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Where to Test a Nuclear Bomb

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On November 6\textsuperscript{th}, 1971, a nuclear bomb two hundred and fifty times stronger than the one dropped on Hiroshima was detonated a mile under an Alaskan island, Amchitka. The blast caused a mile wide crater and was measured at a 6.8 on the Richter scale.\textsuperscript{1} The motive for this bomb and the previous two bombs detonated on Amchitka was to counter the Soviet Union's ICBM nuclear missiles. Nothing in our nuclear arsenal was large enough to satisfy an appropriate response to the Soviet Union's ICBMs and while the bomb detonated on Amchitka, codenamed Cannikin, was too large for missiles at the time, the tests were being planned before the missile technology was developed.\textsuperscript{2}

The United States decided there needed to be new rounds of tests. But why Amchitka? The United States is a large place with a diverse biosphere and the United States is not limited to its own borders. The more infamous Bikini Atoll tests were detonated on islands overseen by the United States as a protectorate. They were never a U.S. territory. In the 1950s Aus-


tralia offered the United States to test their bombs in the western deserts. Amchitka, like all land, mattered to someone. The choice to test on Amchitka did mean to deal with resistance from civilian groups, every level of U.S. government, and foreign powers. Of all the places, why was Amchitka worth the fight to test nuclear bombs on?³

“Project Rufus” started in 1962 and continued well over a year to find the ideal location to test under certain parameters. There were official parameters like being a safe distance from any town (40 miles at least, but preferrable 150 miles from radiation fallout winds), topography and bedrock properties of the location, and ease of transportation to the location. Commercial interests and environmental impact were also considered, but by this point there was no location that could accommodate everything. Amchitka was considered the best choice overall. How does a place become the best place to test a nuclear bomb?⁴

Finding the Perfect Location

Amchitka belongs to a group of islands called the Rat Islands, and a greater chain of islands called the Aleutian Islands. In the mid-1700s, Russian fur traders had come to the Rat Islands to hunt otters and seals. Amchitka was the largest of the Rat Islands and its location among the other islands made it the easiest one to sail to the other islands. The Russian traders would kick the Aleutian indigenous people, Aleuts or Unangax, off the island and later allow them to return, but the permanent removal of the Aleuts came in the 1840s. By the time America purchased Alaska, there was no permanent settler on Amchitka. Seal hunting continued, until the United States, Great Britain, Japan, and Russia agreed to limit seal hunting in the nearby waters. In 1913, President Taft encouraged this recent agreement, and continued his predecessor’s creation of nature reserves by establishing the Aleutian nature reserve on several islands, including Amchitka, through Executive Order 1773. The executive order also allowed the United States to build a military base on any of said islands if a need arises.⁵ In 1930, President Hoover expanded the nature reserve to include nearby islands and stressed the importance of building up the population of local birds.⁶ Amchitka Island was empty and now under direct government supervision. They may have to overlook the environmental impact the bomb will have, but there will be no direct settlements harmed. The islands directly nearby would be subject to seismic activity and fallout. For now, before there was even a nuclear bomb in existence, the nearby Rat Islands were still inhabited by Aleuts.

On June 3rd, 1942, Japan began bombing Dutch Harbor on Unalaska Island. An island far closer to the mainland than Amchitka and the largest harbor of the Aleutian Islands. On June 6th, Japanese forces took the closer islands of Kiska and Attu.⁷ The United States was now able to enact the part of the executive order that allowed the United States to build a military base in the Aleutian Islands. There were no nearby bases to stop any future Japanese air raids or invasions to more and more

³ Ibid. Kohlhoff 5
islands. After the initial invasion, it was silent, but American soil was now occupied. To ease the public’s mind, reporters photographed the entire process. They showed General E. Lloyd, who was put in charge of the Aleutian campaign, personally overseeing the base being built on Amchitka. He even explained the process of deciding where the base would go and how it was built as quickly as it was to the newspapers. Amchitka was already empty, so it started as an ideal base. It was also just seventy miles from Kiska, unlike the far larger Unalaska, which was over a thousand miles away. Even getting into certain geographical advantages as how the North-West part of the island was mountainous; giving some level of protection from Japanese raids and the South-East part of the island was flat with plenty of lakes and rivers and hunting for the soldiers with only the mud to delay building (steel matted runways made conquering the mud easy). In hindsight, the sense of urgency was unneeded. The goal of this invasion was to pull resources away from the rest of the war. The initial invasion of Kiska and Attu had over five thousand Japanese troops present, with three of their ships sunk by American air raids almost right after. There were no future Japanese air raids on the rest of the islands, nor did Japan have the resources to build bases on Kiska or Attu. America retook Attu first and the Japanese troops were snuck off Kiska right after. On May 30th, 1943, thirty-four thousand troops landed on Kiska, ending the Aleutian campaign.

