its near-universal membership, the NPT has the widest adherence of any arms control agreement, with only South Sudan, India, Israel, and Pakistan remaining outside the treaty. In order to accede to the treaty, these states must do so as NNWS, since the treaty restricts NWS status to*

nations that "manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967." For India, Israel, and Pakistan, they were all known to possess or suspected of having nuclear weapons, joining the treaty as NNWS would require that they dismantle their nuclear weapons and place their nuclear materials under international safeguards. South Africa followed this path to accession in 199"1 (The NPT).

2.2. Accusations of North Korea Cheating in its Safeguards Agreement

Article III.4 of the NPT dictates that a NNWS entering to the Treaty must apply a comprehensive safeguards agreement with the International Atomic Energy Agency (IAEA) before the mark of 18 months from its accession. Despite reoccurring criticism, especially at the 1990 conference on the review of the NPT, but also at meetings of the IAEA, the Democratic People's Republic of Korea (DPRK) also known as North Korea took no action to meet the requirements set up by the NPT. Not only that, it attempted to set a number of political conditions before it would accept the agreement. Finally, on 10 April 1992, nearly five years behind the deadline, North Korea brought its safeguards agreement into force

Approximately 100 U.S. nuclear weapons had been based in South Korea. Therefore, after President George Bush announced the unilateral withdrawal of all naval and land-based tactical nuclear weapons deployed out of country in September 27, 1991, Soviet President Mikhail Gorbachev mimicked eight days later. Following that in November 8, the same year, in response to President Bush's unilateral move, President Roh Tae Woo of South Korea announced the Declaration on the Denuclearization of the Korean Peninsula, in which South Korea promises not to produce, possess, store, deploy, or use nuclear weapons, this declaration also bans South Korea from holding Nuclear reprocessing or Uranium enrichment facilities.

These promises, if enacted, would satisfy all of North Korea's conditions for allowing IAEA inspections of its nuclear facilities as well as having North Korea sending "Initial Reports" on all nuclear material to be subjected to safeguards in the country, and North Korea had no choice but to comply. on 4th May 1992 North Korea submitted its report. But this report had within it some surprises. Until the time the report was submitted the IAEA was officially aware of the existence of a single Soviet supplied research and a critical assembly reactor which the DPRK had placed under IAEA safeguards in July 1977. Aside from this small plant, the Initial Report contained a 5 MW(e)graphite moderated Magnox type reactor with a thermal power range of 20 -50 Megawatt, a fuel fabrication plant and a "radiochemical

laboratory" (while North Korea said it was being used for Electricity Generation in reality it was a reprocessing plant) and two much larger Magnox reactors of 50 MW(e) and 200 MW(e) under construction. This report made it seem like the DPRK is poking fun at the IAEA.

The three Magnox reactors were constructed by North Korea itself. They were a lot like the ones that the United Kingdom had used in the 1950s to produce plutonium for its first Nuclear warhead and to generate nuclear electricity. The DPRK authorities showed the IAEA a minimal amount of plutonium (less than 100 grams) which, they said that it was extracted from damaged fuel rods discharged from the 5 MW(e) reactor. They stated that this plutonium was all that they had separated, and that they had conducted only a single reprocessing operation, or "campaign", in 1990. Whereas, the 50 MW(e) reactor was due to be operational in 1995, this reactor would have produced as much as 40-50 kilograms of plutonium a year, which is enough to make a dozen or half a dozen of nuclear warheads.

However, the IAEA's analyses showed a much different case. The analyses proved that there had been multiple reprocessing campaigns. This meant that the DPRK had separated more plutonium than it had stated in its Initial Report. The amount of undeclared Plutonium cannot be calculated in grams or kilograms since it is unknown, and only with further investigations it would be unveiled. It also showed that analyses on the Plutonium provided by the DPRK to the IAEA for the report was not a match with the one found on the sites.

To further enhance the IAEA's evidence, the U.S. provided the IAEA with satellite images showing two extra structures that were not listed in the DPRK's Initial Report. Both facilities were the type to store nuclear waste. It was clear that the DPRK authorities had tried to hide the function of the two facilities by planting trees and using other camouflage techniques.

