On The Brink of Nuclear Destruction

The United States Atomic Energy Commission (AEC) was developed to investigate and initiate peaceful uses for nuclear explosives. There were two parts to the development of these ideas. One was the civil engineering aspect that used nuclear explosives to stimulate the ground to produce more natural resources, such as natural gas, and process underground oil reserves. The second was a political aspect, that incorporated maintaining peace in the world by using disarmament as a primary tool to solve the increasing interest in using nuclear technology to investigate the development of weapons of mass destruction. The combination of these two aspects led to the development of the AEC's "Project Plowshare" program, which was an extension of President Dwight D. Eisenhower's "Atoms for Peace Program", initialized on September 6, 1954[1]. Project Plowshare was the political implementation of President Eisenhower's dream, that scientists and engineers could develop a way to use nuclear technology to convert weapon of destruction into a benefit for both science and industry. As a part of Project Plowshare, Project Chariot developed into the manifestation of President Eisenhower's dream of using nuclear technology, to build a nuclear harbor in Alaska, in ways that were peaceful and designed to encompass the engineering goals set forth in "Atoms for Peace Program". Do not be deceived by President Eisenhower's clever agenda, the "Atoms for Peace Program" was actually a ploy to not only deceive the American people but also the world, especially the Soviet Union. The goal of the Atoms for Peace Program was to clean up the image of the United States government tarnished after the dropping of the atomic bombs on Nagasaki and Hiroshima in World War II. The primary goal of the project was never to find new ways to use atomic energy for peaceful purposes, as Eisenhower claimed. The atomic weapons project was another way to

test the specific effects of the atomic bomb in a peacetime environment so that it could be used for later use against any enemy developments during the Cold War and beyond.

The atomic energy policy, developed during the Henry Truman administration, was based on the illusion that America had a monopoly on all raw materials and technological expertise needed to produce nuclear weapons and would monopolize all such armaments for a generation after Hiroshima and Nagasaki. In 1949, then President Truman wanted to pass a bill through Congress that established an all-civilian Atomic Energy Commission. President Truman wanted to establish this commission because he believed that the USSR had already developed the atomic bomb[2]. Some of the nation's top atomic researchers were convinced that the Russians had quietly forged ahead of the United States, experimenting with tremendous explosions for peaceful engineering purposes, such as mining and the development of waterways. When intelligence reports from the United States and reports out of the Soviet Union came out in 1949 and proved Truman's theory correct, he authorized a governmental laboratory for testing the effects of the hydrogen bomb at the University of California Radiation Laboratory at Livermore, California. That lab was the headquarters for all of the AEC projects involved in Project Plowshare, the peaceful application of nuclear explosions[3].

When President Dwight D. Eisenhower took office in January of 1953, he had already given much thought to the problems he would be facing during his presidency. The top among these was bringing the Korean War, which had begun in 1950, to a peaceful end. Eisenhower knew that the atomic monopoly America had previously enjoyed was over by 1949, and that America was involved in an unpopular war that had caused a massive increase in American combat units, defense budgets, and conventional weaponry[4]. The Korean War had accelerated the search for the super weapon, the hydrogen bomb, and was the motivating factor for President

Truman to expand the atomic production facilities and develop national laboratories for the conduction of experiments. One week before President-elect Eisenhower took office, on November 6, 1952, he was briefed by the five member panel of the AEC about the testing of hydrogen devices that previously taken place because of the conflict. Chairman of the AEC in 1952, Gordon Dean, briefed the president on issues the stockpiling of weapons, what role the stockpiles would have in the event of another war breaking out, and what the strength of the United States would be in years to come with the stockpiling of these atomic weapons[5].

Over the course of the next month, Eisenhower and his advisors, Admiral Author Radford, John Foster Dulles, Charles Wilson, and George Humphrey, laid the groundwork for what was to become a radically new approach to living and governing in the new nuclear world. Eisenhower's greatest goal was trying to balance military spending, not match the Soviet Union man-for-man and weapon-for-weapon. His goal was devise a plan that would keep the enemy in check without bankrupting the country or change the values of American society[6]. From the beginning of his presidency, Eisenhower proposed to continue the Cold War if it could be done in a manner to maintain or bring about peace and the termination of Soviet Communism. Eisenhower devised a plan that he hoped would radically expand the rationale of using nuclear weapons in defense planning, but only if it could be done to strengthen and extend the system of worldwide alliances, and mutual security pacts, and reduce the defense budget[7].

President Eisenhower developed his Atoms for Peace Program with three perspectives in mind. The militaristic perspective argued, that the program would "take the curse off the atom" by presenting the mass public with the belief that atomic energy could be a benefit to humankind, at the same time that the military would be conducting the greatest buildup of thermonuclear data and weaponry in history. The economic perspective proposed to create a

peaceful domestic atomic power industry and to open foreign markets to the industry by developing nuclear power in the form of engineering practices and atomic power sources. The psychological perspective presented to project a way to identify the United States as a peace loving nation interested in bringing the wonders of the atom to people throughout the world and to depict the Soviet Union as a psychological enemy to the development of peace, so that the hatred towards them would build and give more support to the program[8].