The hasty and overwhelming military buildup was not just to stop Japan from taking empty island after empty island, nor just to stop Japan from getting into a position to bomb the continental United States. When Japan invaded Kiska and Attu, they took the native Aleuts back to Japan. There was an understanding if Japan was to take another island, or just to bomb another island, they would not be restrained against civilians. To prevent any civilian casualties, and to use their islands unimpeded, over eight hundred Aleuts from nearby islands were relocated to five duration camps on St. George and St. Peter of the Pribilof Islands. Only the Aleuts. There were plenty of white settlers working on the islands at this time, but an order for anyone with at least an eighth native blood was to be transported. Some Aleuts were able to stay if they worked for a local military/construction contractor Siems-Drake Puget Sound Company. Aleuts had no legal standing to fight against the relocation. Alaskan natives were considered wards after the Russian purchase, and the Aleuts were not living on reservations with their own treaties like in the continental United States. It also meant there was a gray area on who was in charge of the removal, with infighting between government agencies like the Army, Navy, Department of Indian Affairs, and the Department of Fishing and Wildlife (they did live in an official nature reserve). Each wanting to have the final say, but never the responsibility. Lack of direct leadership and responsibility partly led to cramped conditions, hypothermia, malnutrition, and widespread sickness in the camps. Reports of inhumane conditions were coming out. Washington sent an investigator, Dr. Berneta
Block, and she agreed with the reports that all five camps were inhumane.\textsuperscript{12}

Some Aleuts found their way back to their homes in 1943, but what they came back to were torn down homes. In 1944, President Roosevelt ordered the Department of the Interior to allow the remaining Aleuts to return home and for the government to fund the rebuilding of their homes. Due to the continued infighting of the different departments, most were not released until 1945, but not all were sent back home.\textsuperscript{13} Amchitka was no longer the only military asset in the region. The U.S. government did not allow any Aleuts to return to Attu, Biorka, Kashega, and Makushin. They became military bases and weather stations. Beyond the argument for national security, another reason used was how few Aleuts from those islands survived. The U.S. camps had plenty of fatalities and only twenty-five Attu natives survived the Japanese camps. They could now live on a more populated and farther away island and work for the military or companies that set up in their former homes. The surrounding islands that were in the fallout zone of Amchitka have become empty.\textsuperscript{14}

Amchitka was first selected as a possible site for nuclear testing as early as 1951.\textsuperscript{15} The island was already under military supervision with a recently abandoned base and three airstrips.\textsuperscript{16} When it leaked to the media that Amchitka was considered, the government abandoned the idea for the time being. The 1950s was not the time for Amchitka as the focal point of U.S. testing was at Bikini Atoll.\textsuperscript{17}

Before the tests, The Bikinians were relocated from their 2.3 square mile island to .63 square mile Rongerik Atoll. They were put on food and water rations and sickness spread. The treatment of the Bikinians was documented by newsletters like 	extit{Bikini Backtalk}, initially sent to nearby stationed soldiers and later to the United States. The resulting protest did force the government to move them, but to an equally small island that could not support them, putting them back on food and water rations. The tests continued and after 1947 the Bikinian leader, Juda, was brought to the island to assess the damage it did. Then it was clear that the move was not as temporary as they were led to believe.\textsuperscript{18} The 1947 test was nothing compared to the 1954 hydrogen bomb test, Castle Bravo. Castle Bravo was the worst radioactive disaster in U.S. history, irradiating the Bikinians, a Japanese fishing boat, Daigo Fukuryu Maru, and U.S. soldiers stationed at Rongerik Atoll.\textsuperscript{19}