If the IAEA was to analyse the Nuclear waste from these facilities, it would answer the question of: How much Plutonium has the DPRK separated. In its conquest, the IAEA requested investigation on the two facilities in which the request was met by a refusal on the basis that they are Military facilities and the inspection would pose a threat on the nation. Director General Blix then demanded a "special inspection", a demand that was rejected by the board. But on 25th February 1993, the Board formally accepted Blix's request and set a term of three months for the DPRK to comply. On 12th March 1993, the DPRK responded, giving notice that it intended to withdraw from the NPT. On 1st April 1993, the Board found that the DPRK has breached its safeguards agreement and reported the breach to the Security Council which, on 11th May, by a vote of 13 in favor, none against and two abstentions (China and Pakistan) decided "to invite" the DPRK to fulfil its obligations under its safeguard's

agreement.

On 11th June 1993, one day before its notice of withdrawal from the NPT was to be in effect, the USA persuaded the DPRK to halt the "effectuation" of its withdrawal and to accept normal IAEA inspection of the sites it had declared in the report. But during the remainder of 1993 and the first half of 1994 the DPRK continued to frustrate and harass IAEA inspections. In 1994, the IAEA proposed that when the irradiated fuel from the 5MW(e) reactor was discharged it should be done in a way that would permit the IAEA to verify the history of the reactor core and thereby help solve the question whether the DPRK had separated more plutonium than it had declared. In May 1994, the DPRK rejected the IAEA's proposal and hastily discharged the fuel in such an unstructured way as to make any historical analysis of the core virtually impossible.

2.3. Result of North Korea Breaking the Safeguards Agreement

On 10 June 1994, the IAEA Board of Governors decided to suspend all IAEA technical assistance to the DPRK. The latter responded on 13th June by giving notice of its withdrawal from the Agency. On 16th June 1994, the USA proposed that the Security Council should impose a series of increasingly onerous sanctions on the DPRK. The DPRK repeated an earlier warning that sanctions would mean war. The USA declared that it would not be deterred by threats. With this event the tension rose higher than it was ever perceived and the Eastern hemisphere was placed in peril.

At this stage on 17th June 1994 former President Jimmy Carter stepped in and went to Pyongyang to discuss the crisis with Kim Il Sung himself. Carter came back with conciliatory messages. If the USA was prepared to meet the DPRK on certain points such as diplomatic recognition, an assurance that the USA would not attack the DPRK and access to US nuclear power technology, the DPRK would be prepared to refrain from refueling the operating reactor and to refrain from reprocessing the spent fuel, perhaps stop the construction of the larger reactors, and allow the IAEA to keep its inspectors in the DPRK. Hardly had the USA responded to this overture by resuming high level discussions with the Government of the DPRK when the latter announced that Kim Il Sung was dead. On 5th August 1994, "high level talks" reopened in Geneva and on 18th October the two delegations announced that they had been able to concur in a so-called "Agreed Framework", which they signed three days later. On 4th November 1994, the Security Council asked the IAEA to carry out the tasks assigned to it in the "Agreed Framework" and on 11th November 1994, the IAEA Board authorized the

Director General to do so.

1. The DPRK would freeze its existing nuclear programme and accept international verification of all existing plants.
2. The IAEA would verify compliance with the freeze and would continue to inspect "Unfrozen Activities "The DPRK would eventually dismantle all the "frozen" plants.
3. The two governments would seek methods of storing the fuel from the 5 MW€ reactor and disposing of it in a way that "does not involve reprocessing "in the DPRK.
4. The USA would put together an international consortium to arrange financing ($4 billion) for and the supply of two 1000 MW(e) light water reactors.
5. Dismantling of the DPRK's plants would be completed "when the LWR project is completed" target date: 2003.
6. The USA would arrange for the supply of heavy oil to "offset the energy foregone due to the freeze" of the DPRK's graphite moderated reactors.
7. Both nations would ease trade restrictions and move toward establishing diplomatic relations.
8. The USA would provide formal assurances to the DPRK "against the threat of use of nuclear weapons by the USA" (Fischer).

But it should be noted that nowhere in the "Agreed Framework" was the mention of the DPRK re-joining the NPT.

