IAEA

PACMUN 2016

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Dear Delegates,

My name is Carl Bryden and I have the honour of serving as your director of the International Atomic Energy Agency (IAEA) at PACMUN 2016. My goal as well as the goal of rest of my dais is to, above all else, leave you with a positive and educational experience.

This year we will be exploring the topics of Nuclear Waste Management as well as Nuclear Nonproliferation. Both these topics are extremely important on a global and international scale. Every member state is impacted in some way by the disposal of nuclear waste and even more so by the proliferation of nuclear weaponry. We hope that by the end of the conference you can work through these topics clearly and concisely, while also meeting the needs of large and small nations alike.

Nuclear waste management is an extremely important issue for nearly every nation around the world. Trying to balance the needs of large and small countries alike while also keeping a close eye on how the environment is being affected, while also keeping relations between foreign nations in check to prevent them from affecting the safety and security of the environment can be taxing at the best of times. Moreover, many sites scattered across the world that are designated for the disposal of nuclear waste are making their way towards being completely full, and are already impacting the environment around those areas in a negative fashion.

Nuclear nonproliferation is also an extremely important topic that could result in devastation on a global scale if not handled properly. The proliferation of nuclear weapons for many countries is intrinsic to the technology they have as well as their to their manufacturing capabilities. Many countries across the world have the technology to create these weapons at a moment's notice but have yet to actually indulge in them. On the other hand, many other countries across the world have already created these weapons and are standing by with the ability to unleash devastation at a

moment's notice. Your goal is to find a way to a peaceful equilibrium between nations so as to prevent the dissemination of nuclear weaponry.

If these topics seem daunting or too big to handle, don't forget you can always reference this background guide that I, as well as the rest of our dais, have created for you. It discusses past actions and events that may help guide your research. On top of that don't forget that you can always contact me and my staff directly, for further help or guidance. Finally, on behalf of myself and the rest of the dais, I would like to welcome you to the IAEA. Good luck, delegates.

Sincerely,

Carl Bryden

Director | International Atomic Energy Agency

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COMMITTEE INTRO

Founded on the 29th of July, 1957, the International Atomic Energy Agency (IAEA)'s stated goal is to promote peaceful use of nuclear energy. Atoms for Peace, created by the US President Eisenhower, was the first attempt at addressing nuclear energy. This organization found that the topic of atomic energy needed to be reviewed on a worldwide level. Therefore the IAEA was born. The purview of the IAEA centers around the use or misuse of nuclear energy, the prevention and amelioration of nuclear catastrophe, and the use of nuclear technology in other fields. The IAEA's primary work areas are nuclear technology and applications, nuclear safety and security, and safeguards and verification. The IAEA has significant authority in its specific area, but avoids extending its power outside its domain. Nuclear energy poses controversy worldwide and the IAEA was created in order to recognize these problems. The pursue for finding solutions for peace and security in the technologically advancing world is the IAEA's mission, it will provide assistance in ensuring that atomic energy will not be used in a way to further military purpose.

As a committee, the IAEA is on the larger side of the spectrum. Delegates will be expected to represent their specific country policies faithfully and accurately. Delegates who are unsure as to what that may entail should ask the dais. The IAEA as a committee is more suited to intermediate delegates with some experience in MUN.

TOPIC 1

SOLUTIONS TO AND ADEQUATE TREATMENT OF NUCLEAR WASTE

TOPIC INTRO

Since 1970 it has been recognized that the governments of each country is responsible for building a safe, reliable, and permanent disposal area for nuclear waste. Since then each country has handled their waste in different ways, ranging from burying it under the Yutta Mountains to encasing it within Belgian Mines with sealing clay. However, the IAEA (International Atomic Energy Agency) finds it necessary to recognize that there is very little international regulation for how each country should dispose of their waste. Finding a concrete way for each country to uniformly dispose of the waste quickly and effectively has become of the utmost importance, especially for many European nations where deep waste repositories are not an option. The IAEA must find a way for all countries to evenly distribute and dispose of waste that is being created. The question becomes then where and how will this be possible? The IAEA encourages the discussion of issues regarding the international waste disposal safety principles and criteria. The initial purpose of the IAEA's work regarding management

of nuclear and other radioactive waste was to: support research, promote the transparency of information, establish standards, regulations, etc., and lastly, but not limited to, helping the developing countries and their infrastructure when it comes to issues regarding nuclear safety.