The real, primary goal of the Atoms for Peace Program, as Eisenhower envisioned it, was to divert attention away from the weapons development and the nuclear testing (as in the case of Project Chariot and the larger Project Plowshare) in the public sphere, by exposing the people to mass information about the "Peaceful Atom"[9]. The program used articles, speeches, films, cartoons, displays, conferences, pamphlets, television documentaries, radio commentaries, and a constant stream of newspaper and magazine reports to expose the public to the Atoms for Peace Program and the good that nuclear weapons can produce in the right hands. This effort, however, simply redirected the attention and concern away from the AEC and the Livermore Laboratory, which was trying to investigate the impacts and consequences of using thermonuclear technology in the environment.

From 1954 to 1973, Dr. Edward Teller directed scientists and engineers working under the direct supervision of the Atomic Energy Commission at its primary laboratory, which was renamed the Lawrence Radiation Laboratory (formerly the University of California Radiation Laboratory). This research team investigated and backed several different concepts of "peaceful" uses of nuclear explosives through Project Plowshare. One of the Lawrence Laboratory's main areas of focus was the idea of earthmoving, using nuclear explosives to build harbors, canals,

dams, and mountain passes. Teller argued this could be accomplished safely, economically, and scientifically using what he called "geographical engineering"[10].

Many historians, scientists, and geographers, such as Dan O'Neill, Scott Kirsch, John Marrs, and Richard Rhodes all writing in the 1980's to 2000 present day era, have looked at the ideology of detonating nuclear weapons as mode of moving great amounts of earth at once for the purposes of building various things. The declassification of thousands of documents from the AEC and Livermore Laboratory officials made the discovery of new information possible and resulted in a popularity boom of exploring this topic in more depth. Scott Kirsch, a professor of science and technology at Pennsylvania State University, observed in 2000, that the idea of nuclear earthmoving was an utter failure for the Atomic Energy Commission. This was a vastly different opinion from those in the AEC who were extremely disappointed that Project Chariot got postponed indefinitely in 1962, but still had hopes of continuing projects of the same nature in Nevada, New Mexico and Idaho. The AEC conducted six more blast experiments in Nevada (up until the end of 1968) after the postponement of Project Chariot. A New York Times article in August 1963 reported that Eisenhower still supported the Atoms for Peace Program and promoted it all over the country[11]. Kirsch linked the several tests proposed or conducted after the postponement of nuclear earthmoving in Project Chariot with the scientific resources and fears of the Cold War[12].

The Cold War between the United States and the Soviet Union engulfed the world after 1945. The United States viewed the Soviet Union as ruthless, totalitarian power intent on an aggressive policy of expansion to bring about a global communist revolution. The Soviets saw the United States as an imperialist power bent on destroying communism and committed to a capitalist world order in-compatible with Soviet economic interests. Throughout the Cold War

the United States and the Soviet Union avoided direct military confrontation in Europe and engaged in actual combat operations only to keep allies from defecting to the other side or to overthrow them after they had done so. Thus the Soviet Union sent troops to preserve communist rule in East Germany (1953), Hungary (1956), and Czechoslovakia (1968). For its part, the United States helped overthrow a left-wing government in Guatemala (1954), supported an unsuccessful invasion of Cuba (1961), invaded the Dominican Republic (1965) and undertook a long (1964–75) and unsuccessful effort to prevent communist North Vietnam from bringing South Vietnam under its rule[13]. The Cold War had done its damage, it had caused a heightened sense of distrust and animosity between these two countries. This distrust caused both the US and the USSR to develop powerful atomic weapons in growing numbers following the Cold War.

In the late 1950's, scientists at the Livermore Laboratory developed a series of tests and projects designed to test the effects of using nuclear explosives to move land and excavate enormous holes in remote places of the world, such as Alaska. Project Chariot, as part of Project Plowshare, was designed to test the effects of nuclear explosions and the possibly drastic, and unrepairable effects that could be produced on the environment. This resulted in a serious backlash of opposition from the Eskimos of the Point Hope region of Alaska in 1959 and later from all over the country. The Eskimos opposed the project's proposal because Alaska was their home, and it was a very pristine, beautifully natural environment, that they did not want to see disrupted, disturbed or permanently altered by a project of this magnitude.

Kirsch predicted a number of other theories explaining why the United States created a program that used nuclear weapons and atomic energy to dig holes and move great mounds of earth in an era when tensions were still extremely high. He attributed the creation of Project

Plowshare to the Suez Crisis of 1956, in which Egyptians blockaded of one of the world's largest petroleum supply lines[14]. Kirsch argued this action sparked the push at the Radiation Laboratory in Livermore, California to find a technical solution to the problem of how to cut another canal through friendly territory, from the Gulf of Aquaba to the Mediterranean, using nuclear explosives. The United States sponsored a United Nations resolution for a cease-fire and the withdrawal of all foreign forces ended this plan, but the idea still opened the eyes of AEC officials to the possibility of conducting the same form of project on American soil. AEC officials argued that although they did not get the chance to test their theory about the nuclear canal, if they found the right place, where the project would be viable to the surroundings, then it could be done scientifically. Kirsch argued that Project Plowshare and all that it encompassed failed not because of the lack of interest in the AEC or the national government, but simply because the AEC officials, scientists, and health monitors could not agree on what the "permissible dose" of radiation from the fallout of these projects might/should be[15].