In most of the world the "Agreed Framework" was greeted with a sigh of relief. The danger of a second Korean war had been averted. The Republic of Korea and the DPRK (South Korea and North Korea) would establish technical co-operation at all levels, opening up the reclusive North to engineers and technicians from abroad. Supporters of the Framework maintained that it was not based in any way on trust; that it would be most strictly verified and that if the DPRK were to cheat in any way from its terms all commitments for the supply of nuclear technology and fuel oil and the establishment of diplomatic relations would immediately lapse.

The light water reactors would also make the DPRK dependent on supplies of foreign (low enriched) nuclear fuel for a large part of its electricity production. There was, however, some harsh criticism in the USA. Critics point that the DPRK had negotiated by far the better deal, including 2000 MW(e) of modern nuclear power reactors, a substantial quantity of fuel oil and progress towards diplomatic recognition in return for stopping to

do something that it should not have done in the first place and scrapping some obsolete nuclear plant, and that it would encourage other States to follow the DPRK's example. But no one seemed able to come forward with a credible alternative and, in the end, most of the critics seemed reluctantly to accept it which translates to the Korean peninsula ending up with the most benefits from this deal.

The IAEA has been bombarded by criticism after failing to detect Saddam Hussein's secret nuclear weapon programme in 1995. As well as At the end of 1995, however, the IAEA was still not able to verify the completeness of the DPRK's Initial Report, and the DPRK was still in formal breach of its safeguard's agreement, as the General Conference noted in September 1995. Moreover, the "special inspection" procedure had been shown to be very aggressive. Ever since then the IAEA had to completely re-examine its safeguards system in 1997 and the DPRK was the first to have the changes of the IAEA's safeguards system tested on, but this time the DPRK had no way of resisting since the IAEA's board of Governors handed concrete evidence and the request of inspection had to be approved.

Using sophisticated analytical techniques, the IAEA had detected a mismatch between the plutonium that the DPRK presented to it as products or in waste. This led the IAEA to conclude that the DPRK had understated the amount of plutonium it had separated.

Conclusion

The U.S. was on the verge of full out blown war with the Soviet Union over Cuba where it was found that the Soviet Union was supporting the late president of Cuba Fidel Castro. The situation escalated to both nations aiming their Nuclear Arsenal at one another, the United States went into DEFCON 3 while the Soviet Union initiated ballistic missile deployment, this confrontation lasted for 13 days. At the end the situation was resolved peacefully through telegrams between the president John F. Kennedy and premier Nikita Khrushchev where they agreed on the withdrawal of the U.S. Jupiter Missiles stationed in Turkey as they posed a threat to Soviet national security. But this was done in private making it seem like the Soviet Union lost in the Cuban Missile Crisis. On the other hand, for North Korea. The U.S. policy's choice was to accept that the DPRK would continue both its reactor construction programme and the separation of more plutonium at the reprocessing plant, or pay the price needed to put a stop to and eventually reverse these programmes. In effect, the USA decided that it could live with the uncertainty about how much plutonium the DPRK had separated – how much more than the amount it had declared – but that it could not accept the continued separation of

plutonium, even if it were made legal by being fully declared and placed under safeguards.

Thus, in effect, the USA paid the price for the cessation of the plutonium separation programme. But as long as the reprocessing plant remained in place, the DPRK retained some residual leverage, ending up with the satisfaction of both parties. But the one who arose victorious in this deal was Russia because of the limitation on the USA on Asian Soil and the wealth it gained from both Koreas.

.

Chapter Three: The Effect of Nuclear Race on American Citizens

Introduction

In this Chapter we will shed light on the fact that The United States Military had its hand on a large Arsenal of Nuclear weapons and it had to test it out. This situation was similar to a child with a new expensive toy but couldn't find a suitable place to play with it. And when the child does find what he thinks is the perfect place, it turns out the place isn't as perfect as he thought it was and the toy itself isn't as safe as the manufacturer claims it to be.

The U.S. Military thought that the desert of Nevada was the most suitable place to test their new found power since it a wasteland, far away from society and with the lowest air dispersal rate in the United States Soil. Confidently, they went out and tested the nuclear Bomb and Ballistic missiles recklessly only to find out that the tests they were conducting we're not as safe as they thought, resulting in thousands of casualties of Radiation and Millions of Dollars spent as compensation to the families of the deceased on top of the fortune spent on the development and testing of these weapons.