Confidence in nuclear testing was lost. Nukes were still new, and the public was not fully aware of the lasting impact they would have. Scientists believed Bikini Atoll was safe in 1964 and in 1969, the Bikinians were allowed back, only to have to be relocated in 1974 after high rates of cancer and radiation poisoning.\textsuperscript{20} The idea to regain confidence in testing was to show the public that there was no long-lasting impact on nuclear testing by testing it in the United States. Because it was still a dangerous test, these new tests had to

\textsuperscript{12} Ibid New Orleans WW2 Museum
\textsuperscript{13} Ibid New Orleans WW2 Museum
\textsuperscript{14} Ibid “The Lost Villages”
\textsuperscript{15} Canadians Campaign against Nuclear Testing on Amchitka Island (Don't Make a Wave), 1969-1971, Global Nonviolent Action Database, Canadians campaign against nuclear testing on Amchitka Island (Don't Make a Wave), 1969-1971 | Global Nonviolent Action Database (swarthmore.edu).
\textsuperscript{20} Ibid “Nuclear Displacement”
be somewhere that was already empty and in control of the United States.\textsuperscript{21}

Nevada and Alaska were looked at. There were previous tests in Nevada and the federal government owned most of the land. While there was general resistance, a specific individual resisted any nuclear tests in Nevada. Howard Hughes was heavily invested in Las Vegas by this point and used his famous status to prevent any chance of a nuclear test. Beyond general protest, he offered a bribe of a million dollars to President Johnson not to conduct any tests. Howard Hughes also funded democrat and republican campaigns on the local, state, and federal level against any Nevada tests.\textsuperscript{22} He even gave a free suite and certain allowance every day for a week at his casino to the Alaska Governor who ended up supporting nuclear tests in his state. The Governor denied it was because of the bribe, which is very plausible, because the Territorial and State governors of Alaska have been trying to bring nuclear tests to Alaska.\textsuperscript{23}

From the onset of the Cold War, there were fears that the Soviet Union would attack Alaska. The Aleutian Islands had already been invaded. To test there, would signal to the former owner of the islands, The Soviet Union, that the U.S. was in complete control of the region. An initial idea was to test on little Diomede, but it was quickly discarded not just for the people living there, but because the border to the Soviet Union was just one island over. They needed to show the Soviet Union this control through nuclear power, without antagonizing them with it.\textsuperscript{24}

The United States also wanted to find more peaceful uses for the nuclear bombs called the Plowshare program.\textsuperscript{25} The creator of the U.S. hydrogen bomb, Edward Teller, wanted to use hydrogen bombs to open up mining opportunities in the frigid north and to create better coastlines for docking. Amchitka’s small and uneven harbor was its worst aspect for the military. It would have been better to bomb a flatter more accessible coastline. Alaskan government officials were initially open to both the security and opportunity the bomb would bring.\textsuperscript{26}

The initial problem with testing in Alaska, especially the more remote regions, is the weather. Fighter pilots dropping bombs on Japanese occupied Kiska attested to the unpredictable winds that brought planes down and pushed bombs off target. Fallout from atmospheric tests meant there could be no reasonable prediction on how far or what direction it would go.\textsuperscript{27} There could be no atmospheric tests, however, both sides of the Cold War wanted an end to them. The Cuban Missile Crisis accelerated the urgency for a test ban, but there were talks of a test ban for years as the first step to a potential disarmament. In 1963, Great Britain, the United States, and the Soviet Union signed the 1963 Nuclear Test Ban Treaty. France was the only nuclear power at the time that did not sign it.\textsuperscript{28} The treaty banned all tests in the atmosphere, in space, underwater, and underground if it would

\textsuperscript{21} Ibid Kohlhoff 4
\textsuperscript{24} Kohlhoff 4
\textsuperscript{25} Plowshare/Vela Uniform Program Sites, Office of Legacy Management, www.energy.gov/lm/plowsharevela-uniform-program-sites.
\textsuperscript{27} Kohlhoff 4
cause radioactive material to leave the country's border.29