John Merton Marrs, in 1999, supported Kirsch's opinion that the indecisiveness and uncertainty of the Atomic Energy Commission was considered a primary cause of the fast rise and the even more dramatic crash of support for the Project Plowshare program. Marrs focused more on the argument that media coverage, or lack thereof, at the beginning of the Project Plowshare program, and more specifically Project Chariot, was the reason the project almost happened in Alaska[16].

Project Chariot was supposed to be the first true project on American soil implementing this idea of nuclear earthmoving. The goal of Project Chariot was to make a giant harbor on the Northwest coast of Alaska in the Arctic Circle. In June of 1959, when the Atomic Energy Commission announced its plan to build a nuclear harbor in Alaska, only two articles were

written about it in the entire country: one by the Associated Press and one hidden well inside the Fairbanks Daily News[17].

Walter Sullivan of the New York Times, wrote an article based on the Associated Press reports explaining the basic details of Project Chariot. He detailed the exact location and size of the expected blast, reporting: "The plan is to fire one bomb near enough to the beach to carve out a channel. Then four others would be grouped about three-quarters of a mile inland to produce the harbor basin". He also reported that "the site is the mouth of the Ogoturuk Creek, near Cape Thompson, 175 miles across the Chukchi Sea from the Soviet Union". He reported various opinions on what the project was intended to accomplish and what the AEC had told reporters about the project: "The AEC reported, the project is regarded as a test as to what can be done in the way of harbor and canal building" [18]. The story was the first of its kind to study the project in real detail, and it was buried on page eight of the newspaper. The timing of this article and it's location in a national paper is extremely important because it not only was one of the first articles written about Project Chariot in great detail, but it was written in a national newspaper, grabbing the attention of people nationwide. The public in Alaska, they had not previously been told much information at this point, but with this article , people all over the country, were exposed for the first real time to the plans of the AEC and Livermore Laboratory. This raised serious concerns and questions for the people of Alaska and inevitably began the process of generating support for the postponement of the project indefinitely.

When Edward Teller, director of the Livermore Laboratories, made a visit to Alaska in July of 1958 to conduct interviews with reporters, politicians, and community leaders, he sparked national interest in Project Chariot. Following Teller's visit, articles in all of the national

newspapers appeared. The New York Times ran articles and editorials for the next 49 months about Project Chariot. In 1960, the articles covering Project Chariot took off.

On January 27, 1960, the Times reported a conference conducted by Teller explaining how Project Chariot would be mostly undetected in the atmosphere because its explosions would be conducted underground. The significance of this was that according to Teller "only tests conducted in the atmosphere or under water could be detected by the Soviet Union". However the difficulties of controlling tests in space and underground were turning out to be far greater than expected[19]. The article discussed the importance that difficulty to control such explosions would have on the disarmament meetings that were taking place with the Soviet Union at the same time. Teller also stated at the conference that "The risks of not being able to detect the underground explosions of small nuclear weapons was far outweighed by the gain in security to be achieved by a control agreement to stop testing all such weapons". The explosions were designed to be secretive so the United States could continue to test nuclear weapons despite the disarmament treaty. This had consequences that Teller viewed as worth it as long as the tests were conducted for the development of the weapons. The importance of the change in Teller's attitude towards the detection of testing by the Soviet Union could be seen as an act of violence against them and could violate or hold up disarmament talks being worked out at the time. Teller emphasized in his speech "that the United States must prepare itself to strike against any form of aggression. This he added required more refined weapons, whose development in turn, necessitated continued tests"[20].

This was a great contradiction, in terms of why this project was necessary, from six months prior to this meeting when Teller stated to the Associated Press, "the main reason for Project Chariot was to show how using nuclear atomic energy could move great pieces of earth

perfect for building harbors and canals" [21]. He mentioned nothing about weapons or defending the United States against enemy attacks. This is extremely important because it shows how Teller was able to use the media to manipulate the media and gain support from different groups focusing on different aspects of the projects design.

John Marrs argued that Teller's actual visit to Alaska in 1958 and the interest that visit sparked (because he revealed the concept of his plans to the native Eskimos and Alaskans) caused the Atomic Energy Commission to pull the plug on Project Chariot and inevitably Project Plowshare. Public scrutiny and opposition by the residents of Point Hope and citizens of Alaska to the Atomic Energy Commission and to the United States government for backing the project in 1960, was just too much to continue with the project as designed[22]. This was not how it was portrayed to the people of Point Hope through the newspapers. The New York Times reported as of January, 1962 that President Kennedy had called for the halt of the Plowshare Program due to peace talks with the Soviet Union. This was an effort to show goodwill towards the Soviets, and not because of the srutinization by the people of Alaska.