1. "To Keep our People Safe"

> *"When the US entered the nuclear age, it did so recklessly. New research suggests that the hidden cost of developing nuclear weapons were far larger than previous estimates, with radioactive fallout responsible for 340,000 to 690,000 American deaths from 1951 to 1973."* Said Senior reporter Tim Fernholz Decemer 21, 2017.

It goes without saying that the Nuclear age has brought destruction upon the world in all kinds. In the Japanese cities of Hiroshima and Nagasaki casualties ranged over 200.000 deaths on the site of the explosion of the first manmade nuclear bombs "Fat Man" and "Little Boy" that were that were used by the United States of America and many more suffered from the radiation that came as aftermath of the explosions. But the main issue at hand is that the United States of America itself was not safe of its own weapons.

Between 1945 and 1992 the United States of America performed over 1.000 nuclear tests, while most of the testing took place in the remote desert of Nevada the United States military tested the capabilities of these weapons in other places as well, in the Pacific Ocean to be more specific. With the United States' lead in nuclear warfare one would only assume that they comprehended the full effect of such weapons and would take major precautions to ensure that no bystanders are harmed during the time these tests are being conducted. But reckless the United States' scientists had been_ even though the fact that not many nuclear

tests have gone south in the United States' history but one failed test wrong is far too many when _dealing with weapons of mass destruction.

No one is perfect of mistakes and mistakes do happen in every line of duty, and the nuclear testing was no different for the United States.

1.1. March 1st 1945 -Castle Bravo

The first of March 1954 a group of Military officers, scientists, fishermen and Marshall island natives went to witness one of the biggest nuclear tests conducted by the United States of America, but little did they know that this date would marks one of the most serious nuclear fallout incidents in history and this "sightseeing" of their almost lead to their death.

The experiment was designed to test out the first thermonuclear explosion that was based on feasible technology, making the bomb smaller and easier to carry on a small Air-craft in other words the result expected was to make a compact hydrogen Bomb. The prototype bomb measured only 5 feet wide and 24 feet long but weighed approximately 30 tons but the plans were dropped because it was simply too heavy to carry and highly unreliable , which is why for Castle Bravo they used a bomb consisting of Lithium Deuteride which is practically a solid fuel that was way lighted than the original counterpart that was based on the IV Mike weapon (Castle Bravo) .

With this information scientists believed that the explosion radius will be at the estimate of 5 megatons and they calculated the safety zone according to such, where civilians can watch the explosion and remain safe. on 6:45 the Castle Bravo bomb had been detonated.

From the second the bomb detonated the spectators knew that something had gone wrong. The nuclear explosion produced a blinding flash and the heat reached them despite being miles away from ground zero, the Flash was so bright that bystanders were able to see their bones appear as shadows through their own flesh.

Figure 03: The Castle Bravo Explosion from a Journalist's Camera

Source: The National Museum of Nuclear Science & History -Smithsonian- "www.nuclearmuseum.org"

Due to a design error, the explosion reached a strength of 15 megatons, making it three times larger than expected and 1,000 times more powerful than the bomb dropped on the Japanese city of Hiroshima "Fat Man". Radioactive fallout from the test spread over more than 11,000 square kilometers. Radioactive material was detected in Australia, India, Japan, the United States and Europe. The Bikini population had been relocated to other islands before the start of the U.S. nuclear testing programme in the Pacific with the Able test in 1946. Due to the bad weather conditions in which the Bravo test had been conducted, the fallout also affected the inhabited islands of Rongelap, Utrik and others. In addition, radioactive fallout heavily contaminated the Japanese fishing vessel "Lucky Dragon number 5", which was sailing a little over 145 kilometers downwind from ground zero. The 23 Japanese fishermen aboard suffered from radiation poisoning and one crew member died shortly after. The fire ball reach over 4 miles in diameter (see figure 03) navy seals on warships reported that it felt like blowtorches were being aimed at their faces even though the ships are designed to withstand the heat of their own nuclear reactor reaching critical status.

