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WASH YOUR COWS TO REMOVE RADIOACTIVE FALLOUT:
GOVERNMENT EFFORTS TO PREPARE THE RURAL
POPULATION OF THE UNITED STATES
FOR A NUCLEAR ATTACK

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirements for
the Degree of Master of Arts

by

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ABSTRACT

Adams, Monti. "Wash Your Cows to Remove Radioactive Fallout: Government Efforts to Prepare the Population of the United States for a Nuclear Attack." Master's Thesis, Fort Hays State University, 2014.

This thesis evaluates the history of the Civil Defense programs from World War II through the Kennedy Administration. There were various government agencies tasked with Civil Defense, preparing the civilian department for war activities. The urban, suburban, and rural populations received different messages from these various agencies. There were specific marketing campaigns aimed at the rural and agricultural groups to convince them to prepare to survive a nuclear attack. The government needed this key demographic to survive and continue to provide food to the survivors of any nuclear attack. Rural populations and agricultural producers were important due to their ability to provide the crucial food supply necessary to the surviving populace. Without a reliable and safe food supply, the remaining people would not be able to rebuild all that had been destroyed during the nuclear attack. In addition, the rural population needed to survive to play host to those who survived the initial nuclear attacks. Survival plans for urban and suburban populations focused on separate messages than those for rural and agricultural areas because the latter had to factor livestock and crop protection into their survival plans. For those in urban or suburban locals, their only concern was to protect themselves and their families.

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INTRODUCTION

This paper will examine the buildup of the Civil Defense program between 1950 and 1965. This time period is significant because it immediately follows the Soviet Union's successful detonation of a nuclear weapon in 1949 and the stockpile of nuclear weapons by both the United States and the Soviet Union began growing. In addition, the Cuban Missile Crisis occurred in October of 1962, a crucial time in world history. This was arguably the most active period in the history of the Civil Defense program. The general public faced a growing awareness that a worldwide nuclear war was ever more possible.

One particular segment of the United States' population was specifically targeted by the federal government. The government wanted to ensure that the rural population survived for several reasons. First, rural populations and agricultural producers provided food for the rest of the population. An adequate and safe food supply would be necessary for any survivors of a nuclear attack. Another reason to help the rural population prepare for an attack is that the vast majority of rural areas would experience little direct damage from a nuclear attack. This meant that rural areas of the country would be required to play host to those who survived the initial assault. Urban areas and military establishments were primary targets in every planning scenario. Any survivors of attacks would need to be evacuated to areas that experienced little damage, rural areas.

The United States Civil Defense Program first began during World War II when President Franklin D. Roosevelt created the Office of Civilian Defense in 1941. Its name and mission changed several times over the years and at times its necessity was

questioned until the Soviet Union detonated its own nuclear bomb in 1949, thereby eliminating the United States' monopoly on this dangerous weapon. Fearful Americans demanded that their government help them plan for this new threat. Harry S. Truman's administration created the Federal Civil Defense Administration in 1950, in response to local and state governments' demands for help from the federal government to face the possibility of a nuclear attack from the Soviet Union.

Traditionally, American citizens, unlike their European counterparts, had supported military efforts from a safe distance. During both World War I and World War II Americans had grown Victory Gardens, gathered scrap metal, and lived with ration booklets that controlled how much sugar, butter, gasoline, and countless other products they could buy, all to help win the war and keep it from advancing to our shores. However, when President Truman deliberately targeted Japanese civilians with the two atomic bombs dropped on Hiroshima and Nagasaki in August of 1945, the rules of war changed forever. The introduction of this ferocious weapon into the world's arsenal drastically altered the way future conflicts were viewed. From this point on, civilians would find themselves directly in the crosshairs of all manner of destructive weapons and countries planned accordingly.

The Office of Civilian Defense (OCD) was a subsection of the Office of Emergency Planning created by President Franklin D. Roosevelt on May 20, 1941. This transitioned into the National Security Resource Board (NSRB) following World War II. The NSRB published informational material aimed at helping local governments with civil defense training. Most of their publications were ineffectual and local officials became frustrated by the NSRB advice to "lick your wounds, nurse your injuries, and

die.”¹ In 1949, the Soviet Union tested its own atomic bomb and the United States government realized it was no longer alone in the nuclear club. In 1950, the NSRB became the Federal Civil Defense Administration (FCDA) when President Harry Truman signed the Federal Civil Defense Act. The FCDA continued providing government sponsored material to reassure the general population that even though the United States’ sworn enemy now had nuclear capabilities, it was all going to be fine. For instance, in *Survival under Atomic Attack* citizens are reassured that “There is one important thing you can do to lessen your chances of injury by blast: Fall flat on your face.”² The information provided to the general public offered little scientific or technical information. The advice to fall flat preceded the claim that more than half the injuries of a nuclear bomb explosion are due to being thrown around or being hit by flying objects. The FCDA was responsible for civil defense preparations in the United States and its territories for the decade spanning from January 1951 through June 1961. President John F. Kennedy engaged in a game of chicken with Russian Premier Nikita Khrushchev and Prime Minister of Cuba, Fidel Castro during the Cuban missile crisis in October of 1962, and in doing so brought the world to the brink of a nuclear war. Prior to that, President Kennedy transferred the duties of the FCDA to the Department of Defense in 1961. He “issued an Executive Order which assigned major civil defense responsibilities to the Secretary of Defense.”³ This led to the creation of the Office of Civil Defense headed by an Assistant Secretary of Defense (Civil Defense).

¹ Kenneth Rose, *One Nation Underground* (New York: New York University Press, 2001), 23.

² U.S. Department of Defense Office of Civil Defense, *Survival under Atomic Attack*, Film. (1951; Washington, D.C.: U.S. Department of Defense Office of Civil Defense, 2001.), ONLINE <https://archive.org/details/Survival1951>.

Throughout its various incarnations, the office responsible for Civil Defense preparations in the civilian population continued to produce pamphlets, films, coloring books, and newspaper serials aimed at convincing the American population that a nuclear war was survivable and winnable. While some of this material was general in nature, much was targeted to a specific audience. There were three major demographics targeted by the program materials, notably the urban population, the suburban population, and the rural or agricultural population. There were subsets of the larger groups targeted, for instance women and children. However, the main groupings were by locations because urban women would prepare differently than agricultural women would.

There has been a significant amount of study done on the subject of Civil Defense and its many facets. This era is of particular interest to those who grew up in the shadow of the mushroom cloud. However, there has been little research done on the rural aspect of Civil Defense. There was a proliferation of academic articles and books published about all things atomic around the time that the children of the fifties and sixties reached the appropriate age to launch their independent research. Jo Anne Brown looked at civil defense in the public school systems in her 1988 study. She found that overwhelmingly children were first taught about nuclear war and survival in the classroom and then took that knowledge home to their parents.⁴ Elaine Tyler May⁵ and Susan Stoudinger Northcutt⁶ examined Civil Defense and gender in 1988 and 1999 respectively. They both

³ U.S. Department of Defense Office of Civil Defense, *Personal and Family Survival* (Washington D.C.: United States Government Printing Office, 1966), 8-9.

⁴ JoAnne Brown, "A Is for Atom, B is for Bomb: Civil Defense in American Public Education, 1948-1963," *The Journal of American History* 75, no. 1 (1988): 68-90.

⁵ Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era* (New York: Basic Books, 1988).

analyzed the introduction of a war mentality into the traditionally domestic safe zone of the home. They determined that the United States government recruited women to help with preparedness efforts. The government knew that for the civilian population to have any hope of survival in large numbers, the women needed to be involved. An effort was made to convince women that unless they prepared their families to survive a nuclear attack, they were not doing their jobs as efficient caretakers. Neither author specifically discussed any issues specific to rural women, Tyler May does have a paragraph in her book about the increase in demand for rural real estate as a result of fears that urban centers will be bombed. Kristina Zarlengo studied the transformation of civilians from bystanders to targets. Her article claimed that the United States changed the rules of engagement when it dropped the two atomic bombs on Japanese civilian centers, thereby placing United States civilians directly in the sights of future opponents.⁷ Kenneth Rose studied the fallout shelter and the culture that surrounded that phenomenon.⁸ Tom Vanderbilt's book *Survival City: Adventures among the Ruins of Atomic America* looked at, among other things, fallout shelters as well; including one that doubled as an elementary school in Artesia, New Mexico. Located in a small, rural, town south of Roswell, it was the only elementary school that contained a fully functioning morgue.⁹ When evaluating the effect of fallout shelters on American society, it is tempting to think

⁶ Susan Stouinger Northcutt, "Women and the Bomb: Domestication of the Atomic Bomb in the United States," *International Social Science Review* 74, no. 3/4 (1999): 129-139.

⁷ Kristine Zarlengo, "Civilian Threat, the Suburban Citadel, and Atomic Age American Women," *Signs: Journal of Women in Culture and Society* 24, no. 4 (1999): 925-958.

⁸ Kenneth D. Rose, *One Nation Underground: The Fallout Shelter in American Culture* (New York: New York University Press, 2001).

⁹ Tom Vanderbilt, *Survival City: Adventures Among the Ruins of Atomic America* (New York: Princeton Architectural Press, 2002).

that all of America is riddled with backyard shelters. However, using Illinois' Cook County, the county that houses Chicago as an example, as of November 19, 1961 "only 19 people out of a population of 3,500,000 had applied for a permit to build a home shelter."¹⁰

Edward Zuckerman's book contained detailed accounts of the continuity of business plans of several large corporations and their blueprints for how to get their company back up and running after a nuclear attack on the United States. Many of these companies kept a backup of all their important corporate records in a safe and secure location underground, usually a former salt mine in the region near their corporate headquarters.¹¹ The Defense Production Act in 1950 established the importance of creating plans to protect key businesses in case of nuclear attack. Companies, especially in communication, manufacturing, and energy production, were encouraged by the FCDA to have "continuity of business" plans. These plans contained information of the line of succession, the list of people that had the legal power to run the company in the event key executives were killed in a nuclear attack. Much like the "continuity plan" for the Federal government, these plans took the guesswork out of disaster planning. Standard Oil went as far as providing sixteen emergency shelters around the New York area, stocked with preissued \$25 and \$100 checks to help them meet payroll following an attack.¹² The business community was another specialized group targeted by the FCDA. The communication, manufacturing, and energy production businesses would play

¹⁰ Walter Karp, "When Bunkers Last in the Backyard Bloom'd," *American Heritage*, 31 (1980): 93.