HISTORY

Humanity's endeavours into radioactivity began between the years 1895 to 1945 with the discovery of the phenomena of atomic radiation, atomic change, and nuclear fission. Atomic power has been used for the furtherance of a multitude of causes, including military purposes, electrical power generation, and biological and chemical research. A side effect of these new technologies was radioactive waste, defined as any item which contains radionuclides, which is a byproduct of the manner in which energy is generated by the destruction of the atom. There are two major classifications of nuclear waste: high level or low level. Very low level waste and intermediate level waste are more specific categories that some countries do not feel the need to identify and address outside of the two major categories.

Since the 1950's the National Research Council has used scientific research and technical analysis to determine the best possible disposal of high level waste (HLW). At the time, the primary producer of radioactive waste was the disposal of fission products from the reactors used in weapon production. The waste was being stored at the Hanford, Washington, Oak Ridge, Tennessee, and Savannah River, South Carolina sites. Prior to storage in the Earth, those involved with nuclear technology imagined that commercial power reactor fuel would be reprocessed to recover uranium and plutonium. Since the 1970's the United States has decided to not reprocess their HLW due to the concern that large amounts of recovered plutonium could lead to the support of the proliferation of nuclear weaponry. However, countries such as the United Kingdom and France continue to reprocess their nuclear waste. When the United States and Russia made a disarmament agreement, both countries were left with a surplus of plutonium. Plutonium contains an isotope will affect the environment around it tens to thousands of years into the future. In 1988 the Board on Radioactive Waste Management stated that "there is a strong worldwide consensus that the best, safest long-term option for dealing with HLW is geological isolation". Geological isolation also posed a number of challenges within different national programs in several different countries. The long term effects of geological isolation are unknown and are merely predictions. Factors like environmental change and understanding the nature of the geological process cause debate throughout the general public. Majority of the general public do not believe in the ability of experts to determine whether or not geological isolation is the best choice. HLW makeup has changed considerably since 1957 when *The Disposal of Radioactive Waste on Land* report was published. Therefore causing the decision to treat HLW using geological methods one to contemplate. The fact that countries have leaned towards choosing a repository to store their waste has brought up the situation that the majority of

communities do not want to host a nuclear waste repository. Each country has their own unique approach to nuclear energy, including the general belief in fueling their country with nuclear energy.

Low level radioactive waste is mostly generated from hospitals, industry, and the nuclear fuel cycle. It contains short-lived amounts of radioactivity and does not emit enough harmful radiation to damage the human body. It does not have to be specifically handled during transportation. It makes up about 90% of all radioactive waste but only contains 1% radioactivity. Early approaches to low level waste (LLW) disposal in the United States of America included dilution and dispersion, shallow land burial, and disposal at sea. These tasks were oversaw by the Atomic Energy Commission (AEC). The US Navy performed the task of disposing LLW at sea until 1959 when the AEC licensed seven companies to dispose of waste. The radionuclides in LLW have short half-lives, and many believed that dilution in ocean water plus decay would result in innocuous levels of radiation and pose minimal hazards to man. Furthermore, the sea was readily available and economic to use. In 1970, sea disposal of LLW in the U.S. was ended in order to conform within U.S. environmental laws and to prevent the harming of marine life. Between 1946 and 1993 there were fourteen countries that used ocean disposal, however since 1993 ocean disposal has been banned due to international treaties. Once sea disposal declined, land disposal became the next available option. By 1971 there was a total of six shallow-burial LLW disposal facilities that were government licensed in the U.S. Land disposal is now the primary method of LLW disposal and each country follows the Safety Standards and Guide to radioactive waste disposal published by the IAEA

PAST ACTION

On September 23rd, 2014 the two-day Scientific Forum, titled Radioactive Waste: Meeting the Challenge - Science and Technology for Safe and Sustainable Solutions, was held. This was the first time in 14 years that the International Atomic Energy Agency (IAEA) Scientific Forum had considered the management of radioactive waste. In those 14 years, the peaceful use of nuclear science and technology had significantly grown and changed.