The Aleutian Islands were apart of the United States, but far enough away to not affect the continental United States or mainland Alaska. The Rat Islands specifically had been evacuated and already had military installations. With an island, you could contain the fallout to the island (as long as you prevent radioactive material from leaking into the ocean). Alaska campaigned for tests and the unpredictable weather had become less of an issue. Amchitka was at the center of the Rat Islands and the South-West was flat and had multiple potential test sites. It also had the benefit of having the thinnest layer of soil over its igneous rock, making it the easiest to drill into for the underground tests. The igneous rock was formed by the island being right on the Ring of Fire. The Atomic Energy Commission, AEC, officially denied this as a motive and stated their desire to prevent any effect the bomb would have on the fault line right below. Despite the official statement, there were initial curiosities to see the difference between a natural seismic event and an artificial seismic event that did lead to a desire to test an underground nuke somewhere along the Ring of Fire's fault line. This was an almost perfect location for the United States government to test a nuke. Even with an almost perfect location, the United States government must deal with resistance to nuclear testing.30

The Resistance to Cannikin

The previous two tests, Longshot in 1965 and Milrow in 1969, experienced protests, and legal action, but never to the same degree as the final one. One reason is that the previous two were one megaton nuclear bombs, power of fifty Hiroshima's, while Cannikin was five megatons, power of two hundred and fifty Hiroshima's. The fear of causing an earthquake or tsunami by this power was a greater fear.31

The fear of an earthquake and tsunami existed with the previous two tests, and the AEC was correct when they denied that an earthquake or tsunami would happen. In their pursuit to hold back fears of things like a tsunami, they began to deny any possible negative consequence from either test. The AEC also downplayed the projected amount of otter deaths from the test and the lasting results to the nature reserve. Amchitka was a prize in natural conservation for bringing the arctic otters off of the endangered species list. They sent out scientists before and after tests to panels to address local Alaskan's concerns with none of the AEC's data.32

When otter deaths were far beyond the projection and entire lakes in Amchitka evaporated and the panel scientists were revealed to have no knowledge, it did not matter that a tsunami did not happen. They were caught in a lie and the institution the United States government looked to for nuclear answers had lost public trust. Whatever the AEC said could not be taken as truth. Experts could be disregarded as being agents of the AEC. There was nothing the AEC could do after to regain that trust. All they could do is fight the many organizations now against this test.33

The federal and Alaskan government needed to be on board and there were opponents within both of them. By the second bomb, Alaska's governor, both senators, and one representative were against any more tests.34 Eighty thousand signed a petition in Alaska to oppose Cannikin, including members of the state legislature, leaders of Alaskan

30 Ibid Department of Energy
31 Ibid Don't Make A Wave
32 Ibid Kohlhoff 5
33 Ibid Kohlhoff 5
34 Ibid Kohlhoff 7
native groups and trade unions, and members of newspapers like Fairbanks Newspapers.\textsuperscript{35}

It was not ideal, but Alaska has already welcomed the test and it was the federal government, specifically congress and the president that had the final say. Congress’ only attempt to oppose Cannikin was when Representative Minsk put forward a bill that would end any future funding for the test that ended in one hundred and eight votes for the bill and two hundred and seventy-five against.\textsuperscript{36} The federal government was to be for the test, but the many parts were not all in unison. Specifically, the Department of the Interior. The Department of the Interior was consulted with regards to the test. Their recommendations to not mislead on projected otter deaths or tritium leakage in lakes to the public, but overall, the head of the department was not opposed.\textsuperscript{37} Robert Jones oversaw the Amchitka nature reserve and had been fighting against other government institutions since World War Two. He initially had trouble with stationed soldiers killing seals. He was vocal to anyone and everyone about these tests from the beginning.\textsuperscript{38} Other members of the national parks began siding with him, going against their department’s head choice of collaboration with the AEC.\textsuperscript{39} Newly made environmental laws like the National Environmental Policy Act, NEPA, led to the Environmental Impact Statements, EIS, and the successor and newly formed EPA to find their niche in the government, opposing Cannikin at their formation.