¹¹ Edward Zuckerman, *The Day after World War III* (New York: The Viking Press, 1984).

¹² *Ibid.*, 275.

significant roles in the rebuilding of America following a nuclear attack and as such efforts should be made to protect them.

Laura McEnaney suggested that the government's Civil Defense office marketed its agenda primarily to suburban homeowners who were largely white.¹³ This may have been true with popular media like *Life* magazine and *Popular Science*. However, the suburban homeowner was not the only sector targeted. If you look beyond mass media and survival information provided through the post office to all postal customers, you find a significant amount of information specifically for the agricultural community. The government needed this key demographic to survive and continue to provide food to the survivors of any nuclear attack. The government, through various federal agencies, designed specific marketing campaigns aimed at the rural and agricultural groups to convince them to prepare to survive a nuclear attack. Rural populations and agricultural producers were important due to their ability to provide the crucial food supply necessary to the surviving populace. Without a reliable and safe food supply, the remaining people would not be able to rebuild all that had been destroyed during the nuclear attack.

The authors listed above comprise a very small number of those that have written on the subject of Civil Defense in the United States.¹⁴ A wide range of subcategories within the subject of Civil Defense have been examined. However, the Civil Defense programs aimed at the rural and agricultural populations have been virtually ignored. This paper attempts to rectify the gap in the historiography of this subject.

¹³ Laura McEnaney, *Civil Defense Begins at Home: Militarization Meets Everyday Life in the Fifties* (Princeton: Princeton University Press, 2000).

¹⁴ See Supplemental Bibliography for additional authors and their works.

This thesis will examine numerous ways that Civil Defense officials aggressively targeted the agricultural and rural population. The country needed this population, the knowledge they held, and the products that they provided. The government did use some different tactics to reach the rural and agricultural populations; they distributed pamphlets through local extension agents and created fallout shelter plans that incorporated barns for livestock. However, some of the avenues pursued were very similar, popular media was one tool used to reach audiences. For the general population, Civil Defense officials published information in *Life* magazine and *Good Housekeeping*; for the rural and agricultural population, they chose *Successful Farming* and regional publications like *Nebraska Farmer* to carry the necessary information to their target audience. When the Office of Civil Defense commissioned public service announcements (PSA), they had some directed toward urban and suburban populations: *Duck and Cover* and *Family Fallout Shelters*. They also made one expressly for the rural and agricultural population: *Your Livestock Can Survive Fallout from Nuclear Attack*. The latter was available as a pamphlet as was *Defense Against Radioactive Fallout on the Farm*. While it may seem, from a cursory examination of popular media, that all the Civil Defense efforts were focused on the suburban middle class, a closer examination of material from the time period yields a different view of the situation. The government exerted a significant amount of energy trying to prepare the rural and agricultural populations to survive a nuclear attack; the government used different venues to reach different populations. There were some items produced by the Office of Civil Defense that were mass marketed to the general population. However, other items were strategically targeted toward the rural and agricultural communities.

CIVIL DEFENSE FROM WORLD WAR I THROUGH THE KENNEDY ADMINISTRATION

The concept of civilian defense began to surface during the first World War. German forces bombed villages and towns in Poland, Belgium, France, and England in an attempt to defeat the Allies. These attacks did not extract a high death toll but did have a devastating psychological effect on the civilian population. With no organized civilian defense efforts, it was every person for themselves. Many in London sought out the subway tunnels underneath their city for a safe hiding place. While the German bombers dropped bombs on major cities throughout England, the major target was London. The total civilian dead from the bombings reached forty thousand; twenty thousand of those came from London.¹ Because the conflict was contained in Europe, Americans felt safe from an attack on their homeland during World War I and therefore did not initially put any efforts into preparing the civilian population. Eventually the United States government moved to address the issue of the war as it affected their country. Created in 1916, the Council of National Defense (CND) worked to garner support for the war effort. The Council included many members of the President's cabinet, including the Secretaries of Interior, Agriculture, Commerce, Labor, War, and Navy. When the United States entered the war, Americans no longer felt as secure as they once had. Germany was waging unrestricted submarine warfare throughout the Atlantic, increasing fears of an attack on the Eastern seaboard. In addition, Germany tried to entice Mexico into attacking the United States, raising fears of an invasion from the south. With increased threats, the Council's efforts increased and states were asked to form their own councils

¹ "World War II: London in Color," *LIFE* magazine, 2014. accessed April 1, 2014, <http://life.time.com/history/world-war-ii-london-in-color/#1>, 1.

to aid the war efforts of the country. Following the war, the CND ceased operations by June, 1921 as civil defense efforts were thought unnecessary.²

The next time a need for civilian defense was deemed necessary was in 1933 when President Franklin D. Roosevelt commissioned the National Emergency Council (NEC). By 1933 it was apparent that Europe was becoming unstable. Adolph Hitler and his National Socialist German Workers' Party, more commonly referred to as the Nazi party, had been stirring up trouble since the 1930 elections when they became the second leading party in the government. Named Chancellor of Germany in January 1933, Hitler and his Nazis began a campaign that eventually caused World War II.³ The end result of the Nazis' efforts led to the deaths of nearly fifty million civilians. The number may be significantly higher as there is no accurate record of civilian deaths in China and that number has been estimated as high as fifty million in that country alone.⁴ The NEC, like the previous councils before it, consisted of cabinet members as well as President Roosevelt and many agency heads. Roosevelt brought the Council of National Defense back to life in 1940 when Europe became engulfed in warfare to begin World War II.

During World War II the tactic of bombing civilians that had started in World War I continued. This brought increased fear of a bombing on United States soil. New York mayor, Fiorello La Guardia, exhorted President Roosevelt to spearhead some sort of federal effort to protect the civilian population of the United States. According to La

² Homeland Security, *Civil Defense and Homeland Security: A Short History of National Preparedness Efforts* (Washington D.C.: United States Department of Homeland Security, 2006), 4-5.

³ David Goldfield et al., *Twentieth-Century America: A Social and Political History*, 2nd ed. (Boston: Pearson Education, Inc. , 2013), 241-243.

⁴ "By the Numbers: World-Wide Deaths," *The National World War II Museum*, accessed April 1, 2014, <http://www.nationalww2museum.org/learn/education/for-students/ww2-history/ww2-by-the-numbers/world-wide-deaths.html>, 1.

Guardia, “up to this war and never in our history, has the civilian population been exposed to attack. The new technique of war has created the necessity for developing new techniques of civilian defense.”⁵ LaGuardia and others feared a direct bombing attack on the United States, particularly the coasts. Plane spotters were trained to pick out the differences between Allied and Axis bombers from a distance, using the silhouette of the plane. Bombings were considered so definitive the United States Army Air Force created the Ground Observer Corps in 1941, prior to the bombing in Pearl Harbor. Trained spotters had books that “contained both photographs and silhouette drawings of all known warplanes of U.S., British, German, Italian, and Japanese air forces.”⁶

President Roosevelt relied on advice from his wife Eleanor and her associate Florence Kerr, to create the Office of Civil Defense (OCD). Inspired by the work of her friend, Lady Stella Reading who served as the director of Women’s Voluntary Services for Civil Defense in England, Mrs. Roosevelt urged her husband to take advantage of the labor pool of women on the home front. President Roosevelt asked Florence Kerr, a woman in his administration as the head of the Works Progress Administration Community Service Projects, to lead the charge. Kerr and Eleanor Roosevelt collaborated on a report for the President titled “American Social Defense Organization.” The President entrusted the two women to put the framework in place for the Office of Civilian Defense (OCD). President Roosevelt signed an Executive Order in May of 1941

⁵ Elwyn A. Mauck, *Civilian Defense in the United States: 1940-1945* (Unpublished manuscript by the Historical Officer of the Office of Civilian Defense, 1946), 55. Cited in Homeland Security, *Civil Defense and Homeland Security: A Short History of National Preparedness Efforts* (Washington D.C., United States Department of Homeland Security, 2006), 5.

⁶ Sam Moore, “When Farmers Were Spotters: Farming the Homefront During World War II,” *Farm Collector*, June 2010, accessed March 25, 2014, <http://www.farmcollector.com/farm-life/farming-the-homefront-during-world-war-ii.aspx#axzz2xGuwX0Rc>, 1.

and selected LaGuardia to lead the new office.⁷ Kerr and the first lady pushed the president to consider expanding the scope of the new office. Some of the President's advisors wanted a more conservative mandate for the new office. However, President Roosevelt saw an opportunity to meet more of the country's needs and authorized the OCD "to meet a wide array of needs, including the protection of the civilian population, the maintenance of morale, and the promotion of volunteer involvement in defense."⁸ The President viewed this as another opportunity to expand his social agenda. Many in the Washington establishment and the rest of the country felt that the Roosevelts' plans of incorporating social services with Civil Defense planning overstepped the original military preparatory mission of the program. A vocal segment of those in opposition to the "softer" side of Civil Defense planning felt that the whole program should be under the purview of the Department of War and not a civilian group.⁹

At this time governors and other local officials reinstated the state and neighborhood chapters that had been active under the Council of National Defense. LaGuardia resisted the effort to change the focus of the OCD from that of a defensive organization. Rather than dilute the mission of civil defense, he wanted to concentrate on creating neighborhood militias. However, Eleanor Roosevelt strongly supported the many social welfare goals of the OCD including "morale maintenance, promotion of volunteer

⁷ Department of History George Washington University, "Teaching Eleanor Roosevelt Glossary: Office of Civilian Defense," *The Eleanor Roosevelt Papers Project*, accessed December 7, 2013, <http://www.gwu.edu/~erpapers/teaching/glossary/office-civilian-defense.crm>, 1.