The IAEA (International Atomic Energy Association) was founded in 1957, in response to a speech given by President Dwight D. Eisenhower to the UN General Assembly on Tuesday, December 8, 2:45 p.m. In his speech, he spoke of the oncoming atomic age, where every nation would share equally in the benefits and the risks of nuclear power, and of the necessity for unity. He pointed out the immense power of atomic weaponry and its supreme potential for destruction, as well as the ease with which it proliferated. And finally, he made a proposal. He proposed that the related governments make contributions to an international agency, supported by the United Nations, under whose purview would fall all matters pertaining to atomic energy. He declared that the United States would be willing to undertake this project in good

faith, and that any other nation willing to cooperate would find a staunch ally in the US. He suggested that the atomic energy agency be made responsible for the collection, storage, and if necessary, distribution of fissile material fit for use in nuclear technology. Perhaps most importantly, he also suggested that they be made responsible for the development of nuclear technology and its applications in civilian and scientific fields for the betterment of all mankind.

Eisenhower's ideal agency had four objectives. First, they were to encourage international research into peaceful uses of fissionable material. Second, they were to reduce the destructive potential of nuclear weapon stockpiles across the globe. Third, they were to show people across the world the constructive potential of atomic energy and prove that it could be used to create as well as destroy. Fourth and finally, they would act as a peaceful intermediary between nuclear powers, especially opposed powers, to ensure that a nonviolent solution could be formed through public and private channels to any conflict pertaining to atomic energy.

The IAEA came into existence in 1957. However, the rapidly changing political and technical climate made it difficult for the IAEA to fulfill some parts of their mandate. Moreover, previously hostile nations began to seek peaceful resolutions, such as the US and the USSR during the Cuban Missile Crisis in 1962, which was resolved without IAEA input. As such, the IAEA seemed almost superfluous, and many nations simply ignored them or paid their suggestions no heed. France, the most recent nuclear power, and India, the most eager to secure nuclear power for itself, were particularly opposed. In 1970, the power of the IAEA experienced a sudden upswing with the passage of the NPT (Non-Proliferation Treaty), but worldwide enthusiasm for nuclear power was also declining, and Western nations were turning away from nuclear power. The demand for nuclear power fell almost to nothing after the Chernobyl incident of 1986,

While Chernobyl was a disaster in the eyes of the world. It was a mixed blessing of sorts for the IAEA. While it meant that public opinion of atomic energy plummeted, it also meant that the majority of nuclear countries were much more willing to listen to the suggestions the IAEA had been making, as they were very much more concerned about the possible effects of a nuclear operation gone wrong.

CURRENT SITUATION

Nuclear power uses radioactive material as fuel. This fuel comes most commonly in the form of fuel pins, cylindrical ceramic pellets 8 to 15 millimeters in diameter, encapsulated in metal. Common fuels include uranium oxide or mixtures of uranium oxide and plutonium. Fuel pins are usually kept in groups, known as fuel assemblies. Each fuel assembly can be treated as a single entity when working with a reactor, simplifying procedure. Each assembly remains useful in the reactor for anywhere from 3 to 7 years, after which time it becomes unusable. It is also highly

radioactive, radiates immense amounts of heat, and is a constant source of both gamma radiation and loose neutrons. This spent fuel is usually stored under water for 9 to 12 months, as the water not only acts as a cooling agent, but also acts as radiation shielding. However, this also tends to render the water unsafe. After roughly a year, the cooling requirements are sufficiently reduced that the fuel no longer needs to be kept underwater. It remains, however, highly radioactive, and must be kept shielded.

Disposal of said fuel can be handled in a number of different fashions. The least common and most effective method of disposal is for the fuel to be reprocessed. Waste fuel is often up to 96% uranium, which can be extracted and repurposed into another fuel assembly to feed another a reactor. The spent fuel is shipped to a reprocessing facility, shredded, chemically dissolved, and separated into uranium, plutonium, and various waste products. However, said waste products must be disposed of in the same manner as normal nuclear waste. The other common strategy is to directly dispose of all waste, which requires less immediate effort, but also means that a greater quantity of fuel must be stored.

In either case, once the fuel has been reprocessed or simply determined to be ready for long-term storage, it must be moved to a facility capable of storing it for an extensive period of time. The two primary storage technologies are wet storage, in which the spent fuel is stored in pools of water. However, the spent fuel must be stored for extended periods of time, and oftentimes, the water in which the fuel is stored must also be collected. It does ensure, however, that no heat dissipation technology is required. Dry storage, on the other hand, involves the storage of spent fuel in containers rather than in pools. It has the advantage of being modular and allowing for easy transport and transference. France, Russia, Japan, and China all prefer reprocessing, while the USA, Canada, Finland, and Sweden prefer direct disposal. Most countries are storing their fuel and waiting for further development before they choose a method.