Project Chariot had nothing to do with the economic benefits for the citizens of Alaska although Teller and his Livermore associates told them it did. Dan O'Neill, author of the "Firecracker Boys" as well as other scholarly journal articles dealing with views of the Atomic Energy Commission and Project Plowshare, argued that Project Chariot's main value to the AEC was to yield the cratering and radiation data necessary to plan a new, sea-level Panama Canal to be excavated with nuclear explosives[23]. Alaska was the testing ground for radiation fallout. A blast of this magnitude would have widespread effects in remote parts of the world. The Livermore Laboratory scientists wanted to test the results of the blast in these remote atmospheric conditions and the effects it would have wildlife and humans[24].

O'Neill's 1990 article argued that Edward Teller lied directly to the people of Point Hope Alaska in a March 14th, 1960 meeting in Point Hope. AEC officials told the people of Point Hope that the nuclear bombings in the Pacific had not significantly contaminated fish with radiation, and that the fish were still suitable for human consumption. They claimed that the radioactive fallout from Project Chariot was expected to register too small of an amount to measure with their radioactive detection equipment. The laboratory representatives also told the people of Point Hope that they would not feel any form of seismic shock from the blast. Also they claimed that although the Japanese survivors of the bombings received very high levels of exposure to radiation, they soon recovered from the radiation sickness and later suffered no further effects[25].

This was a complete and blatant lie by the AEC representatives to the people of Point Hope, because in a Journal of Psychohistory article in 1984, Mary Coleman shows that immediately following the bombing of Nagasaki and Hiroshima, the Atomic Bomb Casualty Hospital in Hiroshima was completely full with radiation related illnesses and was still completely full in 1984, when the article was written, due to the blast. Coleman reported, "the two bombs at Hiroshima and Nagasaki left 200,000 dead the first year and another 470,000 slowly dying with lingering illnesses since that time"[26]. The United States knew the effect that the bombs dropped in Japan created, and scientists also knew exactly how dramatic the effect of a project of the magnitude of Project Chariot would be for the people living in the region of Point Hope and they still were in agreement to pursue further testing.

John N. Wolfe, the AEC's Division of Biology and Medicine director, met with other Livermore scientists at the University of Alaska at Fairbanks in 1959, and got them to admit that more detailed testing would have to be completed before the people of Alaska could ever

consider Project Chariot justified. The AEC agreed, and Wolfe developed 42 new studies in geology, hydrology, meteorology, and botany and inquiries into the birds, mammals, oceanography, fisheries, and human geography. Wolfe also conducted comprehensive studies of the current radiation levels of the area, and working with the University's top biologists, such as Doctors William Pruitt and Leslie Viereck, to test many of the organisms in Point Hope region. Wolfe, working in the cold war era of the AEC, pulled off something nobody thought he could: he convinced the AEC to make Project Chariot contingent on the results of his environmental studies. Wolfe used his clout as the director of the AEC's Biology and Medicine division to persuade Teller to allow him to complete these tests to prove to people of Alaska that Project Chariot could be done[27].

When John Wolfe's final report was published as Environment of the Cape Thompson Region, Alaska in 1966, he had already persistently argued for five years that the atomic age was far too new an adventure to continue with this type of experimentation and expose the fragile environment of Alaska to that type of catastrophic project [28]. In 1961, Wolfe argued fanatically, before his research finding were even complete, that these tests, some of the most extensive ever conducted in the world on one location, made it perfectly clear that Project Chariot was never intended to be used as more than just a testing project for the effects of nuclear detonation. He also concluded that there was absolutely no way that this project could or should take place in Alaska, or anywhere else for that matter. The consequences would be so dramatic and catastrophic that they could not be conducted without doing considerable damage to the atmosphere and ecosystems surrounding the blast location, or causing other global impacts[29].

Although Alaska was saved from the use of nuclear explosives, the effects of nuclear radiation are measurable in the ground, water tables, and wildlife in the other regions in which

detonation was conducted. Other Plowshare projects, such as Neptune, Danny Boy, Sedan, and Schooner were all military cratering experiments. In all, 17 Plowshare oriented "device development" tests were conducted at the test site in Nevada and Idaho[30]. Why was this project so important that the United States government and the Atomic Energy Commission saw fit to expose the landscape and atmosphere of these 17 test blasts to the unprecedented doses of nuclear radiation? Project Plowshare was a pivotal part of President Dwight D. Eisenhower and his "Atoms for Peace Program".

These seventeen test blasts were pivotal components of the AEC effort to discover the amounts of nuclear energy possible to use and the effects the blast would have on enemies during the Cold War. The test-ban treaty, signed by President John F. Kennedy in August of 1963, also including Great Britain and the Soviet Union prohibiting all above-ground, outer space, and under water nuclear weapons tests. This agreement was a psychological breakthrough that helped ease tensions that had escalated over the previous ten years, due to the persistence of President Eisenhower's push for nuclear weapons testing during his presidency[31].