⁸ Ibid.

⁹ Homeland Security, 6.

involvement, and nutrition and physical education.”¹⁰ She emerged from the background, where she stayed to prevent her presence being a drag on the new office, and joined with LaGuardia so that all of the objectives of the original mandate could be implemented.

The criticism of the agency came from all sides. Those who did not like the social welfare aspects decried the overreach of government into people’s lives. Others believed that the civilian defense portion would be better served under the Department of War. President Roosevelt ignored all the criticisms, including all those who felt that the OCD should be mothballed after the end of World War II.

With the end of World War II came the belief that the threat of an attack on the United States’ homeland was minimal. The head of OCD, James Landis, supported this school of thought and pressed for the closure of his own agency. After all, troops were returning home from Europe, having defeated Hitler and the Nazi regime, and Japan would soon meet the same fate. The United States was victorious and safe from further invasion. Civil defense was no longer necessary. With Roosevelt’s death on April 12, 1945, Vice-President Harry Truman became the new President. The Truman years were marked by conflicting reports and disagreement between his advisors. Truman sided with Landis and others who felt the OCD had outlived its usefulness. He took office having only been Vice-President for a total of eighty-two days and knowing nothing about the secret nuclear weapons program. On June 4, 1945 he signed an Executive Order to end the OCD and by June 30, 1945 it was officially decommissioned.

The entire world’s ideas of safety and rules of warfare changed dramatically with the introduction of the atomic bomb. Following the United States decision to drop two atomic bombs on Japan, the idea of war and civilian defense shifted. A report published

¹⁰ Department of History, “Teaching Eleanor Roosevelt,” 1.

in 1946 by the U.S. Strategic Bombing Survey admitted that during World War II conventional bombing of civilians in Japan and Germany had been effective strategies. As one way to reduce the impact of civilian bombings in the United States in a future conflict, civilian defense plans should be adopted. The group advised the creation of plans to aid in the mobilization of civilians from urban areas to safer areas and shelters for those unable to evacuate the possible targeted areas.¹¹

An alternate report in 1947 by the War Department's Civil Defense Board recommended the federal government stay out of civil defense planning. This report stated that local officials were best suited to know the requirements of protecting their communities. The role of the federal government was to offer resources to help local leaders best protect the civilians in their location.

In 1947 the National Security Resources Board (NSRB) was created by Congress in the same legislation that unleashed the Central Intelligence Agency on the world. The National Security Act of 1947 established the NSRB and charged it with developing "programs for the effective use in time of war of the Nation's natural and industrial resources for military and civilian needs, for the maintenance and stabilization of the civilian economy in time of war, and for the adjustment of such economy to war needs and conditions."¹² With World War I, World War II, and the onset of the Cold War taking place within the span of thirty years, the United States government recognized that a procedure needed to be in place that would allow them to switch from a peace time economy to a war time economy quickly and efficiently. In addition, developing a plan to

¹¹ Homeland Security, 6.

¹² "Text of the National Security Act of 1947," *United States Congress* ONLINE, accessed December 1, 2013, <http://www.intelligence.senate.gov/nsaact1947.pdf>, 1.

ensure the safety and continuity of the food supply was crucial. The nation's agricultural assets needed to be protected in case of nuclear attack to provide sustenance to survivors that would rebuild the country.

Civil defense became a priority of the Truman administration when the geopolitical differences between the United States and the Soviet Union ratcheted up at the end of the 1940s. When the Soviet Union detonated its first atomic weapon on August 29, 1949, the United States' confidence shattered.¹³ The United States had been certain that it would take significantly longer for the Soviet Union to develop an atomic weapon. The possibility of a worldwide atomic war suddenly became all too real.¹⁴

President Truman reevaluated the need for a civilian defense system, in part prompted by a study on civil defense operations and the establishment of a civil defense unit in the Office of the Secretary of Defense (OSD). Recommended were several things including that a new agency for civil defense be created under the auspices of the OSD. In addition, this new office should be a permanent installation to help the United States prepare for the new realities of living in the atomic age. Truman acted on these recommendations and created the Office of Civil Defense and Planning (OCDP) March 27, 1948.

The United States' first Secretary of Defense, James Forrestal, headed the newly created OCDP, but his term as head was characterized by major disagreements with

¹³ Jason Hall, ed., "Soviet Atomic Bomb Test," *The Cold War Museum*, ONLINE, accessed December 1, 2013, http://www.coldwar.org/articles/40s/soviet_atomic_bomb_test.asp, 1.

¹⁴ On September 23, 1949, President Truman announced to a stunned United States populace that the Soviet Union had detonated their own atomic weapon less than three weeks previously. "Truman's Statement on Detection of Soviet Atomic Test," *PBS American Experience*, 2000, ONLINE, accessed March 25, 2014, <http://www.pbs.org/wgbh/amex/bomb/filmmore/reference/primary/trumanstatement.html>, 1.

President Truman about virtually every issue, including budget levels of the military and the size of the military that would be needed to combat the ongoing threat posed by the Soviet Union. In early 1949 Truman forced Forrestal to resign from both the OCDP and the Department of the Defense, but not before Forrestal had commissioned yet another committee to study the issue of Civil Defense. Russell Hopley, the president of Northwestern Bell Telephone Company, headed this new committee.¹⁵ Mr. Hopley selected a committee to work with and the group produced a three hundred page report that proposed the framework for a national civil defense organization. The committee recommended the federal government provide more of a support role and that the bulk of the preparations should be handled by local and regional leaders. The groups opposed to the recommendations included Congressional members objecting to the increased costs involved and civilian groups who feared possible over-reaching by the government and increased military control over civilian life.¹⁶

It is at this point when the National Safety Resources Board (NSRB) was reinvigorated. Rather than establishing a civil defense office under the control of the OSD, President Truman gave responsibility of civil defense for the country to the NSRB. This effectively silenced those that feared a military intrusion into their lives. However, the NSRB received neither adequate authority nor material backing to effectively do its job. Consequently, the NSRB moved from agency to agency, never remaining under the control of any one agency for very long. First, the NSRB was transferred to the control of the Department of Defense. Then, it moved to the Executive Office of the President.

¹⁵ Jerry N. Hess, interview by Felix E. Larkin, September 18, 1972 and October 23, 1972, transcript ONLINE, accessed November 12, 2013, Truman Library <http://www.trumanlibrary.org/oralhist/larkin.htm>, 1.

¹⁶ Homeland Security, 7.

Finally, the NSRB found itself assigned to the Office of Defense Mobilization (ODM). All of these transfers occurred between March 3, 1949 and December 1, 1950. During this period of transition, the NSRB produced the first booklet to help the general public prepare for a nuclear war. In October 1950, the NSRB released the booklet titled *Survival Under Atomic Attack*.¹⁷ According to the booklet, “The civil defense program for this country must be in constant readiness because for the first time in 136 years an enemy has the power to attack our cities in strong force, and for the first time in our history that attack may come suddenly, with little or no warning.” The information provided to the general public through the early efforts of NSRB provided superficial information-little technical or scientific information. The advice provided in the booklet compares radioactivity from nuclear bombs to that received from x-rays and sunburn.¹⁸

The Soviet Union’s nuclear capabilities were a surprise to the United States. They did not know in advance about the Soviet Union’s first nuclear testing in 1949 and they did not know the extent of any other nuclear capabilities. Uncertainty drove the panic of the 1950s, unlike the 1960s conflicts over the Berlin Wall and the Cuban Missile Crisis. The anxiety felt in the 1950s was the reason behind the nuclear tensions between the United States and the Soviet Union. The Joint Chiefs of Staff proposed the preemptive strike as a viable solution to defeating the Soviet Union in 1950. The idea of being able to disarm the Soviet Union before a war even began proved popular with both the military and civilians.¹⁹

¹⁷ Department of Civil Defense, *Survival Under*.

¹⁸ *Ibid.*, 1.

¹⁹ “David Alan Rosenberg on: U.S. Planning for a Soviet Nuclear Attack,” *PBS American Experience*, 2000, ONLINE, accessed March 25, 2014, 1.

With the establishment of the ODM in 1950 and the successful testing of an atomic weapon by the Soviet Union in 1949, a new era dawned. The general public as well as local government leaders clamored for a definitive plan to help them prepare for an entirely too real possibility of an atomic attack by the Soviet Union. Congress responded in December 1950 by passing the Federal Civil Defense Act thereby establishing the Federal Civil Defense Administration (FCDA).

The FCDA produced a flurry of pamphlets and educational material aimed at helping many facets of the American population survive an atomic attack. The agency published numerous fallout shelter designs and instructions on how to build them. In addition, material instructing the public how to deal with nuclear fallout was published in virtually every newspaper around the country. Children were introduced to Bert, an animated turtle who showed them the proper way to protect themselves in case they were near a nuclear explosion. An entire generation grew up watching Bert the turtle in the infamous *Duck and Cover* public service announcement produced by Ray Maurer and Anthony Rizzo in 1951, at the request of the FCDA.²⁰ Bert was seen in a cartoon, coloring book, and comic book for decades. Bert marketing was one of several efforts made to indoctrinate children in the United States in the value of nuclear safety. The National Education Association's Commission on Safety Education, school officials from Massachusetts to Los Angeles, and the FCDA's Division of Education and Training supported these efforts. The general sentiment at the time was that if the children could

²⁰ Glenn Harlan Reynolds, "The Unexpected Return of Duck and Cover," *The Atlantic*, January 4, 2011, accessed November 27, 2013, <http://www.theatlantic.com/national/archive/2011/01/the-unexpected-return-of-duck-and-cover/68776/>, 1.

be convinced of the necessity of being ready in an instant to react to a nuclear attack, they would bring their parents into the fold.²¹

Women became another target audience. The FCDA created a campaign aimed at women that evoked images of earlier times titled “Grandma’s Pantry.”²² In addition to the pamphlet with this name produced by the FCDA, newspapers around the country published excerpts and encouraged their readers to stock up with a three day supply of food and water for their families. As the St. Petersburg Times stated, “The modern housewife, who can hop in her car and drive to the nearest super market to pick up the ingredients for the evening meal at a moment’s notice, does not regard her pantry with the same respect as grandma did.”²³ The article listed the FCDA recommended list of three day supplies for one person. The categories listed were canned milk with the recommendation of fourteen to fifteen ounces of either dry or canned evaporated milk per person, canned meat with the recommended amount of twelve ounces, canned soups with the recommended amount of twelve ounces, canned vegetables with the recommended amount of twelve to sixteen ounces; following these items was an extensive list of miscellaneous items and their recommended amounts.²⁴ All the wife needed to do was take the list, multiply the quantity by the number of people in her family, and purchase the recommended amounts.