Regardless of which method is chosen, it is imperative that a solution be found. Over 10,000 metric tons of waste are produced every year, with the figure expected to rise ever higher. The cumulative amount spent is expected to reach 445,000 tons by the year 2020. Obviously, this is a significant amount of spent fuel, and a solution for this excess must be found. Unfortunately, no readily available solution has presented itself, and so the international community remains undecided as to what the best option available to it is.

BLOC POSITIONS

NUCLEAR COUNTRIES

The majority of countries with access to nuclear technology feel that nuclear waste is an issue that should be addressed independently by each country. Moreover,

the majority of these countries have methods of their own which they feel suffice to guarantee the safety of the materials they are required to dispose of. Oftentimes, these methods do in fact prove to be sufficient. The United States, despite being one of the countries most associated with nuclear technology, has yet to suffer a significant waste containment fault with long-lasting effects. On the other hand, there have been incidents in other nations where waste containment has failed, and has failed with drastic results.

Other nations have also called for more regulation for these parties, for various nations. Some nations fear that nuclear byproducts might be employed by 3rd parties as weapons or to threaten another government. Some nations feel that the methods of disposal used by other nations are inefficient or ineffective. The United States has been criticized for its use of direct disposal instead of reprocessing its waste to be reused. Other nations have been criticized for their lack of proper safety and security precautions when it comes to storage of nuclear waste. However, few of these nations are willing to accept external oversight regarding their nuclear programs.

NON-NUCLEAR COUNTRIES

The positions of non-nuclear countries varies on this position. Some countries feel that this is an affair for all the world, as the possible consequences of a catastrophic failure are immense and global. Some countries fear that other countries are not taking sufficient precautions against possible containment failure, be it by accident or by deliberate intervention. The majority of these countries have been pushing for greater oversight on this topic, but have faced strong opposition from countries with nuclear programs.

Other countries are not particularly invested in this affair and are entirely willing to let other countries do as they will with their nuclear waste on the condition that whatever is done with their nuclear waste does not affect them or their interests. However, this bloc has been steadily shrinking over time as the potential and the peril of nuclear power grows more apparent, and at this point, even the most apathetic of countries has expressed some interest in increasing oversight of nuclear powers with regards to both their use of nuclear material and their addressal of nuclear waste.

CASE STUDY

CHERNOBYL

The events of the Chernobyl incident are well-known worldwide. During a systems test on 26 April 1986, at the Chernobyl site near Pripyat, Ukraine, there was a sudden and unexpected power surge in reactor number four at 1:23am, which led to the attempting of an emergency shutdown. Unfortunately, said emergency shutdown

also caused a much larger power surge. This power surge lead to a reactor vessel rupture when the graphite around the control rods displaced the neutron-laden water, which lead to a series of steam explosions, and caused the graphite moderator in the reactor to ignite. Both the explosion and the fire released massive quantities of radioactive material into the atmosphere, which drifted over large parts of the western Soviet Union and over Europe. The cause of the incident is generally held to be faulty operating instructions and significant design deficiencies, rather than operator error. Not only is there documentation of significant structural damage having been done to the plant, most of said damage was never addressed, but was rather left unattended. The control systems for the reactor were flawed, and most of the staff was either poorly trained, absent, or following protocols that were incorrect or outdated. Unfortunately, most of these factors were not corrected, and so the International Atomic Energy Agency (IAEA) was forced to step in during the aftermath in order to reduce the metaphorical and literal fallout.