While not ideal, the AEC was looked for, to determine if a test should happen or not. Not these other departments.\textsuperscript{40}

The Department of Indian affairs were also against the test, siding with the Aleuts who opposed all tests.\textsuperscript{41} The Aleuts did not agree with the tests, because the island, while abandoned, was still viewed as a home to Aleuts and each island represented the soul of a folk hero in their mythology. Aleuts also feared radioactive fallout and tsunamis to the islands the Aleuts were not evicted from.\textsuperscript{42} They had legal rights against the bomb, as the Aleuts had exclusive fishing rights to certain waterways and nuclear fallout in these waterways would violate these rights.\textsuperscript{43} Almost all court actions against Cannikin involved Aleuts or their organization, the Aleutian Pribilof Island Association.\textsuperscript{44} State court rulings ultimately agreed with the AEC that the health of the Aleuts were not in danger, as it was psychological. The courts did require the AEC to provide warning of when the test was going to go off and to organize testing centers for the nineteen Aleut villages closest to Amchitka.\textsuperscript{45}

\textsuperscript{36} Kohlhoff 9
\textsuperscript{39} Kohlhoff 9
\textsuperscript{40} Strausberg, Gary Igal. The National Environmental Policy Act and The Agency for International Development, The National Environmental Policy Act and The Agency for International Development on JSTOR.
\textsuperscript{42} Kohlhoff 9
\textsuperscript{44} The Aleutian/Pribilof Region, Aleutian Pribilof Islands Association, Tribes | Aleutian Pribilof Islands Association (apiai.org).
\textsuperscript{45} Kohlhoff 9
would be. The courts found that the AEC was following the laws laid out for nuclear testing safety and with the military installations and previous nuclear tests, the non-Aleuts outnumber the Aleuts on the islands. It meant that they had no standing on a discrimination claim since the non-Aleuts were in as much danger as the Aleuts. Inside America’s courts there was a battle to stop Cannikin, and on America’s diplomatic side, they had to deal with foreign resistance.

The Soviet Union would be a likely choice for a foreign country who would oppose the test. Despite far eastern newspapers reporting about the test, the Soviet Union had no response. A country that responded to the tests was Japan. There were multiple species of birds that have annual migrations from northern Japan to the arctic, stopping at Amchitka pass. They feared that with an irradiated Amchitka it would either kill the migrating birds or irradiate the birds which would then be brought to Japan. Japan’s only form of opposition was publicly denouncing the test and requesting the United States not to conduct the test. Canada had the harshest response to the test among the foreign powers. The Canadian government threatened to bill the United States for any damage from the bomb and the governor of British Columbia declared this as the lowest point in relations between these two countries in his lifetime. The other acts of opposition from the Canadian government came as direct pressure from Canadian protestors. Protestors outside the U.S. consulate in Vancouver made the government request the consulate to ask congress to stop the test. There was also a halt of all movement for all roads that crossed the Canadian American border for an hour in response to protestors already stopping trucks from crossing the border. It did not satisfy the protestors and it was up to the Canadian government to stop future protestors from blocking roads. Ultimately, Canadian opposition did not come from the government, but nature conservation organizations. They posed the largest threat to stopping Cannikin.

Don’t Make A Wave or DMAW was the largest conservation group to oppose the test. It was formed after the initial group Society for Pollution and Environmental Control or SPEC failed after forming before the first test and never making any progress. Fears of a Soviet response to Cannikin and a desire to protect indigenous rights were motives to stop the test, but their main concern was environmental. Specifically, the fear of causing a tsunami. Their most famous feat was getting a boat and sailing it to Amchitka to stop the test. There was no chance to see if they could evade the coast guard. A storm happened just after they set off and they had to retreat to the harbor where they stayed even after Cannikin was detonated.

The Committee for Nuclear Responsibility formed just to oppose Cannikin and was the leading group in conservation legal action against Cannikin. They were unsuccessful because the AEC followed all environmental guidelines set up for nuclear tests, but it did cause the head of AEC, Seaborg, to be replaced by Schlesinger. The Committee for Nuclear Responsibility united with seven other groups, including DMAW in their final attempt to stop the test, that lead to the only

49 Kohlhoff 9
50 Ibid Don’t Make A Wave
51 Ibid Don’t Make A Wave
Supreme Court hearing on nuclear tests. This case was only for if the AEC’s scientist properly predicted if a seismic event would happen, beyond the usual seismic event of detonating a nuclear bomb. If there was reason to believe detonating Cannikin on a fault line would cause a tsunami, Alaska State Medical Association, Federation of American Scientists, and plenty of other organizations not formed to oppose Cannikin found their own ways to protest the bomb.