²¹ Brown, “A is for Atomic,” 70.

²² Tyler May, *Homeward Bound*, 91-92.

²³ Marianne Kelsey, “Grandma’s Pantry Returns as Civil Defense Factor,” *St. Petersburg Times*, Society Section, March 23, 1955, accessed December 18, 2013, <http://news.google.com/newspapers?nid=888&dat=19550326&id=JNtSAAAAIIBAJ&sjid=coADAAAAIIBAJ&pg=3319,3120759>, 22.

²⁴ *Ibid.*

Women were also urged to decorate their home fallout shelters and provide a homey place for their families to ride out an atomic attack. A pictorial essay from *Life* magazine showed a family in their shelter. The picture featured the parents and three children seated-the parents in lawn chairs and children on the carpeted floor. Their survival supplies, cupboard doors open to show rows of canned goods and first-aid supplies surrounded them. According to the accompanying article, each member of the family had a role to play in their successful survival of an attack. The father was responsible for the tools necessary for survival and security; the mother's role was to stock and rotate the supplies her family needed. Each of the children had a specific duty within the shelter; "Daughter Charlene is in charge of bedding for the folding cots and fold-up bunks. Son Claude looks after the candles, flashlights, transistor radio and a fresh supply of batteries. Daughter Judy is the shelter librarian with a stock of books and games to help pass the time."²⁵ The FCDA worked tirelessly to promote the idea of the survivability of an atomic attack, if only one were adequately prepared.

The notion that an atomic attack by the Soviet Union was survivable took a hit in 1953. The Soviet Union successfully tested their first hydrogen nuclear bomb. The destruction capabilities of this new type of bomb made surviving in a home built shelter impossible. At the unbelievable size of 400 Kilotons of TNT, the hydrogen bomb was twenty six times more powerful than the bombs dropped on Hiroshima and Nagasaki. The Soviet Union created a succession of ever more powerful hydrogen bombs, resulting in the creation and detonation of the world's largest thermonuclear device.²⁶ Due to the

²⁵ "Family in the Shelter, Snug, Equipped and Well Organized," *Life Magazine*, September 15, 1961, 105.

power of these new weapons, the FCDA began recommending the strategy of mass evacuations from urban centers rather than the shelter model.

This new strategy became popular with President Dwight Eisenhower, who had always held the position that state and local leaders should be responsible for civil defense rather than the Federal government. The efforts to promote mass evacuations gained increasing support until the United States government blasted the Bikini Atoll with a colossal thermonuclear bomb named Bravo. The wind shifted following detonation and radioactive fallout dispersed over seven thousand square miles and affected a Japanese fishing crew and the test personnel. When the public found out about the incident and the resulting illnesses as a result of the radioactive fallout, there was an increased demand for shelters capable of protecting citizens from drifting fallout that would follow any nuclear attack.²⁷

The Eisenhower administration still supported the idea of mass evacuations, in part due to the efforts underway to expand the federal highway system. The head of the FCDA wanted Congress to divert money from the highway program to federal civil defense. Once again the Civil Defense agenda lost out to a more popular one and the funding levels demonstrated that lack of support. The President was determined to complete a nationwide highway system and was unwilling to divert funding to the other programs, including the FCDA.²⁸

²⁶ Tony Long, "Aug. 20, 1953: Soviets say, 'We've got the H-Bomb, Too,'" *Wired*, August 20, 2007, accessed December 1, 2013, http://www.wired.com/science/discoveries/news/2007/08/dayintech_0820.

²⁷ Homeland Security, 10.

²⁸ Homeland Security, 10.

The mass evacuation program limped along for a few years until Congressman Chester Holifield of California convened a House Committee on Government Operations in 1956 to look into the effectiveness of the FCDA. Holifield, elected in 1942, served on the House Subcommittee on Legislation and Military Operations, was chairman of the Joint Committee on Atomic Energy a number of times, and was one of the few in either chamber of Congress to protest and vote against the Emergency Detention Act.²⁹ He was informed on the subjects of the military and nuclear science. In addition, he was well respected in Washington D.C. and not afraid to speak his mind, even if it went against popular opinion.

The findings of the “Holifield Hearings” were that the federal government had focused its efforts on evacuation to the exclusion of other solutions. There were at least two reasons for the tunnel vision of the FCDA. The first being that the evacuation plans were vastly cheaper than building enough public shelters to adequately house citizens. By encouraging evacuation, the costs were shifted to individuals and local governments rather than the federal government. The second reason was that Eisenhower was pouring billions of dollars into creating a national highway system; the Eisenhower administration used the idea of mass evacuations as a benefit of having a national highway system. These funds allowed homeowners to get low cost loans to convert their basements into shelters or build fallout shelters in the backyard. According to one source, the Federal Housing Administration (FHA) had several programs that would help homeowners

²⁹ This act confined over one hundred thousand Japanese-Americans into camps during World War II. Holifield was instrumental in creating the Atomic Energy Commission, the civilian agency to counterbalance the military control of atomic energy. In addition, he vocally opposed the House Committee on Un-American Activities and voted against making it a permanent committee in Congress.

“Chester Holifield, 91, Congressman for 32 years,” *The New York Times*, Obituaries, ONLINE, accessed December 1, 2013, <http://www.nytimes.com/1995/02/09/obituaries/chester-holifield-91-congressman-for-32-years.html>, 1.

finance a shelter, including one that allowed a homeowner to borrow up to \$3500 for a maximum of five years. There were a few restrictions on the money including that the shelter needed to meet the “standards of the office of Civil Defense Mobilization and the FHA, who would make the inspections of construction.”³⁰ The article also suggests that people create dual purpose spaces that can be used by the family everyday but serve as a fallout shelter when needed in an emergency; suggestions for these rooms include dark rooms, dens, and laundry rooms.³¹

The “Holifield Hearings” took place in 1956 and for the next decade the push was toward home fallout shelters in suburban and rural areas and public shelters in urban areas, with mass evacuation as an alternative plan. Several other reports followed that confirmed the importance of civil defense to act as a deterrent in this new type of warfare. The first was a report released in 1957 and produced by the Gaither Committee, convened at the request of President Eisenhower. This report concluded that based on current military readiness, the U.S. was unable to effectively defend itself from a surprise attack by the Soviet Union. This report recommended that fallout shelters be provided a measure of deterrence. The belief being that if enough people survived the initial attack, a substantial counter-attack could be mounted. Next came the *Rockefeller Report* that had, among others, Henry Kissinger on its panel, and the second a report published by the RAND Corporation. Kissinger recommended that Civil Defense would be an effective part of a serious effort towards deterrent and the RAND report stated much the same

³⁰ “Financing Fallout Shelters,” *Nashua Telegraph*, Around Town Section, October 6, 1961, ONLINE, accessed January 14, 2014, <http://news.google.com/newspapers?nid=2209&dat=19611006&id=kqMrAAAAIBAJ&sjid=pPwFAAAAI BAJ&pg=4315,3156752>, 1.

³¹ Ibid.

opinion.³² The federal government believed that civil defense was a part of an effective strategy of deterrence, but did not want to pay for it. The government wanted to pour more money into military capabilities and civil defense detracted from that. Particularly during the Eisenhower administration, the Secretary of State and military leaders did not support the shelter idea out of fear of decreasing the military's budget. They felt the money would be better spent on retaliatory efforts rather than protecting civilians. Even Eisenhower himself did not support the shelter efforts, under his watch the FCDA did little but inform the public about the benefit of home shelters and count existing shelters. Eisenhower decommissioned the FCDA and introduced the Office of Civil and Defense Mobilization.³³

Eisenhower may not have wanted to invest in shelters for the general public, but during his tenure he had a huge bunker commissioned for use by members of Congress and their staffs. The concept of "continuity of government" was the motivating factor behind these shelters. "Continuity of government" plans detail the line of succession for the federal government in case multiple members of the Executive Branch are killed in any kind of disaster, although they were specifically planning for a nuclear attack from the 1950s through the present day. The Presidential Line of Succession Act of 1947 changed the protocol for determining who would take over for the President in the circumstance that he was unable or unavailable to carry out his duties. An earlier version had removed the Senate president pro tem and Speaker of the House from the line of succession. This version replaced them, however put the Speaker ahead of the president

³² Homeland Security, 10-11.

³³ Homeland Security, 11.

pro tem.³⁴ Later “continuity of government” plans were developed for every major branch of government.

To help provide for the survival of as many of the administration in Washington D.C., a number of nuclear shelters were built within one hour’s drive of the D.C. metropolitan area. This distance was chosen to provide an easy commute in times of disaster, but allow enough distance from the city to remove it from any immediate blast damage. Built into a mountain underneath an existing luxury hotel, the Greenbrier Hotel, in White Sulphur Springs, Virginia, the Congressional bunker would be the post-apocalyptic home for eleven hundred people. This figure included one hundred senators, four hundred and thirty five representatives, five hundred staffers, and surprisingly no family members.³⁵ President Truman commissioned and built a similar shelter in 1950. Site R or the Raven Rock Mountain Complex was built into the Catoctin Mountains on the edge of Pennsylvania and six miles from Camp David. Officially designated the “Alternate Joint Communications Center,” Site R was designed to be a backup location for the Pentagon and military leaders in case of nuclear war.³⁶ In addition, there is Mount Weather located on five hundred acres in Virginia. This facility’s actual origins remain a mystery. All that is known is that it was built sometime in the 1950s and started as a

³⁴ “Presidential Succession Act,” *United States Senate* accessed April 2, 2014, http://www.senate.gov/artandhistory/history/minute/Presidential_Succession_Act.htm, 1.