The IAEA was asked by the Government of the USSR to intervene and organize the performance of Soviet authority and evaluate the measures they had taken to secure the well-being of the populace. One of the first steps the IAEA took was to publish a report regarding what, precisely, had gone wrong at Chernobyl. In this report, the IAEA pointed out a number of flaws in the reactor, such as the void coefficient of reactivity, which was so high that the reactor was capable of evaporating its coolant if not properly controlled, and the surprising inefficiency of the cooling system in the reactor, which tended to pump water that was already rather heated. The report also noted a significant number of poor decisions made during the operation of the reactor. For example, all eight of the pumps were running simultaneously during the incident, and were feeding hot water to a reactor chamber was already running with boiling water, which did little to cool the reactor. The majority of the International Nuclear Safety Group (INSAG) report continues in this vein, outlining deficiencies and failures in Soviet regulations and constructions, as well as providing recommendations on what could have been done better. It also corrects a small number of details mentioned in previous INSAG reports, as well as a rather larger number of other ideas or conclusions reached in other reports, such as the Commission of the USSR State Committee for the Supervision of Safety in Industry and Nuclear Power (SCSSINP). Most importantly, it outlines a framework of ideas to expound on measures that ought to be taken to minimize the possibility of such a terrible accident occurring again, and makes note of the preventability of this incident.

As is clearly visible, during the Chernobyl incident, the IAEA did not directly involve itself in the workings of the relevant government bodies, nor did it send people to intervene directly. Rather, it focused on addressing the aftermath of the incident. The main focus of the IAEA was on ensuring that civilians were mostly secured from the direct effects, and that the parties involved were aware of which of their actions had any relevance to the occurrence of the incident. Rather than taking a directly punitive or administrative role, in the case of this incident, the IAEA acted as a consulting group, which evaluated an event that had occurred and made appropriate

suggestions based on the evidence that they collected. The IAEA's recommendations were also, for the most part followed, meaning that, for example, every Soviet reactor designed after 1986 was constructed with a negative void coefficient to prevent the positive feedback cycle that caused the first surge during Chernobyl.

GUIDING QUESTIONS

- Who should be responsible for nuclear waste management?
- What is your country's system of nuclear waste management and how does it affect other nations?
- Should nuclear waste be policed? By whom?

TOPIC 2

ASSURANCES OF NUCLEAR NONPROLIFERATION

TOPIC INTRO

Ever since the first nuclear weapon was detonated during the Second World War, nuclear technology has inspired both fear and awe. Recognizing the immense power of nuclear technology, the nuclear powers of the time passed the Nuclear Non-Proliferation Treaty (NPT), with the signatures or accession of every country bar five. Of course, this treaty has not prevented other countries from attempting to develop their nuclear technology, which could have catastrophic consequences should mishaps occur or should the technology fall into the wrong hands. Appropriately applied, nuclear technology could have a bevy of bounteous benefits. If incorrectly instituted, the consequences could be calamitous. The question for the IAEA is simple, but difficult to answer. Should nuclear technology be permitted to proliferate among the nations of the world, and if so, to whom and in what form?

HISTORY

The events of Hiroshima and Nagasaki in 1945 regarding nuclear warfare sparked the realization of the capabilities of nuclear energy for weapon purposes. That same year scientists from the University of Chicago Metallurgical Laboratory wrote to the United States Secretary of War informing them on the importance of international control on atomic energy development. The United Nations was founded in 1945 and during the first General Assembly the topic of the future of nuclear weapons was discussed. Following that year, efforts to ensure that nuclear energy was to be only used for peaceful purposes began. The Baruch Plan was designed to be a guideline for the peaceful promotion of nuclear energy. This was an attempt at preventing proliferation by internationalization, which proved to fail. Moving forward, the Atomic Energy Act of 1946, also known as the McMahon Act, was created "to conserve and restrict the use of atomic energy for the national defense, to prohibit its private exploitation, and to preserve the secret and confidential character of information concerning the use and application of atomic energy". However, in 1949 these efforts were brought to a stop as there arose conflict between major Powers. Specifically when the Soviet Union detonated their first nuclear bomb on August 29th, 1949. At this point, both the Soviet Union and the United States were working on developing their nuclear weapons, and in 1952 the United Kingdom became the third country to possess nuclear weapons.