After the whole incident wore down the pentagon released a statement saying "The reason for the faulty calculation was due to a tritium bonus that happened in the middle of the thermonuclear reaction that caused a complete different chain reaction between the Lithium Deuteride and the U-235 isotope. Indeed, it was changing lithium into tritium and helium resulting in a far bigger explosions", and tritium created extreme energetic fusion and the reason why it is not used to produce energy is because it is highly unstable. Radiation still linger in the Marshal islands in 2018 a study was conducted by the university of Wisconsin to

determine the levels of radiation in the site and the result was published by Helen Regan, CNN in July 17 ,2019. 4-5Gy of none protective exposure will kill a human being in approximately 50 to 60 days. Meanwhile 10Gy of unprotective exposure will kill a human in mere hours. the island levels of radiation are of 13Gy which rendered the entire Marshal islands unhabitable.

1.2.18 December 1970 – The Baneberry Incident

Due to Atmospheric nuclear testing being banned, the U. S military and scientists had to go underground to see the capabilities of their creations. In December 18th 1970 a test was scheduled at 7:30 in once again the remote desert of Nevada. The Bomb was lowered over 900 feet below ground in a hole about 7 feet of diameter. In a matter of less than 3 minutes into the test everyone witnessing the test site knew that what is before their eyes was not planned, about 300 feet away a fissure opened in the ground. This fissure was only large enough for a dust cloud to break through no different from the sight of a regular dust cloud, only this one was full of nuclear fumes. In fact, it was able to rise over 8.000 feet in the sky and the fallout reached all the way to California. The U.S government immediately engaged in a detoxification process, which consisted of vacuuming and spraying down over 400 cars owned by civilians however property was the least of anyone concerns considering how many civilians were close to the Fissure (The Baneberry Incident).

Evacuations were executed immediately but when dealing with Nuclear fallout, “Time is of the essence”. 19 workers who were closest to the site developed extreme leukaemia in days and perished within 1 week. Their widows filed a law suit against the American government, even though the court found the government to be negligent in this situation they determined that they were not liable since the government delivered an evidence that the geology was too damp and soft. As a conclusion, it caused the fissure and the court was the one that singed off the permission and had given the green light to carry on with the test therefore no money was offered as compensation.

1.3. The Ultimate Sacrifice “The Fallout”

It is no surprise that the cost of possession of nuclear arms is very hefty, but for the United States of America that cost came in a new form, in Form of Civilian Deaths. In all the tests conducted by the U.S Military the casualties from explosions were significantly small compared to the casualties of the Nuclear fallout. Between 1951 and 1973 it is estimated that

anywhere between 340.000 and 690.000 American citizens died as a result of nuclear fallout in their own country (Fernholz).

Between 1951 and 1963 the U.S tested nuclear weapons above ground, inadvertently exposing thousands of workers to fallout. In high doses this fallout is deadly to humans and even in low doses it can still lead to cancer, but the main issue is not that the fallout killed the workers in site but the wind itself server as a factor to transfer the emissions towards the entire country. Crops were the first to be affected by the carried emissions that was not the deal breaker to the civilians though what sealed the deal was the cows feeding on those crops (National Academy of Science).

One of the most essential sources of nutrition for any human being is MILK and no one has even theorized that the milk will serve as the trojan horse for radiation into Human bodies. The south was the main source of milk and its products for the entire country and evidently no one had the slightest idea that milk will be the carrier of Iodine -131 an isotope that would cause a grown elephant to grow week to carry its own weight in less than 2 months.

Conspiracy theorists argue that the death rate of the isotope carried by milk is 7 to 14 times higher than what the governments officials have published but that still remains a theory on the other we know for sure that there over 400.000 deaths of thyroid cancer linked to exposure to Iodine-131 (National Academy of Science).

2. How it Affected the U.S Economy

The United States of America has researched so many sites to claim as plausible testing facilities, any facility near civilian community would have caused hundreds upon thousands of casualties. The Nevada desert was the best choice since it had the lowest dispersal rate in the entire country, but even with that low dispersal rate the U.S citizens were not safe of the nuclear fallout and the toxic fumes being carried away into the sky by the wind causing hundreds upon thousands of people being affected by the fallout.

The united states did not give up on its people though, it went and developed a compensation program called The Radiation Exposure Compensation Act (“the Act” or “RECA”), established an administrative program for claims relating to atmospheric nuclear testing and uranium industry employment. The Act delegated authority to the Attorney General to establish procedures and make determinations regarding whether claims satisfy statutory eligibility criteria.