³⁵ NPR Staff, “The Secret Bunker Congress Never Used,” *National Public Radio* March 26, 2011 accessed May 1, 2014, <http://www.npr.org/2011/03/26/134379296/the-secret-bunker-congress-never-used>, 1.

³⁶ Bill Gifford, “Bunker? What Bunker?” *The New York Times Magazine* December 3, 2000. Accessed January 4, 2014, <http://partners.nytimes.com/library/magazine/home/20001203mag-gifford.html>.

presidential hideaway in case of nuclear war. This location is officially home to the Federal Emergency Management Agency (FEMA).³⁷

When you consider the array of bunkers in the Washington D.C. area, the safety of government officials seemed assured. For the Truman and Eisenhower administrations and essentially every administration since then, the average American's safety and security during a nuclear attack was not a priority, they were basically on their own. The government's continuity plans only include protecting themselves, not necessarily their constituents. Any planning to ensure the safety of civilians was left up to the local authorities or to the individuals themselves.

The importance of civil defense changed dramatically when President Kennedy took office in January 1961. Kennedy took office during a time of heightened tensions between the Soviet Union and the United States, primarily due to the actions of Kennedy and his administration. During the Presidential campaign of 1960, Kennedy had deliberately exaggerated the disparity in missiles between the Soviet Union and the United States. He had used this as a campaign issue against his opponent. He had deliberately exaggerated the Soviet missile technology, as well as the capabilities of their aircraft to carry them to the United States homeland. In addition, he underestimated the number and capability of the United States' arsenal. His misinformation was intentional

³⁷ However, unofficially it is still the secret location to hide the members of the Executive Branch to ensure continuity of government as local residents can attest to following the terrorist attacks on September 11, 2001. The local 911 service received a call from a woman living close to the facility who claimed to have seen the mountain open up, Airforce One flew into it, and the mountain closed up again. . Most of these facilities are still in use for the protection of qualified members of the government. They were enacted following the attacks on September 11, 2001. When Vice-President Cheney was repeatedly moved to an "unknown location." The continuity of government plan was activated to ensure that both the Vice-President and the President were never in the same place at the same time.

Tom Vanderbilt, "Is this Bush's Secret Bunker?" *The Guardian* August 27, 2006. Accessed January 5, 2014, <http://www.theguardian.com/world/2006/aug/28/usa.features11>.

because in July of 1960, in the midst of his campaign, both he and his running mate, Lyndon Johnson, were briefed on many intelligence issues including Soviet missile capabilities.³⁸ Kennedy's public claims of ignorance reinforced Soviet Premier Nikita Khrushchev's view of him as young and inexperienced. When he and Khrushchev met for a summit at Vienna in June of 1961, Khrushchev's opinion remained unchanged. The goal had been to establish a basis for trust between the two governments, instead when Kennedy returned to Washington D.C. he did so knowing that Khrushchev's distrust was growing.³⁹ Then in August of 1961, literally overnight, the Soviet Union built a wall separating the two sides of Berlin. The wall was an effort to try to prevent the approximately two thousand East Germans crossing into West Berlin daily. The people leaving included scientists, skilled workers, and intellectuals.⁴⁰ In addition, President Kennedy and his brother Robert, the newly appointed Attorney General of the United States, had an obsession with the revolutionary leader of Cuba, Fidel Castro, who would later become Prime Minister of Cuba. They feared the revolutionary zeal he brought to Cuba would spread. This preoccupation resulted in the Central Intelligence Agency (CIA) orchestrating over a dozen assassination attempts on Castro's life, numerous efforts to foment a counter revolution in Cuba, a mock invasion of a nearby island under the thinly disguised codename "Ostrac," and even one try to convince the Cuban population that they were witnessing the second coming of Jesus Christ.⁴¹

³⁸ Dwayne D. Day, "Of Myths and Missiles: The Truth About John F. Kennedy and the Missile Gap," *The Space Review*, January 3, 2006, accessed April 2, 2014, <http://www.thespacereview.com/article/523/1>, 1.

³⁹ "The Cold War in Berlin," *John F. Kennedy Presidential Library and Museum*, accessed January 5, 2014, <http://www.jfklibrary.org/JFK/JFK-in-History/The-Cold-War-in-Berlin.aspx>, 1.

⁴⁰ David Goldfield et al., *Twentieth-Century America*, 334-335.

The barrage of attempts on Prime Minister Castro's life added to all the other operations caused him to fear a United States military invasion of his nation. Castro turned to the Soviet Union and Nikita Khrushchev in his time of need. He repeatedly requested help from Khrushchev and clearly stated he feared imminent attack by the United States. In the following excerpt from a letter that Castro wrote to Khrushchev on October 26, 1962, at the height of the Cuban Missile Crisis, he says, "Given the analysis of the situation and the reports that have reached us, [I] consider an attack to be almost imminent—within the next 24 to 72 hours."⁴² By this time the Soviet Union had delivered forty three thousand troops and ninety eight tactical nuclear warheads to Cuba. In addition, they had mid-range missiles in Cuba that could reach Washington D.C. and New York, which the United States intelligence community did not know about. The United States believed not only that they were going to be able to keep Soviet missiles from reaching Cuba, but that they had the right to. The Soviet Union had delivered them and set them up prior to the United States detecting them. The United States intelligence agencies were so busy planning assassination attempts on Castro, they missed thousands of Soviet troops and nearly one hundred nuclear warheads being delivered to Cuba.

The underlying problem in the whole scenario was that President Kennedy, Attorney General Robert Kennedy, and the CIA failed to recognize that Cuba was a separate entity from the United States. They continued to treat Cuba like a protectorate, with no right to do what it wanted to do. When threatened by the United States, Castro felt he had no choice but to try to defend himself and his country. Castro contacted the

⁴¹ Howard Jones, *Crucible of Power: A History of American Foreign Relations from 1897* (Lanham, MD: Rowman & Littlefield Publishers, Inc., 2008), 355.

⁴² Fidel Castro, "Letter from Castro to Khrushchev, 10/26/62" *PBS.com* Accessed 1/31/14, <http://www.pbs.org/wgbh/americanexperience/features/primary-resources/jfk-attack/>.

Soviet Union out of fear, born out of the multiple attacks on his life and his nation by the United States. In a letter from Khrushchev to Kennedy at the height of the Cuban Missile Crisis, Khrushchev told Kennedy that he will authorize the dismantling of the missiles in Cuba. He asked for one thing in return, a promise from Kennedy not to attack Cuba.⁴³

The period from 1960 to 1963 was the most active time period for civil defense. President Kennedy wrote an open letter to the public that was published in *Life* magazine on September 15, 1961. In this letter he states that “nuclear weapons and the possibility of nuclear war are facts of life we cannot ignore today.”⁴⁴ In addition, he encouraged citizens to build fallout shelters, “I urge you to read and consider seriously the contents of this issue of *Life*. The security of our country and the peace of the world are the objectives of our policy.”⁴⁵ The article that followed contained plans for various fallout shelters and pictorials of typical families building and stocking their own fallout shelters. The final article of the series was a “[r]undown of things to remember in case attack should come.” It included information about the difference in a Civil Defense attack for an alert versus one for a warning to take cover. In the case of an alert the Civil Defense siren would send out a three to five minute blast and in the case of a warning the siren would send out a three minute period of short blasts or a wailing siren. In addition, the article outlined the steps that would happen if a nuclear blast occurred in your area

⁴³ “Cold War Cuban Crisis,” *Library of Congress*, ONLINE, July 22, 2010 accessed March 27, 2014, <http://www.loc.gov/exhibits/archives/colc.html>, 1.

⁴⁴ John F. Kennedy, “A Message to you from the President” *Life* magazine, September 15, 1961, 95.

⁴⁵ *Ibid.*

including the three stages of an attack: the flash, the shockwave, and the fallout.⁴⁶ The cover of the magazine featured a man in a radiation suit to reinforce the message.

Under the Kennedy administration the Office of Civil Defense and Mobilization split into the Office of Emergency Planning (OEP) and the Office of Civil Defense (OCD) by Executive Order on July 20, 1961. The OEP became part of the Executive Office and was responsible for non-military emergency preparation and civil defense. The OCD became part of the Office of the Secretary of Defense and the Department of Defense. The OCD was responsible for civil defense at the national level, especially the fallout shelter program.⁴⁷

Thanks in large part to the Cuban Missile Crisis, the cause of civil defense jumped to the forefront. President Kennedy received all of the \$200 million he asked for from Congress to address the issue of finding and stocking public shelters. The goal being to provide room for as many individuals as possible in the current public shelter locations.

The massive shift in policy can be attributed to the idea of that in order to win a nuclear war with the Soviet Union as many citizens as possible had to survive in the United States to continue the American way of life. This was in direct contrast to the previous administrations of Truman and Eisenhower. These administrations had fully supported the buildup of the military and the building of secret shelters for government use only. The Kennedy administration's new emphasis included businesses, manufacturing companies, and private citizens. It was incumbent on everyone to prepare

⁴⁶ "Rundown of Things to Remember in Case Attack Should Come" *Life* magazine, September 15, 1961, 108.

⁴⁷ Homeland Security, 12.

themselves to survive a nuclear war so that the United States could return to “normal” as quickly as possible. To this end, companies like Shell Oil Company and AT&T had continuity plans in place and bunker locations for executives to hide out and continue to operate their businesses in the event of a nuclear attack. States and local communities devised emergency plans to inform their citizens of the proper actions to take in the event of a nuclear attack. Private citizens built fallout shelters in their backyards and basements to ensure their families safety in the event of a nuclear attack. Everyone hoped that if the Soviet Union believed that the majority of United States citizens could survive a nuclear attack the Soviet Union would hesitate to launch their nuclear weapons if total destruction of the United States was not assured. The deterrent factor that had been mentioned in many previous reports and recommendations finally became a factor in the Cold War.