President Eisenhower's "Atoms for Peace Program", which he declared before the United Nations General Assembly, on December 8, 1953 declared that "the United States knows that peaceful power from atomic energy is no dream of the future. The capability, already proved, is here"[32]. Instead of enlarging the stockpiles of weapons, Eisenhower urged that the nuclear materials be used "to provide abundant electrical energy in the power-starved areas of the world"[33]. Many scientists saw this plan as a way to conduct nuclear testing during the Cold War, which the Soviet Union was also doing at the time, and not have it seem threatening or as an act of war. President Eisenhower had two central ideas behind his program; one was to develop engineering methods to use nuclear explosives to make canals, harbors, and dams. The other was

to use nuclear explosives to stimulate the ground to produce more natural resources, such as natural gas, and process underground oil reserves[34].

In the late 1950's, as the hazards of radioactive fallout became increasingly apparent and peaceful halt had been ordered on all nuclear tests because of the tensions surrounding the Cold War because of progressive talks in the signing of a test-ban treaty. Teller's role in the program at the LLNL was to conduct the research experiments designed to explore these peaceful uses of atomic energy that President Eisenhower wanted to explore. Teller and President Eisenhower had to tread very lightly in dealing with nuclear weapons testing. This was because talks between the Soviet Union, Great Britain and the United States were underway to devise a "Test-Ban Treaty" that would ban all tests of nuclear bombs for the purposes of weaponry during the Cold War. Teller, however, entered the process of testing with the understanding that he could conduct research on the use of nuclear weapons for peaceful purposes and not violate any test-ban agreements. Teller and his associates were on a quest for what he called "geographic engineering" in which he would conduct monumental engineering projects that could theoretically be undertaken only with the use of nuclear explosions[35].

In a classified meeting in February of 1957, at the Lawrence Livermore National Laboratory, Teller and his associates designed a project that would use a series of thermonuclear bombs to construct an instant harbor on the coast of Alaska. Not only would this test provide scientific evidence of the causes of nuclear radiation in the remote atmosphere, it would support both aspects of Eisenhower's program. The project would focus on the civil engineering aspect of the program by building a harbor using nuclear explosives. In doing so, it provided a way to gain better access to oil fields in northern Alaska, by making that region more accessible to ships

porting in the newly developed harbor, hopefully allowing for year-around access to the areas and more capital produced[36].

In early 1958, the AEC, on the advice of Teller and the LLNL, selected a site at the mouth of the Ogotoruk Creek near Cape Thompson, approximately 30 miles southeast of the Inupiat Eskimo village of Point Hope. This village is situated at the end of a long spit of land projecting out into the Chukchi Sea, 125 miles above the Arctic Circle. Point Hope struck Dr. Teller and his laboratory planners as an ideal site for the project they were going to conduct because it was distant from any major population centers[37].

The scientists also believed that the bountiful coastline was perfect for testing effects of radiation fallout on marine environments. Since no significant tests were ever conducted on Japan after the dropping of the bombs, the United States conducted its tests on the Marshall Islands (specifically Bikini Island) in the 1940's. These nuclear weapons tests were designed as a part of Operation Crossroads, which was aimed to redirect atomic energy "for the good of all mankind and to end all world wars." When the United States bombed the Bikini Islands on July 1, 1946, with the world's fourth atomic bomb, it created a disasterous effect. Radioactive material blew up into the atmosphere over a half a mile high forming a mushroom cloud. By mid-August, the radioactivity was still so prevalent on the remaining ships at Bikini Island that the United States government decided to scrap Operation Crossroads, and sink the highly contaminated ships to the ocean floor of the Pacific. Between 1946 and 1958, the United States conducted 67 nuclear tests on Bikini and surrounding islands, with a bomb detonated in 1954 completely obliterating two islands surrounding Bikini Island. These blasts released radioactivity into the atmosphere, the water, and soil making not only the island itself a radioactive nightmare but seriously contaminated all oceanic food chains around the blast site[38].

The Atomic Energy Commission knew of the results of the atomic blasts on Bikini Island, as well in Japan, when they proposed the idea of the Plowshare program and specifically Project Chariot, but because the project was designed specifically to isolate a blast site to create a harbor, and to conduct tests on the radioactive effects of such a blast on American soil, it seemed like a perfect location to conduct the studies. The logic the AEC used, some speculate, is because the tundra surrounding the Cape Hope region is comparable to that of Siberia, and if the United States were ever forced to bomb the Soviet Union, Alaska gave them a comparable place to test the effects of such an attack. The primary belief by historians such as Kirsch, Marrs, and O'Neill is that the Alaskan tundra fit the description that Teller and the AEC had of an isolated and baron place perfect for the dumping of toxic wastes, to be used as a practice bombing range, and a testing ground for hazardous technologies. They figured no one in the continental United States would really care about the detonation since it did not directly affect them. This belief was rooted in the ideology that been shared about the plains of America before westward migration, the Alaskan tundra was mostly an empty wasteland perfect for destruction and experimentation[39].

On June 9th, 1958, the AEC formally accepted Teller's proposal for a scientific experiment at Point Hope in Alaska and publicly gave it the name "Project Chariot". Project Chariot was the first test of its kind: A nuclear earthmoving experiment designed to test the levels of radiation released into the atmosphere after detonation. It was not expected be the last. On June 13th, Lewis Straus, then Chairman of the AEC, requested the removal of all people within 1600 square miles of land and water in the area of Cape Thompson, which encompassed Point Hope and the Ogotruk Creek[40].