The United States conducted nearly 200 atmospheric nuclear weapons development tests from 1945 to 1962. Uranium mining and processing was of priority for nation's nuclear weapons development, which was carried out by tens of thousands of workers, making their job carry a huge occupational hazard

Following the conclusion of these activities, lawsuits against the United States alleged failure to warn of exposures to known radiation hazards. These suits were dismissed by the appellate courts. Congress responded by devising a program allowing partial caring to individuals who developed serious illnesses after the exposure to radiation released during the atmospheric nuclear tests or after employment in the uranium industry. The Radiation Exposure Compensation Act was in effect on October 5, 1990. The Act's scope of coverage was broadened on July 10, 2000.

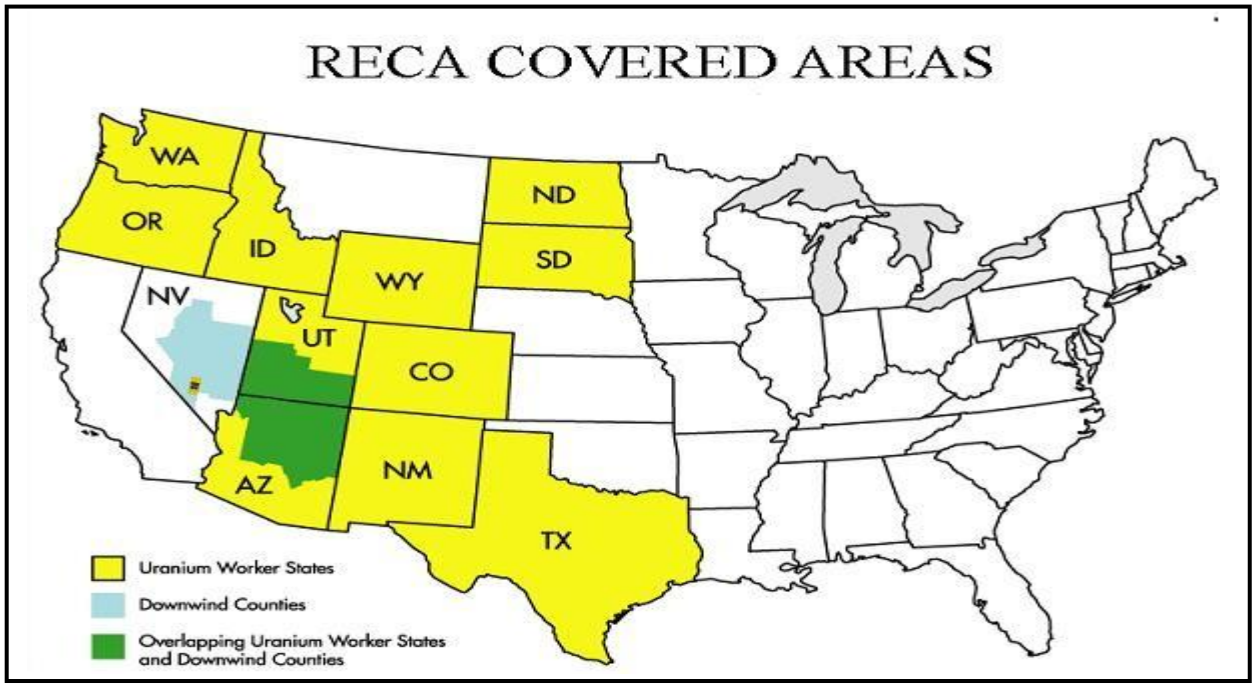
This unique statute was designed to serve as an expeditious, low-cost alternative to litigation. Significantly, RECA does not require claimants to establish causation. Rather, claimants qualify for compensation by establishing the diagnosis of a listed compensable disease after working or residing in a designated location for a specific period of time. RECA establishes a sum of compensation awards for individuals who contracted specified diseases in three defined populations:

1- Uranium Miners, Millers, and Ore Transporters may be eligible for one-time, lump sum compensation of $100,000.

2- "Onsite Participants" at atmospheric nuclear weapons tests may be eligible for one-time, lump sum compensation of up to $75,000.

3- Individuals who lived downwind of the Nevada Test Site ("Downwinders") may be eligible for one-time, lump sum compensation of $50,000.