URBAN AND SUBURBAN SURVIVAL PLANS

The factors considered in strategic survival planning varied by community size and location. Metropolitan locations or urban centers had different needs than suburban areas did and rural and agricultural areas were completely different than either of the previous two areas. Those involved in Civil Defense planning had to consider all of these constituent populations when designing programs.

According to the United States Census Bureau in 1960, an urban community is one that has a population of two thousand five hundred or more. There was no official delineation for suburban.¹ A more helpful definition appears on the Census Bureau's current website. The updated definition of an urbanized area is one that is larger than fifty thousand people. The qualification for an urban cluster might be a good descriptor for a suburban area, a community that is larger than two thousand five hundred people and less than fifty thousand people.²

The focus of both the urban and suburban community survival plans was to protect the civilian populations that lived in the specific areas. These areas made attractive targets because of the population density. Bombs aimed at cities would cause more damage through sheer numbers alone. Until the mid-1960s when missile silos started being built in rural areas, the biggest threat faced by rural populations was drifting radioactive fallout. The different threats faced by the various communities were one of the reasons for a change in survival strategy for those in rural and agricultural

¹ United States Census Bureau, "United States Urban and Rural," *Population: 1790 to 1990*, August 23, 1993, accessed February 24, 2014, <http://www.census.gov/population/www/censusdata/files/table-4.pdf>, 1.

² United States Census Bureau, "Urban and Rural Classification," *Geography Reference*, March 7, 2013, accessed March 28, 2014, <http://www.census.gov/geo/reference/urban-rural.html>, 1.

communities. Another reason the urban and suburban plans focused on separate messages than those for rural and agricultural areas is that the latter had to factor livestock and crop protection into their survival plans. For those in urban or suburban locals, their only concern was to protect themselves and their families. Rural and agricultural residents had more extensive responsibilities. They needed to guarantee that enough of their livestock and crops survived to continue providing for the hungry survivors who emerged from their urban public shelters or suburban basement shelters when the all clear was signaled.

During the Roosevelt administration the plan for the urban population was for the government to build and equip community shelters. However, Congress was reluctant to allocate adequate funds that would have been necessary to sufficiently protect even a fraction of the civilian population. During the Truman administration there was a shift to local control of Civil Defense efforts. The Federal Civil Defense Administration (FCDA) led efforts to help local communities identify public shelters, provide supplies to stockpile for future use, and establish a uniform warning system to be used in case of attack.

During the Eisenhower administration efforts shifted to focus on evacuation. The new interstate highway system, Eisenhower's signature effort, was touted as an efficient way to transfer the population from targeted locations to less populated, safer areas. Another issue that factored into Eisenhower's support of evacuation over shelters was the increasing size of the nuclear bombs. This more powerful bomb that the Soviet Union detonated in 1953 created the belief that cities would be unlivable if attacked with a hydrogen bomb, whether people were in shelters or not. The only possible way to protect a city's population was to make sure it was not there during the attack.

However, one of the biggest problems with evacuation versus shelter was the warning time involved. Once the onus for protection of civilians shifted to local governments, many states created formal survival plans trying to consider all contingencies that were possible in their specific location following an attack. The information in the following passages came from the *State of Kansas Operational Survival Plans*. The plan included a Basic Plan and several additions specific to various cities around the state that could expect to be affected if Kansas were the target of an attack on the United States. The whole plan was printed and distributed around the state to local Civil Defense Agencies in 1958.

The formal survival plans had contingencies for several different Warning conditions including: Strategic Warning (8 hours or more), Tactical Warning (1/2 to 8 hours), Attack Imminent and/or No Warning (1/2 hour or less). The Warning conditions began with an announcement of a Strategic Warning, this meant that the President or the Congress proclaimed a state of emergency, usually in response to growing international problems. With a Strategic Warning, the State Warning System started broadcasting emergency warnings. The public was subject to voluntary evacuation at this stage. If conditions progressed, the next step was a Tactical Warning. A Tactical Warning came from the FCDA National Warning System Headquarters. A warning such as this would be in response to military intelligence indicating a likely attack within a matter of hours. The public located in a Target Area faced mandatory evacuation. The next stage would be Attack Imminent. Again, this designation came from the FCDA Headquarters. This warning would be issued upon visual verification of enemy forces or destructive devices. At this stage all the public could do would be seek shelter where they could and ride out

the storm.³ Bomb size and destructive power increased and improved missile technology allowed for multiple bombs to be launched from stealth submarines located off either of the United States' coasts instead of the previous long-distance bomber planes. Warning times decreased and the challenge became how to evacuate an entire city with less than thirty minutes? In 1950 the total urban population numbered just over ninety million, and by 1960 that same population had grown to over one hundred thirteen million. In the event of a nuclear attack on the United States tens of millions of people would need to be evacuated to "Reception Areas."⁴ Reception Areas were less populated areas designated to play host to refugees from urban centers and other targeted areas like military bases in the event of nuclear war. For the Kansas City, Kansas metropolitan area as an example, the 1960 population of 475,539 people needed to be moved to the smaller communities further out in the state of Kansas, like Emporia, Atchison, and Doniphan to name a few.⁵

If even one third of the cities were attacked in the initial wave, that is still over thirty million people that need to be evacuated. If it is a school day, how do parents collect their children and leave the city in the specified time? As many city residents, particularly on the east coast, do not own a private vehicle how does the city coordinate public transport for evacuation? All of these questions and many more needed to be addressed in a formal survival plan. The evacuation plan for Kansas City, Kansas reads in part:

³ Kansas Survival Plan Project Staff, "Action to be Taken under Warning Conditions," *State of Kansas Operational Survival Plan: Basic Section, June, 1958*, BA-22-BA-25.

⁴ Kansas Survival Plan Project Staff, "Mission and Situation," *State of Kansas Operational Survival Plan: Basic Section June, 1958*, BA-3.

⁵ Kansas Survival Plan Project Staff, "Appendix BA2, Factors in the Economy of Support Area 1," *Support Area 1 Operational Survival Plan, Basic Section*, BA-20.

It is expected that with the sounding of sirens and the employment of other warning media indicating a potential attack, individual and mob panic will be an unwanted but highly probable result. The degree to which hysteria prevails will to a large extent be dependent upon each individual's awareness of what positive action to take in accordance with established plans. The providing of designated evacuation routes from Target Areas in itself is insufficient to secure maximum survival of human life. Additional provision must be made for the direction of evacuees and for other basic needs, both within the Target Area and along the routes leading to safety. From any point within the Target Area sufficient routes have been laid out to allow all persons the possibility of escape. Designated routes provide the most direct and expeditious egress from the danger area since they utilize surfaced roads traversing radially away from the points of danger and have no serious intersections.⁶

The plan mentioned that Kansas City area residents were to use residential cars and trucks as their primary means of evacuation and expressly rules out the use of trains and planes as being impractical. In fact, the plan indicates that in case of an attack all train traffic must give the right of way to vehicular traffic to allow better traffic flow. Every neighborhood was assigned a number and had a corresponding primary evacuation route, alternate evacuation route, and transfer route. If a person found themselves in an area other than their home neighborhood when the alarms went off they were to evacuate according to their present location, not their home location. Evacuation operations were to be managed by the police force including reserves and auxiliaries as needed to maintain control of the operation and had absolute and final authority over everyone within the Target Area.⁷

One of the major reasons for bringing civil defense training into the nation's schools was to alleviate anxiety in the first generation of children faced with nuclear war.

⁶ Kansas Survival Plan Project Staff, "Target Area Evacuation Plan," *Kansas City (Kansas) Target Area Operational Survival Plan, Basic Section*, 1958, BA-29.

⁷ *Ibid.*, BA-30-BA-31.

The introduction of civil defense training programs including the animated Bert the Turtle, dog tags for identification, and duck and cover drills. Duck and cover drills involved children diving under their desks or against a wall and covering the back of their necks to protect it from radiation, all on a teacher's command or with the sound of an air-raid siren. Bert the Turtle was an animated character who demonstrated the duck and cover technique in a cartoon, coloring book, and comic book and emphasized that when the attack came to remain calm. In addition, schools in large cities started issuing dog tags to their students to enable authorities to identify bodies in case of a nuclear attack. However, that purpose was never publicized and many preferred to believe that they were to help in identifying lost children and aiding in reuniting them with their families. A side market emerged for those companies that provided metal bead chain necklaces for use with the dog tags issued by the armed forces. The chain companies started advertising their product in the backs of comic books and school magazines.⁸ Those that came of age during the 1950s and 1960s have a different view of safety than previous generations. They grew up with duck and cover drills, Bert the Turtle, and the threat of a nuclear cloud permanently hanging over their world.

Suburban communities were close enough to heavily populated urban areas that were likely to be targeted. But far enough away that the government figures informed people they would be safe. For instance, a five megaton surface nuclear blast would cause a one-half mile crater at the site of the explosion. The resulting damage emerges from the center in outward in concentric circles. The first circle encompasses three miles in all directions of the blast and would kill everyone within the circle. The next two circles continue out to seven miles from the center and the damage varies from heavy to

⁸ Brown, 81-85.

moderate. From seven to nine miles out the expected damage is light and beyond nine miles there should be no damage. The largest risk outside the blast range would be from radioactive fallout.⁹

Home fallout shelters were the solution stressed in virtually all of the newly formed suburban communities in the 1960s. The only exceptions to this plan were those communities that fell within Target Areas, due to proximity to a military target or other high risk target. Many of the suburban communities were in fact “Support Areas” or areas that would play host to those evacuating at the first hint of a possible attack. The government expected suburban residents to not only save themselves, but also all of the refugees that would be coming their way from nearby cities.

The efforts to convince suburbanites to build a fallout shelter in their basement or backyard took many forms. The federal government produced pamphlets and booklets that gave detailed instructions for building both permanent and improvised fallout shelters. Many local entities from state civil defense agencies to city newspapers reprinted these materials and distributed them to their local populations. One such example of this is a serial printing of *Survival under Atomic Attack* cut out of the local newspaper by one family and pinned together.¹⁰ The collected information was stored in the family copy of *Personal and Family Survival*.¹¹ The two items were printed over a

⁹ Department of Defense Office of Civil Defense, *Personal and Family Survival* (Washington D.C.: United States Government Printing Office, 1966), 18. In possession of the author.