Teller's scientific proposal, with the backing of the AEC and the White House, to the people of Alaska was a visionary idea. The project called for the burial of six nuclear bombs placed in a row at a shallow depth. Four of the bombs would be capable of an explosion force equivalent to 100 kilotons of TNT and would be used to carve out an entrance channel. Two one-megaton bombs would be used to excavate a turning basin. It was scheduled to be a $5 million project, which would, with all the explosions, be equivalent to 40 million cubic yards of land exploded into the atmosphere. It would, theoretically, cause the sea to rush in and fill the deep, keyhole-shaped crater that would be created by the blast. The harbor was originally designed to be used for the shipment of coal, oil, and other non-renewable resources thought to exist along this part of the coast in Alaska[41].

The ecological effects shown in the tests previously conducted at Bikini Island and information known about the Japan bombings, suggest that Teller and his associates knew what the results were going to be when the nuclear blast occurred, but those were never explained to the Eskimos of Point Hope. They were told directly that the radiation effects that the people of Japan felt were short lived and after a short stint of radiation sickness everything would be fine. Teller insisted that the food, the water, and the people of Point Hope would be fine after the detonation[42]. As Teller and his associates tried to convince the people of Point Hope that they were in no danger from the explosion, they were also explaining to them that this project would be a ground-breaking study in nuclear testing. Teller guaranteed Point Hope residents that Project Chariot would bring millions of dollars to their struggling economy and many more in import and export dollars once the project was completed[43].

Researchers William Pruitt and Leslie Viereck at the University of Alaska at Fairbanks had been called on to conduct research experiments on the environmental implications of nuclear

testing in Alaska in 1959 by the AEC to work with John Wolfe . This research was completely funded by the Atomic Energy Commission, supported the university by awarding research grants totaling over $100,000. This was going to be a very profitable venture for the University of Alaska, and the school president, William Ransom Wood, was eager to maintain that lucrative relationship with Teller and the AEC. As university scientists were asked to conduct the experiments on the effects of nuclear explosions, some of them began to develop strong opposition towards the project. President Wood had just recently come to the University of Alaska from the University of Nevada. There, he had received millions of dollars in AEC grants. President Wood discounted the scientists' objections by saying, "if the United States government decides that the project is a safe one, then there is no reason for concern"[44].

The two most vocal critics in the studies of Project Chariot were the biologists that conducted the experiments, Pruitt and Viereck. They were angered with President Wood and the AEC, particularly John Wolfe, when they realized that he was misrepresenting their primary research reports in statements to the press. The AEC completely ignored any of the biological findings produced by the university biologists that were different than the AEC stated objectives. When Pruitt and Viereck complained to President Wood, he discarded their objections, and let them know that he opposed any attempts by them to set the record straight regarding the findings of the project. President Wood's response to Pruitt and Viereck was that "perhaps it would not be in the best interest of the university to rehire faculty who opposed the activities of the agency that was providing money for their research". Not long after that statement, Pruitt and Viereck learned that their contracts had not been renewed[45].

The firing of Pruitt and Viereck from the University of Alaska was just the beginning. After leaving the university, they were blacklisted by the AEC from any further teaching at

public university in Alaska or elsewhere in the United States. William Pruitt was asked to join the zoology department at Montana State University. When Wood, at the University of Alaska, found out Pruitt was a candidate at MSU, he put the MSU president in touch with the AEC and that president blocked the search committee's unanimous recommendation to appoint Pruitt to the department. The same was true with Viereck, who got similar treatment at the University of Oklahoma, where AEC officials sabotaged his candidacy after a visit to the campus. Viereck tried to escape the AEC's control by emigrating to Canada, and he later got a job with the Alaska Fish and Game Department, but state legislators also tried to get him removed from his position there[46]. This showed the power of the AEC and the influence that they had over organizations all over the country, but especially Alaska because of the monetary backing that they were able to provide to specific people.

The treatment of Pruitt and Viereck was very closely related to the common practice of honestly in the United States during the Cold War. The "Red Scare" was a popular fear in the 1940-1950's. This fear resulted in many of the most prominent names in American culture in that period being blacklisted from being in movies, TV or any prominent position in society. The practice of blacklisting was a remnant of the Cold War era, and was used by the AEC to silence Pruitt and Viereck from spreading the information they knew about Project Chariot.

The Atomic Energy Commission was not about to let anyone stand in the way of their objective, and they made that abundantly clear in the cases of Pruitt and Viereck. The AEC showed that if anyone had the audacity to stand up for the people of Alaska and object to the study, that the agency had ways of making sure that a person would no longer be involved in the study and would not have the opportunity to share any information collected about the Project Chariot studies.