The US had failed in attempts to keep a strict secrecy policy once the UK had nuclear weapons therefore causing the US to change its non-proliferation policy from one of total secrecy and denial to selective secrecy and control by co-operation. The US President Dwight D. Eisenhower stated that US co-operation to all countries that were or wanted to be engaged in the development of nuclear energy for peaceful purposes was available. The Atomic Energy Act of 1946 was modified to the Atomic Energy Act of 1954 and it allowed the controlled transfer of nuclear equipment, materials, and scientific and technical know-how. On the intergovernmental level the Euratom Treaty of 1957 was generated to establish the European Atomic Energy Community. As it was being created there was discussion on whether or not the Treaty should prohibit the use of nuclear energy in member states for military purposes. However, France was engaged in their own nuclear programme and in order for the Euratom to go into effect all member states had to “renounce the use of the atom for military purposes". The conclusion was made that the Euratom Treaty does prohibit the diversion of civilian nuclear material for military use, and to this end the Treaty contains provisions for safeguarding nuclear materials and installations used for civil purposes in the member states. President Eisenhower continued to promote peaceful uses of nuclear technology and in his “Atoms for Peace” proposal at the eighth UN General Assembly urged that an international organization was to be created. This organization was to promote and control nuclear technology and in 1957 the International Atomic Energy Agency (IAEA) was established. Immediately nuclear non-proliferation was addressed.

The interest in nuclear non-proliferation became an international routine and it became apparent that a Treaty for nuclear weapon non-proliferation was wanted worldwide. In 1968 it was brought to the conclusion that the Treaty would prevent the proliferation of nuclear weapons, enable co-operation for the peaceful use of nuclear energy, and further the goal of achieving nuclear disarmament. The Treaty brought controversy as well, in 1967 India proposed that the Treaty "discriminated against states not possessing nuclear weapons”. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) went into effect in 1970. It was established that review conferences of this treaty would be held every five years to ensure that the content of the Treaty was abided by. A total of 191 states signed the Treaty at one time or another. Four of the UN member states that have never joined the Treaty include India, Israel, Pakistan, and South Sudan. North Korea gave in to the Treaty in 1985 but never came into compliance, causing them to withdraw in 2003.

PAST ACTION

The United Nations, from its very formation, took the question of nuclear energy very seriously. During their first session, on January 24, 1946, they resolved the establishment of a commission to deal with the problems established by atomic energy and other related matters. The commission reported directly to the UN Security Council, and had access to all staff and resources they could show a justifiable need

for. The commission was to create proposals in order to fulfill specific goals. These goals were to establish a basic exchange of scientific organization between nations, to ensure control of atomic energy to the extent necessary to ensure its use only for peaceful purposes, to eliminate from national armaments all atomic weapons and other major weapons adaptable to mass destruction and to impose effective safeguards by way of inspection and other means to protect compliant states from violations and evasions. This commission was known as the United Nations Atomic Energy Commission (UNAEC). They failed spectacularly, managing only to produce three reports of varying quality and to propose a plan which would require the destruction of all extant nuclear weaponry, currently only possessed by the U.S., and would impose a moratorium on further nuclear development except as permitted by UN controls. The UNAEC was officially disbanded in 1952, though it had been effectively defunct since 1949.

The subject would return to the general consciousness with Eisenhower's "Atoms for Peace" speech and the publication of the Russel-Einstein manifesto, and in time, the UN would turn back to this issue, and decide to approach it once more. This time, the UN did so by establishing another body to address issues pertaining this field, in this case an Agency. Formally established in 1957, the International Atomic Energy Agency will have a significant impact. During this time, the rest of the world also begins fomenting open anti-nuclear sentiment. In the UK, the Campaign for Nuclear Disarmament holds its first meeting, and Ireland begins proposing a resolution to prohibit the dissemination of nuclear weapons. The Antarctic Treaty, preventing nuclear deployment in Antarctica, also opens for signature, and is immediately signed by every nation currently operating in or near Antarctica. Meanwhile, France starts nuclear testing, becoming the world's fourth nuclear state.

In 1961, the UN unanimously approves Resolution 1665, earlier proposed by Ireland, which calls for negotiation to prevent the dissemination of nuclear weaponry and suggests that countries already possessing nuclear weaponry refrain from sharing, and that they refrain from transmitting information pertaining to their manufacture or use. The ideas in this Resolution will go on to form the core of the NPT, albeit with much expansion in scope and enforcement.

In 1963, President Kennedy begins expressing fear that the world may be overrun with nation professing nuclear weaponry, which he regards as the greatest threat and hazard. This declaration, made a mere six months after the Cuban Missile Crisis, seems justifiably concerning. He makes this declaration based on the assessment that at the time, eight countries are deemed capable of developing nuclear weaponry within a decade, with several more following suit later. The risks of such proliferation serve as an impetus for the drafting of the NPT. Currently, thirty states are considered capable of developing nuclear technology, but only nine are known to possess such weaponry. In the same year, the Partial Test Ban Treaty is passed.