This booklet is a collection of all the basic information a family would need to prepare to survive a nuclear attack. The chapters include information of radioactive fallout, public shelters, home shelter designs, and lists of recommended foods and other necessities to include in one’s home shelter.

¹⁰ “Survival under Atomic Attack,” *The Omaha World Herald*, January 1951. in the possession of the author.

¹¹ Department of Defense Office of Civil Defense, *Personal and Family Survival*.

decade apart, but someone in the family that resided at 423 Box 72 in Imperial, Nebraska felt strongly enough about the issue of Civil Defense and preparedness to keep the information safe and together. When found at an auction, the book and clippings were with miscellaneous first-aid items. They were likely the remnants of the original owners civil defense preparations.

Another pamphlet was *Family Shelter Designs* published by the OCD and Department of Defense. This concise work contained eight different designs for variously styled fallout shelters. Also included were material lists, construction instructions, basic blueprints, and technical information for each of the eight designs. The plans ranged from a basic lean-to shelter in a basement with sand as the shielding material, to the more elaborate brick masonry shelter that was designed to be built at the same time as a new house.¹² It is difficult to ascertain exactly how many home shelters were built. Many people converted a space they currently had into a secondary use as a fallout shelter. Rather than build a new single use room, they turned a corner of their basement or their storm cellar to serve as a temporary haven in case of nuclear attack. In addition, it is impossible to know how many secretly built fallout shelters in their basements or backyards without telling anyone, including their neighbors. These people were preparing to save their families, but they did not want the entire neighborhood showing up on their doorstep wanting in at the first sign of danger. As Father L. C. McHugh, associate editor of the Jesuit magazine *America*, said, “To love one’s neighbor as thyself, he argued, was

¹² Department of Defense, *Family Shelter Designs*, Department of Defense Office of Civil Defense, (Washington D.C., United States Government Printing Office, 1962).

undoubtedly a 'heroic' Christian virtue, but it was not a Christian duty. Indeed, it was 'misguided charity' not to shoot a neighbor trying to invade one's jam-packed shelter."¹³

Another way that suburban residents were exhorted to prepare for a possible nuclear attack was through popular media. The biggest of these was the *Life* magazine issue dated September 15, 1961. The cover featured a man in a radiation suit along with the headline of, "How you can SURVIVE FALLOUT." A personal appeal from President John F. Kennedy started off the thirteen page pictorial essay.¹⁴ In this letter from the President he outlines his argument for building shelters, both public and private. His last paragraph includes this plea:

I urge you to read and consider seriously the contents of this issue of *LIFE*. The security of our country and the peace of the world are the objectives of our policy. But in these dangerous days when both these objectives are threatened we must prepare for all eventualities. The ability to survive coupled with the will to do so therefore are essential to our country.¹⁵

This simple message came weeks after the Soviet Union erected the Berlin Wall and one year before the Cuban Missile Crisis. President Kennedy had been in office less than one year and he felt compelled to write an open letter to the general public and have it published in a popular news magazine. The President wanted to impress on people how important the issue of nuclear preparedness was.

At the bottom of the page is the following series of sentences, "You could be among the 97% to survive if you follow advice on these pages ... How to build shelters ... Where to hide in cities ... What to do during an attack."¹⁶ With one exception, all of

¹³ Walter Karp, "When Bunkers Last in the Backyard Bloom'd," *American Heritage* 31 (1980): 92.

¹⁵ John F. Kennedy, "A Message to You from the President," *LIFE* magazine, September 15, 1961, 95.

¹⁶ "Fallout Shelters," *LIFE magazine*, September 15, 1961, 95.

the pictures and plans that follow apply exclusively to those who live in the suburbs. The plans assume that one owns a single family home with a basement or a big backyard that one could use to build a fallout shelter in. One picture shows the “typical” teenage girl using her family’s fallout shelter as her private clubhouse, with a cola in one hand and a telephone handset in the other.¹⁷ There was not a minority or apartment dweller among those pictured in the photo essay. This particular message was targeted to white middle class suburbanites, although it was ostensibly in a nationwide magazine. Published approximately one year before the Cuban missile crisis, this edition of *LIFE* magazine was timely as tensions in the Cold War had ratcheted up. In addition, with the President making the argument that it was every citizen’s duty to his/her country to survive an attack, the message was pervasive.

In addition to preparing personal fallout shelters for their families, those living in the suburbs needed to prepare to play host to those evacuated out of Target Areas. Even though there was a big push for family fallout shelters, President Kennedy commissioned a survey of all public spaces that would be suitable for use as a public shelter in times of nuclear attack. In cities, public shelters would be used for those that could not evacuate. In suburban areas, public shelters would house evacuees from cities. As reported in the 1962 fiscal year report signed by Robert S. McNamara, more than fifty five million shelter spaces had been identified by the end of fiscal year through that survey.¹⁸ This meant that someone in the government realized that with mass evacuations came refuges that needed somewhere to go; the Support Areas would be that somewhere. Every Target

¹⁷ “Life Underground,” *LIFE magazine*, September 15, 1961, 106-107.

¹⁸ Department of Defense, *1962 Annual Report of the Office of Civil Defense* (Washington, D.C.: United States Government Printing Office, 1962), 6.

Area was assigned at least one Support Area to funnel its people to. Some cities needed more than one Support Area to handle all of the potential evacuees. Other Target Areas needed contingency Support Areas in case their primary ones were unreachable due to unexpected circumstances like additional bombs or shifting winds carrying fallout.

An example of the plans for a Support Area can be found in the Kansas Survival Plan Project. There are a number of Target Areas in Kansas, including Kansas City, Wichita, Topeka, Junction City, and Salina. Junction City and Salina made the Target Area list due to their proximity to military targets rather than what the cities actually contained. Each of these Target Areas have a Support Area, although some Support Areas are shared by more than one Target Area. While not considered primary Target Areas, there are a number of surrounding counties that were likely to be too damaged to be Support Areas either. These counties included Leavenworth, Jackson, Jefferson, and Riley. Support Area one acts as the host area for refugees from both the Topeka and Kansas City Target Areas.¹⁹ Those tasked with figuring out the specifics of life after a nuclear attack made a meticulous survey of the assets contained within Support Area one and how they might best be utilized. Each city within the Support Area is named and the useful industrial facilities in the city are listed. For example,

Emporia has a number of small food processors, including one meat packing company, four dairies, three bakeries, and one poultry house. It has only one producer of animal feed. In the field of metal fabrication Emporia possesses four concerns. There is also one manufacturer of storage batteries, one soybean oil and meal mill, one woodworking plant, two producers of building materials, and five commercial printers.²⁰

¹⁹ See Appendix A.

²⁰ Kansas Survival Plan Project Staff, "Appendix BA2, Factors in the Economy of Support Area 1," *Support Area 1 Operational Survival Plan, Basic Section*, BA-20.

The assessment goes on to evaluate each of the major towns within the Support Area. In addition, there is a discussion of converting the existing factors to produce what is needed for recovery, rather than what is necessarily currently produced. The report notes that some factories currently produce lawnmowers, snow plows, aluminum doors, and many other items that may not be necessary during an emergency. However, the high amount of welding done at these factories ensures that they can turn out basic tools and parts as necessary.²¹ This capability will aid in the rebuilding of the infrastructure and buildings damaged by any nuclear attack. In addition to the manufacturing assets, the planning extended to the number of evacuees expected. The planners estimated that as many as two hundred seventy three thousand people may leave the Kansas City area for the Support Area. Therefore they had a list of the major towns in the Support Area and the number of evacuees they could be expected to house. For example, Atchison was expected to house thirty three thousand whereas Doniphan was expected to house only five thousand evacuees. The total number listed under all the towns added up to approximately the same number as expected in the event of evacuation following a nuclear attack.²² The details contained within the state plans appear complete, but do not consider the behavior and emotions of the people involved. The planners assumed that everyone would evacuate the Target Areas as instructed, in a neat and orderly manner. The Support Areas would welcome the evacuees into their communities and share their resources because it was for the good of the country. This completely ignored the blind panic that most people would experience with a legitimate warning of an imminent

²¹ Ibid., BA-21-BA-22.

²² Ibid., BA-7.

nuclear attack on their location and the tendency of human beings to become territorial and protective of limited resources during a crisis.

While much of the early material produced by the FCDA and OCD was for the general public, the end of the fifties brought a change occurred. Specific groups were the recipients of messages designed to help them in their unique circumstances. In addition, the OEP and OCD recruited other federal agencies, like the United States Department of Agriculture, to produce material for these targeted groups.

RURAL SURVIVAL PLANS

The geopolitical events of the early 1960s significantly influenced the actions of the United States government and its citizens. This was the height of the Cold War, the working relationship of President Kennedy and Soviet Premier Khrushchev was ever more strained as they faced off over the Berlin Wall and the missiles in Cuba. This tension led to the proliferation of magazine articles, newspaper serials, and government published materials all with the same goal: preparing the American public to survive a nuclear war.

The OCD started targeting the agricultural community with information provided by scientists from the United States Department of Agriculture. The information provided to rural and agricultural communities was significantly different than that provided to the general public. These groups were given technical and scientific information designed to help them protect themselves, their livestock, and their crops. Information regarding specific types of radiation that could be expected in fallout. The level of detail provided was thought important so that farmers and livestock producers would understand the necessity of correctly protecting their livestock, crops, and land.

As with other demographics, the government enlisted some popular media to address the issue with farmers. These included a 1962 article in *Successful Farming*, a 1962 article in *Nebraska Farmer*, the 1961 article in *LIFE* magazine that pictured a farm family sheltering with their livestock in their barn. In addition to the popular media, the government produced a number of brochures, pamphlets, and Public Service Announcements geared toward the rural population.