The firing of Pruitt and Viereck from the U of A added to the growing hostility against the project. Many Alaskans, including the Eskimos of Point Hope, began to mobilize and protest the proposed detonation site. They displayed sophistication, worldly knowledge and the ability to also manipulate the media, which caught the AEC officials extremely off-guard. In June of 1958, when Project Chariot was introduced to the people of Alaska by Teller and his Livermore associates, the only newspaper that covered the announcement was the Anchorage Times. By the end of 1959, growing concern about the project began to creep out of Alaska and was picking up more publicity. A meeting of biologists in Alaska in January of 1959 exposed misleading statements made by the AEC about the possible biological effects of Project Chariot and the entire nuclear testing program[47].

Growing concern about the project began to creep back to Washington D.C. and in September of 1960, got the attention of the Wilderness Society, led by Aldo Leopold. The Wilderness Society promptly adopted a resolution disapproving of Project Chariot and urging the abandonment of the Project. Other advocacy groups such as the Sierra Club, in May of 1961, reprinted a lengthy critical account of Project Chariot originally published by the tiny Alaska Conservation Society, based out of Fairbanks. The next month, the Committee on Nuclear Information dedicated an entire issue of their bulletin to the controversy surrounding Project Chariot[48]. By May of 1962, The New York Times reported that: "Project Chariot may well be dead, killed by the adverse publicity about its effects on Alaskan Eskimos and their hunting grounds"[49].

The subject that no newspaper in Alaska or the country besides one wanted to cover was now getting all the attention. The coverage of Project Chariot manifested 121 total articles in the Fairbanks Daily News Miner newspaper, 92 in the Anchorage Daily Times and 16 in The New

York Times between July 1958 and August 1962. The concern was spreading throughout the country, not because Teller and the AEC wanted to disturb a magnificent landscape or endanger species, but because saving the environment was not as large an issue as it is today. People objected to the project because it was based on destroying the natural world of the Eskimos. This was not acceptable because the people felt sorry for the Eskimos and because of their "invisible interconnectedness that they have with all things and their surroundings"[50].

In the context of the American "military-industrial-scientific complex" during the Cold War, Project Chariot, and on a much grander scale, Project Plowshare, offered a case study for examining the diversity of scientific practices under military, industrial, and government business like agreements. From the start, the public relations goals of getting the majority of the people of Point Hope and of the entire country to support the project, by using Cold War propaganda, and the threat that the Soviets were beating the U.S. to the development of new ways to use the bomb, were intertwined with the agenda of the project. Articles in The New York Times reported these political agendas surrounding Project Chariot which was designed to disrupt the negotiations of the US and USSR, and to find ways around the international treaties that would limit or ban the nuclear weapons testing, was the goal of the project[51].

Teller and his associates lost the endorsement of the project from the Alaskan State financial leaders that they once had. The financial interests in Alaska, and the Point Hope Village Council, had serious doubts about the commercial viability of mineral deposits thought to be found along the coast. They also questioned the importance of a harbor being constructed to ship out the small supply of minerals that might be located there. The access to minerals found in this region of Alaska was one of the main reasons Teller used to justify the project when he introduced the idea for construction of the harbor. Many of the citizens, biologists, and

anthropologists, people like David Frankson, a head whaling captain in Point Hope, and Alaskan economist George Rogers, began raising serious questions, attacking the blasts' viability and the impact that the blast would have on the people and the wildlife of their region. The AEC acknowledged this growing concern among the natives and those questioning the Project's relevance and advantages versus the consequences. This growing scrutiny caused Teller and his associates to return to California and regroup. They failed to find economic justification for the Cape Thompson harbor. Teller could not convince anyone, besides the AEC, to advise the Eskimos to abandon their economy and culture and change their way of life so a harbor could be built that could only operate three months out of the year[52].

Teller had concentrated on public relations, the selling of Project Chariot to the people Point Hope, because he believed that he could persuade a simple-minded Eskimos that this was a great idea. He used large sums of money as incentive to get them to agree but the plan backfired. In turn, this caused the AEC to pull further and further away from the project. Teller incessantly pushed to keep Project Chariot on track and secure the support it needed. He believed if he could get the support and conduct the explosion as designed, then he and the Livermore Laboratory would get the opportunity to supervise the project in Central America to build a new Panama Canal using nuclear explosives. The plan was to use nuclear explosives like the ones designed to be used in Project Chariot and to build a 1,000-foot-wide, sea-level canal in Columbia or in the Darien Province of Panama. The nuclear project to replace or ease the load on the old, overworked canal would be much cheaper and much less time consuming than conventional construction[53]. To assure Project Chariot stayed on track and did not get cancelled, so that he could possibly construct the new canal in Panama, Teller scaled down the explosiveness of the project to 460 kilotons of explosives (just 19 percent of the original). In other words, the revised

project was just a simple engineering test. This smaller project could not be used to make a harbor and it lost its validity as a demonstration for useful nuclear applications[54]. Teller still wanted to conduct the project despite the lower level of explosives so he got the experience and data necessary to supervise the bigger, more important project, building the second Panama Canal in Central America.