In 1967, the Treaty of Tlatelolco is signed by all Latin American states, in which Latin America is established as a nuclear-free zone. A few months later, the US and the USSR simultaneously introduce identical draft treaties regarding the prevention of the spread of nuclear weapons. Just under a year later, the UN General Assembly adopts Resolution 2373, endorsing the draft text of the NPT. The four no votes are Zambia, Tanzania, Cuba, and Albania.

CURRENT SITUATION

The current situation with regards to nuclear non-proliferation is tenuous at best. There are currently nine countries with access to nuclear capabilities at this time. There are five countries which are parties to the NPT; China, France, the Russian Federation, the UK, and the US. There are four countries which possess nuclear technology but are not party to the NPT, and are therefore cause for greater concern. These four countries are India, Pakistan, Israel, and possibly North Korea. Setting aside these states, there are 184 other states party to the NPT which do not possess nuclear weaponry. However, approximately thirty of these states are thought to have the capacity to develop and utilize nuclear technology in a reasonably short time frame should they choose to do so.

Methods to prevent nuclear proliferation are varied, but can generally be summarized. The least avoidable hindrance in developing nuclear technology is merely the inherent difficulties of the field. If every detail is not attended to with perfect precision, the results can be catastrophic. Moreover, resources and supplies can be very difficult to obtain. Complicating this matter is the interference of the international community. The majority of states are in agreement that nuclear power, while potent and potentially useful, is too risky to allow to fall into the wrong hands. This creates a situation of international political pressure, as no nation wishes to see their neighbors develop and abuse nuclear technology. The primary solution to nuclear proliferation, therefore, will tend to be political rather than technical.

The most common system used to ensure that nuclear technology is not accidentally or intentionally proliferated to parties currently without it is the use of safeguards often endorsed by the international community to ensure safety and security. The IAEA itself mandates the use of such safeguards by states party to the NPT. First and foremost, a systematic accounting of all movements of personnel and material is required from any and all sites pursuant to the IAEA's purview. These records are audited by IAEA inspectors, along with the actual material and the sites in which they are contained. Surveillance cameras and instrumentation are also required, and must be shared in their entirety with the IAEA. The system relies on three parts. First, it relies on material accountability. All transfers of material are heavily monitored, as is the flow of material within a facility. This includes sampling of material, analysis, on-site inspections by IAEA auditors, and review and verification of records by external parties. Second, there is a heavy element of physical security. Access to nuclear sites is

restricted, as is access to data on nuclear technology, as well as access to technology within the sites as well as to material within the sites. Measures include guards, physical barriers, and other necessary measures. Finally, there is a significant amount of containment and surveillance anywhere nuclear technology is present. There are seals, automatic cameras, radiometers, and other measures in place to detect either unapproved movement or malicious tampering with the material or technology at any site. These safeguards are mandatory at any nuclear site in any IAEA member state.

Nonetheless, significant concerns have been raised regarding the current safeguards. Some nations feel that they are excessive and prevent the development of useful and peaceful applications of nuclear technology, as evidenced by the slow development of nonviolent nuclear technology. Other nations feel that they are insufficient, as evidenced by the sudden increase in nations capable of nuclear weapon manufacture, and need to be increased.

BLOC POSITIONS

UNITED STATES/WESTERN BLOC

The United States stance on nonproliferation has been a cornerstone to The Treaty of the Nonproliferation of Nuclear Weapons established in 1970. The United States is one of only 9 states that actively have Nuclear Weapons at their disposal. Along with China, France, India, Israel, North Korea, Pakistan, Russia, and the United Kingdom. The United States is one of the only states that have actively supported nonproliferation. President Barack Obama in 2009 sparked new debate over nonproliferation when he gave a landmark speech in Prague on revamping initiatives to call for a "Nuclear Free World." While later that year in September the UNSC unanimously passed Resolution 1887. Which calls for a push in efforts to create total Nuclear Nonproliferation. The United States being one of the members that actively pushed for this resolution.