Schlesinger fought the legal battles, but also the battles for public approval. He chose not only to be on the island for the test, but to bring his wife and kids to the island for the test to show how safe it would be. He brought two U.S. representatives as well and kept over two hundred of the nine hundred employees on the island. In a three to four decision, the Supreme Court allowed the test to take place and in six hours Cannikin was detonated.

After the Bomb

No tsunami happened. Rolling motions could be felt on Adak Island two hundred miles away and no one on Unalaska Island felt anything at six hundred miles away. This was the final test on Amchitka, with Schlesinger stating they cancelled all future tests partly because Cannikin was a success and partly from the widespread opposition. Schlesinger had to testify at a congress hearing about the test. It was just Schlesinger going through the step-by-step process of setting up the test. All that resulted from the hearing was the AEC being granted full authority and full responsibility for all environmental decisions in any future tests.

The first concern after the test was the people affected. The two hundred workers that experienced the blast were left on the island for a couple of days and already that early, there were signs of leakage at the blast site. A temporary hotline for Amchitka workers was set up in case they felt any illness after their initial test for radiation exposure. Higher than average, but under the limit for immediate concern. CDC conducted surveys for Alaskan natives that lasted from 1969 to 1983. It was established after the first two bombs and was to track cancer rates. They separated the Alaskan natives by region and language groups. The Aleuts’ cancer rate was average for Alaskan natives and America. The rate of throat and lung cancer were high, but it was attributed to their high rate of smoking. Radiation was not considered a factor. A later study in the 90s did question if a radioactive environment did play a role in cancer rates for Aleuts. CDC and Indian Health were inconsistent in re-checking on Aleut villages and a doctor, Doctor Bowerman, conducted his own survey and focused on lung cancer. He divided it island by island unlike previous CDC surveys, and while not naming the four islands, he stated that these four islands should be studied in the future to see if there could be conclusive evidence found that the radioactive environment played a role in their cancer. The study was never conducted.

Studies into Amchitka and its effects were

53 COMMITTEE FOR NUCLEAR RESPONSIBILITY, INC. v. SCHLESINGER, 404 U.S. 917 (1971), Justia, COMMITTEE FOR NUCLEAR RESPONSIBILITY, INC. v. SCHLESINGER :: 404 U.S. 917 (1971) :: Justia US Supreme Court Center.

54 Ibid Don’t Make A Wave
55 Ibid New York Times
56 Ibid New York Times

58 Hearings of Cannikin Test, Atomic Energy Commission, i.pdf.


often delayed or never conducted. There were initial excavations on Amchitka where scientists found tritium in the remaining freshwater lakes. While it was not officially considered a contaminate, people are still barred from drinking from any water source on Amchitka.62 The crater from the cannikin site caved in and there were fears that radioactive material broke into underground water and found its way to leak into the ocean. Scientists in the 90s began to check the water around Amchitka for any signs. The moss and water samples indicated that radiation was higher than average, it was not high enough to conclude if it was from leakage at Amchitka or other nuclear activity in the Pacific.63 In 2001, independent organizations like Fairbanks conservation society and Greenpeace were allowed to check in Amchitka. They found underwater plants in the Bering Sea filled with plutonium, but origins remain unknown. It was still unknown at this time if it was safe to eat anything grown on Amchitka.64 The latest report was in 2011, which expanded their search all the way to Adak Island. It too was inconclusive.65 After Cannikin, Amchitka was built back up as a nature reserve. There are still occasional visits from scientists to learn about the long-term impact from the tests.66

The United States did not pick Amchitka by just pointing at the globe. For what their goal was, Amchitka was the best place to test nuclear weapons in the late 60s and early 70s. This island in the middle of the north pacific still had defenders, many defenders. For decades after, there were still lingering concerns about these tests. Even on an abandoned island at the tip of Alaska, seeming at the end of the world, there were those who cared for it. There is no perfect place to test such a deadly weapon. No abandoned lifeless husk of land that has no connection to anyone. Amchitka was the best choice that incorporated America’s desires at the time, and it could not be enough.

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