The new AEC commissioner in 1959, William Libby, and the AEC Chairman, John McCone, indicated the project had been shelved temporarily because Alaskan business leaders were disinclined to invest in backing the project as it stood, and because of the concerns voiced at the Second International Conference of Peaceful Uses of Atomic Energy meeting, in Geneva in 1958. The AEC lacked the backing that they needed from the people of Alaska. People like Don Foote, a human geographer from McGill University, who had landed the AEC contract to research the human geography of the Cape Thompson region, documented the people's dependence on caribou, and also raised a lot of questions about the safety of a blast so close to the village[55]. He worked in connection with the Point Hope Village Council and in conjunction with pressures from the Soviet Union and from some of the United States' allies who helped stop the project. The critics saw Project Chariot, 180 miles from Siberia, as an obstacle in negotiations for the emerging test-ban treaty, and the project was viewed as a thinly disguised attempt to continue to test nuclear explosives by the United States despite the treaty[56].

In April of 1962, the Atomic Energy Commission and the Livermore Laboratory announced that Project Chariot was postponed, indefinitely. An article in the New York Times published January 28, 1962 reported "the United States ordered the suspension of all underground testing projects as it was an attempt to demonstrate good faith during the present test-ban treaty talks with the Russians"[57]. This was the reason President Kennedy gave the press

and the Soviets for halting the project, but John Kelly, director of the Division of Peaceful Nuclear Explosives listed several other factors for the cancellation. He listed the $5 million cost lost in the project for the tests conducted in Point Hope, but another reason was the negative environmental studies conducted by independent researchers not tied directly to the project. These studies had raised some serious concerns on the issue of safety. Primarily, Kelly did not want to raise anymore skepticism on the safety of nuclear excavation than already had been, since more test blasts were planned for the Nevada testing site later on. His argument showed that the environmental impact of the project was just too high and the extremely high level of public concern over the project caused its demise[58].

Trying to cover up its $5 million loss in the months following the cancellation of Project Chariot, in August of 1962, Teller and the AEC continued to study the effects that a radiation blast would have on this area. Trying to make the project have some form of value, they secretly gathered 43.5 pounds of highly radioactive sand from the Project Neptune nuclear blast site in Nevada and took it to the Ogotoruk Creek proposed site. They placed the radioactive material in various sites along the creek and left it there. At least one test site drained directly into the creek and sea, and the AEC did not post any warning signs or inform local officials of what they had done[59].

Dan O'Neill discovered this undisclosed release of nuclear radioactivity after the project was shelved, while he was conducting research for his book "The Firecracker Boys" in the mid 1980's. O'Neill, an oral history researcher and professor in the oral history program at the University of Alaska, Fairbanks, and his fellow researchers gathered some 15,000 pounds of contaminated soil buried under a four-foot layer of uncontaminated soil that Teller and his associates had left there. Tests revealed that this contaminated soil was more than 1,000 times

more radioactive than 1960's standards allowed for the burying of strontium 85 and cesium 137. These findings led to a wave of anger and fear among the long-suffering Eskimos of Point Hope. This cover-up presented a disturbing picture of the way government agencies, such as the Atomic Energy Commission, could justify their behavior by using the excuse that they were "defending the nation against the Soviet threat" and how it seriously damaged the fabric of American democracy[60]. It damaged the fabric of American democracy because the people of Point Hope did not want this project to take place in their home, no matter what Teller and the AEC were offering them. The fact that the AEC continued to develop the project shows that, even though we are a democratic nation, when it comes to matters the government deems necessary to put under the umbrella of national security, we truly have very little input about what takes place.

If the goal of Project Chariot, and on a much larger scale, Project Plowshare was indeed to initiate the idea of using thermonuclear technology as a tool for the promotion of peace, then President Eisenhower never should have allowed the research studies in Alaska, Nevada, and Idaho to continue without first consulting with Great Britain and the Soviet Union. The United States showed no respect for the disarmament talks that had taken place at the nuclear non-proliferated treaty negotiations of late 1940-early 1950's and at the Geneva Conference in 1959. President Eisenhower's goal in developing his "Atoms for Peace Program" was purely a ploy to cover up the real reason the United States wanted to study the effects of using nuclear explosives. The AEC and scientists like Teller wanted to use the research gathered in the study of the Plowshare project to test the specific effects of the atomic bomb for later usage against enemies, such as the Soviet Union. President Eisenhower was worried about the American image after World War II and the dropping of the bombs on Hiroshima and Nagasaki. He wanted to

clean up that image by keeping the blasting in Alaska low key so as not to jeopardize the US involvement in the talks that eventually led to the signing of the Limited Test-Ban Treaty in 1962.

The opponents of Project Plowshare, and specifically Project Chariot, were never awarded a clear-cut acknowledgement of their success in defeating Dr. Teller and the AEC. The Eskimos, biologists and conservationists who all sacrificed and stood up for their homes were part of a bigger picture. On the surface, Project Plowshare, was a lesson in conflict, and scandal, that involved the intervention of passionate people who learned a valuable lesson: institutions of a free society can not always stop scientists and people of high authority from conducting business in the way they see fit, but a free society must at all times be skeptical and question all infringements on our land and our freedom and not accept without close scrutiny the propaganda of anyone who offers it.

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