The United States went on to enter the new START treaty in February 2011 with Russia. By entering into this treaty both nations agreed to limit the amount of strategic nuclear warheads to 1,550 (The United States having 1,900 strategic warheads and 180 nonstrategic.) As a result of which the United States has the smallest stockpile in it's history since 1956. Since the new START treaty was signed the United States has agreed to reduce their stockpile up to ⅓ and has agreed to support a "Nuclear Free World" but will not relinquish its stockpile until all other countries agree too. It is also pursuing a new treaty that bans the use of fissile missiles to be used as nuclear weapons.

RUSSIAN FEDERATION

Russia was the 2nd state to be recognized as a nuclear state by the Treaty on the Nonproliferation of Nuclear Weapons. Moscow being a strong supporter of nonproliferation and by working through initiatives for bilateral nuclear arms control with countries such as the United States. As of March 2013 their nuclear stockpile has been brought down to approximately 4,300 nuclear warheads. While during the Cold War their stockpile was estimated to be around 40,000 warheads.

Russia appropriated the vast majority of the Soviet Union's nuclear potential when it fell. Russia has since then been adapting and approving the technology in order to maintain its status as a major military power and, been using it's advancements as a way to combat the superiority of the north Atlantic Treaty Organization (NATO). Because of their capability to create WMDs nonproliferation has been of the utmost importance for the success of the nation in relation to other countries.

CASE STUDY

NUCLEAR NON-PROLIFERATION TREATY

The Nuclear Non-Proliferation Treaty (NPT) was a landmark incident in the history of nuclear diplomacy. A number of the greatest nuclear powers agreed that the power of nuclear technology was too great to be distributed wantonly, and agreed to restrict not only their willingness to share this technology with others, but also their own usage of this technology. The NPT was adopted on 12 June 1968, in New York, but only came into force on 5 March 1970. The primary purpose of the NPT was to ensure that nuclear weaponry stayed in the hands of those polities which would refrain from using them wantonly and without reason, and to guarantee that the nations which had nuclear weapons were disinclined to use or even retain them. It made disarmament a goal for all of the nations.

The terms in the NPT dictate a number of mandatory clauses that all states party to the NPT must obey. Since almost every single nation in the world barring a very small number of exceptions is beholden to the NPT, the majority of states follow the protocols expressed therein. The few states which have not acceded to the NPT also tend to obey its strictures out of simple politeness and a disinclination to earn the ire of the other states which possess nuclear technology.

The terms in the NPT are not particularly difficult. First, the NPT mandates that no state in possession of nuclear weaponry will in any manner permit any other state

to exert any form of control over said weaponry, nor will it assist any other state to manufacture or otherwise take control of nuclear weaponry. Second, no state which is not in possession of nuclear weaponry may take actions in order to secure ownership or control of nuclear weaponry or receive assistance from other states in pursuit of the same. Third, every signatory state accepts any and all strictures placed by the IAEA on safeguards, fissile material, or technology pursuant to nuclear power, so long as said strictures are reasonable and just. All parties also agree not to provide fissile material or any equipment to process said material. Fourth, no terms in the NPT are to be interpreted as affecting the inalienable right of the nation's party to the treaty to research and develop peaceful uses of nuclear technology as well as disseminate at their leisure any items pertaining to the peaceful use of nuclear technology. Fifth, every group associated with the NPT agrees to ensure that potential benefits from nuclear technology meant to be employed in a peaceful manner are made available to all states, subject to negotiation. Sixth, every nation agrees to immediately undertake negotiations in good faith to cease or prevent a nuclear arms race, as well as to begin moving immediately towards nuclear disarmament. Seventh, no term of this treaty prevent any state from concluding regional treaties in order to guarantee the total absence of nuclear weapons in their respective territories. Eighth, any party may propose amendments to the treaty, which must be approved by at least one third of the parties signatory to the treaty, at which point a conference will be convened to reevaluate the terms of the treaty. There may also be held, at the discretion of the signatories, a conference to discuss the terms of the NPT every five years, so long as it is supported by a simple majority. Amendments must also have a simple majority to pass. Ninth, this treaty is open to ratification and signature, and will take effect once it is ratified. Tenth, all parties have the option of withdrawing from the treaty at their discretion, so long as they give a notice three months in advance. Eleventh, texts in all languages will be made available to all governments of this treaty.

GUIDING QUESTIONS

- Should peaceful nuclear technology be disseminated freely?
- Which countries should have access to nuclear technology? Why?
- Why or why not does your country agree or disagree with nuclear nonproliferation?

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