Map 01: Areas effected by Radiation Exposure Compensation Act.



Source: The United States Department of Justice www.govinfo.gov

This compensation act was executed in October 5 ,1990 and still taking effect till this day, with all the people who were affected the compensation sum reached 2 Billion Dollars in 1997 and it is still being carried out .this amount of money may seem large but what is more surprising is that this amount of money is a mere fraction of what the United States has spent on the development of these nuclear weapons.

> *"From 1940-1996, the United States spent a minimum of $5.5 trillion on its nuclear weapons program. The lack of data for some programs and the difficulty of segregating costs for programs that had both nuclear and conventional roles mean that in all likelihood the actual figure is higher. This figure does not include $320 billion in estimated future-year costs for storing and disposing of more than five decades' worth of accumulated toxic and radioactive wastes and $20 billion for dismantling nuclear weapons systems and disposing of surplus nuclear materials. When those amounts were factored in, the total incurred costs of the U.S. nuclear weapons program exceed $5.8 trillion.*
>
> *Of the $5.8 trillion, just seven percent ($409 billion) was spent on developing, testing, and building the actual bombs and warheads. To make those weapons usable by deploying them*

> *aboard aircraft, missiles, submarines, and a variety of other delivery systems consumed 56 percent of the total ($3.2 trillion). Another $831 billion (14 percent) was spent on command, control, communications, and intelligence systems dedicated to nuclear weapons. The United States also spent $937 billion (16 percent) on various means of defending against nuclear attack, principally air defense, missile defense, antisubmarine warfare, and civil defense. The amount spent through 1996$5.5 trillion was 29 percent of all military spending from 1940 through 1996 ($18.7 trillion). This figure is significantly larger than any previous official or unofficial estimate of nuclear weapons expenditures, exceeding all other categories of government spending except non-nuclear national defense ($13.2 trillion) and social security ($7.9 trillion). This amounted to almost 11 percent of all government expenditures through 1996 ($51.6 trillion). During this period, the United States spent on average nearly $98 billion a year developing and maintaining its nuclear arsenal."* (Cost of Nuclear weapons).

Conclusion

The United States Military tested a large number of Nuclear weapons in the name of science and technology, but no one foretold the damage that these tests would cause. All of the tests conducted by the U.S. military were calculated in all terms of safety, explosion radius and possible outcomes, and most of the results were as expected. However, one failure is far too many such as the tests Operation Castle Bravo and Operation Baneberry where the explosion was far greater than was estimated, putting bystanders lives at risk and even costing some their lives.

The effect of such failures reached far beyond expectations when the fallout made contact with the crops in the area near the test site in Nevada. This caused a wave of Radiation cases of I-131 in the southern region of the U.S. that was carried by milk from the cow that fed from the contaminated crops. The U.S. government would later be forced to offer compensations to all the radiation victims and their families, but the issue is that the money spent as compensations would be pocket change compared to the money spent on the development and testing of these weapons.

General Conclusion

General Conclusion

To sum up the United States always sought to seize control over everything, and Nuclear power was no exception. To achieve its goal the U.S. used all available methods and the Manhattan Project was the beginning of it all, with it being the first laboratory aiming to weaponize nuclear fissions and using it with explosives. The United States also resolved its conflict with the Soviet Union through treaties such as NEW START and SALT1 to limit the possession and usage of nuclear weapons for both parties. On the other hand, with North Korea not being as strong a nation as the Soviet Union, the U.S adapted the containment policy that revolves around preventing other countries to rise into power. Lastly, upon the testing of Nuclear weapons on American soil, many citizens were incapacitated and some even lost their lives. Convicted by the U.S. Court itself, the government was pushed into a corner having to financially support the casualties of these tests and their families.

The nuclear power was discovered by mistake but it has brought the world a whole new enigma that scientist to this day are still finding new things about it. It gave a new source of energy different from all the sources known to mankind but it also gave a new method of destruction.

The United States understanding the power of the Nuclear fission, wanted it all for itself. But since the Soviet Union was already on the same pace with the U.S. its only choice was to try to limit how much the Soviet Union can have of this power. Ultimately, limiting how much the U.S. itself can have of this power. However, on the case of a smaller less powerful nation such as North Korea, the U.S. went straight in and implemented the containment policy to prevent it from developing any further. This policy is regarded wrong by the U.S. officials but have no shame of using it on other nations which signals a level of hypocrisy.

The discovery of nuclear power may have come as a mistake but the mortality rate increase because of the nuclear power was no mistake. Days after the creation of the first two nuclear bombs 200.000 innocent citizens lost their lives in Japan in the name of science and experiment. But what is more demeaning is that the United States has killed approximately double that amount of its own people with mere experiments on American soil. In an attempt to compensate the U.S. government paid the victims and their families to keep them from retaliating and to keep its privilege to test out more weapons of mass destruction.

This research shows how much of a devastation nuclear weapons can be; it shows how much the obsession over power can cost a nation. They cost the United States trillions of

dollars before they were even used and cost so many bystanders and innocent people their lives.

Even with being a weapon of mass destruction, scientist theorized a nuclear explosion works like a shock of electricity to the human body. The electric shock could stop the human heart as well as it could reanimate the human heart, a nuclear explosion could start a big Tsunami wave as well as it can stop a big Tsunami wave. The USSR used a nuclear explosion to put out a gas well fire in Uzbekistan in 1966, the fire burned for 1074 days, that is approximately 3 years. The explosions supposedly crushed the leaking well under tons of earth and soil and the leak was stopped.

Bibliography

Bibliography

- David Fischer. History of the International Atomic Energy Agency: The First Forty years, IAEA, 1997.
- U.S. Department of Energy, Kvasnicka. The History of nuclear Energy, Kindle Edition, U.S. Government, April21, 2011.

Webography

- "Breeder reactor" Britannica, www.britannica.com/technology/breeder-reactor#ref1262565. Accessed on 24.04.2020.
- "Castle Bravo" CTBTO, www.ctbto.org/specials/testing-times/1-march-1954-castle-bravo. Accessed on 20.07.2020.
- "Cuban Missile Crisis" Britannica, 04.02.2020, www.britannica.com/event/Cuban-missile-crisis. Accessed on 03.06.2020.
- "Enrico Fermi" The Noble Prize, www.nobelprize.org/prizes/physics/1938/fermi/biographical/. Accessed on 20.03.2020
- "Health Risks of I131 Exposure" NCBI, www.ncbi.nlm.nih.gov/books/NBK100835/. Accessed on 23.07.2020.
- "Henri Becquerel", The Noble Prize, www.nobelprize.org/prizes/physics/1903/becquerel/biographical/. accessed on 19.03.2020.
- "John F. Kennedy" JFK Library, www.microsites.jfklibrary.org/cmc/oct26/doc4.html. Accessed on 03.06.2020.
- "Manhattan Project" History, www.history.com/topics/world-war-ii/the-manhattan-project, 27 January 2020. Accessed on 27.04.2020.
- "Marie and Pierre Curie" The Noble Prize, www.nobelprize.org/prizes/themes/marie-and-pierre-curie-and-the-discovery-of-polonium-and-radium/. Accessed on 19.03.2020.
- "New START" U.S. Department of State, www.state.gov/new-start/. Accessed on 04.06.2020.
- "RADIOACTIVE MILK" QUARTZ, qz.com/1163140/us-nuclear-tests-killed-american-civilians-on-a-scale-comparable-to-hiroshima-and-nagasaki/. Accessed on 18.07.2020.
- "Strategic Arms Limitation Talks" Office of The Historian, history.state.gov/milestones/1969-1976/salt. Accessed on 04.06.2020.
- "The Baneberry Incident" CTBTO, www.ctbto.org/specials/testing-times/18-december-1970-the-baneberry-incident/. Accessed on 20.07.2020.
- "The Cost of U.S. Nuclear Weapons" Stephan I. Schwartz, NTI, 1.10.2008. www.nti.org/analysis/articles/costs-us-nuclear-weapons/. Accessed on 17.07.2020.
- "The Nuclear Nonproliferation treaty" Arms Control Association, March 2020, www.armscontrol.org/factsheets/nptfact. Accessed on 04.06.2020.

Bibliography

- "Wilhelm Ronten" Jacquith,Kevin. Universal Medical, blog.universalmedicalinc.com/wilhelm-conrad-roentgen-father-of-diagnostic-radiography/. Accessed on 26.03.2020.