In the days before ubiquitous large chain stores that pushed out locally owned retailers, families living in rural areas lived differently than their urban counterparts. This was particularly true for those that lived on farms and ranches. Thus the government found a receptive audience in this constituency. Rural residents were used to growing and canning their own food, storing large amounts of staple goods, taking less frequent trips to town for shopping, and in general living a more self-reliant lifestyle. This population was accustomed to their independence, fending for themselves, and taking care of their own responsibilities. While the primary goal of the campaign was to prepare their families and the secondary goal was to protect their livestock and crops, there was another message. The tertiary message included in the survival information aimed at the rural population was that following a nuclear attack, citizens may be isolated and without governmental help. In addition, this population had other things to take into account if a nuclear attack happened; they were caretakers of their livestock and land. The preparation materials aimed at this population featured information and messages aimed to address the unique interests of the rural citizen. These interests included protecting their family, sheltering their livestock, and preserving the fertility of the land needed to feed and water both.

The United States' government had one goal following any nuclear attack: to get the country up and running again. One of the ways to accomplish that feat was to protect the food production areas, including livestock production and agricultural production. One of the chief methods of determent against a nuclear attack from the Soviet Union was to ensure that normal life in the United States would continue with little delay following any attack. This included ensuring that food production faced little disruption.

While the population could survive for a time on canned and stored goods, it was vital that America's farmers return to food and animal production as soon as possible. The preparation efforts of the government to ensure the agricultural population and their livestock and land would survive reflected that concern. A careful reading of the materials shows that one of the biggest concerns was the protection of dairy cows. Dairy cows were the focus of much attention for two reasons. First, the daily requirement of infants and children for dairy milk had no viable substitute at the time. If the milk supply was insufficient to meet the needs of the younger population, the effects would be felt for their entire lifetime. Second, dairy milk was extremely susceptible to the effects of absorbed radiation. Much of the material given to rural and agricultural populations featured information about protecting dairy cows, placing their importance above all other livestock species on the farm.

The fallout shelters for rural residents were very different than those of the urban and suburban population. Many farm families, especially those in the Great Plains region, already had storm shelters. These storm shelters might be in the basement of the house or a separate root cellar dug into the ground equally distant from the house and the garden. Regardless of where these shelters were physically located, they could expect to be pressed into service as fallout shelters in the event of a nuclear attack. These shelters already housed the excess garden produce canned by rural families and so it was an easier feat to set them up with furniture and enough shelf stable food as recommended by civil defense pamphlets.

The government utilized several avenues, including local agricultural extension offices, to distribute several types of shelter plans that were uniquely suited for

agricultural use. Although the plans featured farm buildings with built in fallout shelters, they were specifically designed to be used daily for their primary agricultural purposes. These buildings offered a few advantages over a fallout shelter in a root cellar or basement. First, they were an extra farm building to be used daily as needed by the farmer. Next with respect to the cattle bunker, the family and any staff would shelter with their livestock. They would not need to risk their health or wellbeing to take care of their stock; all were housed under one roof.

One of these plans was for a fallout shelter built on to a potato storage facility.¹ For everyday use the storage facility held six thousand cwt. The term cwt equals one hundred pounds, therefore six thousand cwt of potatoes is the equivalent of six hundred thousand pounds of potatoes. The plans advised that this would normally be used to hold seed potatoes. However, in the event of an emergency anyone sheltering in the adjacent facility had access to six hundred thousand pounds of potatoes in addition to other shelter goods. The potato storage facility featured two levels, with parking for trucks on both levels, and the shelter on the lower level built into the hill. In fact, the protection factor of the shelter increased if there was a truck parked above the shelter. Intended to protect up to six people following an attack, the shelter measured approximately ten feet by eighteen feet.²

Another of these plans was for a bunker style shelter designed primarily for cattle, but easily converted to any type of livestock.³ In addition, the plans say that it may be

¹ See Appendix B.

² United States Department of Agriculture, "Fallout Shelter in a Farm Potato Storage, Cooperative Farm Building Plan No. 5951," *The Superintendent of Documents* (Washington, D.C.: United States Government Printing Office, 1964), 1-2.

³ See Appendix C.

converted to a rural community shelter for people with some modifications. This shelter is designed to be built into a sloping hill in the pastures or fields where the animals are grazing. That way the animals can be herded into the safety of the bunker with little advance notice of a nuclear attack. The food and water should be pre-positioned, just like in your family's shelter. Depending on the width and length of the chosen shelter design, up to sixty cattle could be safely housed for up to two weeks, as recommended by the United States Department of Agriculture.⁴

Roberts Dairy Company, a major regional dairy company in Elkhorn, Nebraska, built and tested a modified version of the bunker style cattle shelter. In 1963 they sent thirty-five cows, a bull named Aristocrat, and two student workers underground for two weeks to test the viability of their shelter. Built under a company farm, the shelter was large enough to house two hundred cows, two bulls, and fifteen people to care for them. Separate from the cow shelter, the human shelter had its own air filtration system. The cows and bull weathered the two week test with little difficulty. The same cannot be said of the student workers. Even though they had a two-way radio so they were not isolated completely from the outside world and they had the chores associated with caring for the livestock to occupy them, the two young men "complained about boredom and the monotonous food."⁵ Overall the experiment was deemed a success and proved a positive

⁴ United States Department of Agriculture, "Bunker-type Fallout Shelter...for Beef Cattle, Cooperative Farm Building Plan No. 5950," *The Superintendent of Documents* (Washington, D.C.: United States Government Printing Office, 1964), 1-2.

⁵ "Civil Defense, The Family Fallout Shelter: Sheltering Cattle," *NebraskaStudies.org*, Accessed February 24, 2014, http://www.nebraskastudies.org/0900/frameset_reset.html?http://www.nebraskastudies.org/0900/stories/0901_0134.html, 1-2.

step in protecting the food chain in the event of a nuclear attack.⁶ This is particularly important because dairy cows are the most vulnerable to contamination from nuclear fallout and the most likely to transfer the fallout to the milk they produce.⁷

The information provided to the agricultural producers took many forms. One of these was Farmer's Bulletin No. 2107 distributed by the U.S. Department of Agriculture, "Defense Against Radioactive Fallout on the Farm." This bulletin reiterates the steps that farmers and livestock producers should take to protect their products. Again, the emphasis is on protecting dairy cows if a choice needs to be made, due to the susceptibility of milk to radioactive contamination. Some of the information seems contradictory. At one point the bulletin has the following line, "growing vegetables that are exposed to heavy fallout may become highly radioactive."⁸ However, a few lines further into the paragraph the following line advises farmers that they may be able to save their radioactive crops, "Most vegetables would be marketable, and should not be destroyed without testing for radioactivity."⁹

Another pamphlet provided by the U.S. Department of Agriculture had an additional bonus, a thirty second Public Service Announcement (PSA). "Your Livestock Can Survive Fallout from Nuclear Attack" came as an eight page pamphlet and a PSA to demonstrate the instructions found within its pages. The solemn voice narrating the

⁶ Ibid.

⁷ Federal Extension Service U.S. Department of Agriculture, "Fallout and Your Farm Food," *Office of Civil Defense, Department of Defense* (Washington, D.C.: United States Government Printing Office, 1962), 6.

⁸ Michael Scheibach, ed., *"In Case Atom Bombs Fall:" An Anthology of Governmental Explanations, Instructions and Warnings from the 1940s to the 1960s* (Jefferson, NC: McFarland & Company, Inc. Publishers, 2009), 48.

⁹ Ibid.

commercial advises viewers that, “In any disaster your livestock need protection too.”¹⁰ At another point in the commercial the same announcer tells farmers, “In an emergency shelter your livestock, then take shelter yourself.”¹¹ The farmer demonstrated the various techniques intoned by the announcer, including stacking hay bales along the exterior walls of the barn to increase the protection factor from radiation and herding a cow into the barn to protect it from fallout. In contrast to the commercial, the pamphlet listed information on protecting chickens as well as the typical cows, the many ways to ensure that adequate amounts of food and water were covered and protected from nuclear fallout, and ways to convert typical farm buildings and storage facilities into improvised shelters at the last minute to ensure that the maximum number of animals were protected as well as possible. Included in the pamphlet was a set of specific instructions on what to do “[i]f you receive sufficient fallout warning...” and “[i]f fallout warning gives you little time...”¹² The pamphlet does have some advice on protecting the family on the last page of the brochure. Unlike the video version, the pamphlet urges that readers, “first provide for your own safety and that of your family and neighbors. To do this, you may not be able, at first, to take care of your livestock, your crops, and your land.”¹³

In June of 1963 the United States Department of Health, Education, and Welfare, Office of Education produced a more formal basic Civil Defense educational program

¹⁰ U.S. Department of Agriculture, *Your Livestock Can Survive Fallout from Nuclear Attack*, Video, Office of Civil Defense of the Department of Defense, 1965, <https://www.youtube.com/watch?v=sIUg08w5zAI>.

¹¹ Ibid.

¹² U. S. Department of Agriculture, *Your Livestock Can Survive Fallout from Nuclear Attack*” Office of Civil Defense of the Department of Defense, Pamphlet (Washington, D.C.: United States Government Printing Office, 1962), 5-6.

¹³ Ibid., 7.

also aimed at rural residents. Officially the program was commissioned by the Federal Extension Service and the United States Department of Agriculture, in cooperation with the OCD. This program was designed for use by extension office agents to uniformly instruct their local constituents in the basics of civil defense as it applied to their unique environments. Covered in the program were the basics of nuclear attack, why rural preparedness was necessary, the importance of a shelter and how to stock it, helping the community, preparing to care for your livestock, feed, and crops, rural fire prevention, and making a family survival plan. This educational effort plainly stated one of the federal government's main goals for producing so much Civil Defense material specifically aimed at the rural population. Under the heading of "Why Rural Preparedness" the following statement appeared, "Following any attack it would be essential that farmers and other rural people survive, save breeding stock, decontaminate and continue basic food production that would be vital to the country's survival and recovery."¹⁴ That is the clear motivating factor behind the ongoing effort to convince the rural population that they need to prepare to survive the dangers of nuclear fallout. No giving up! Your country needed you and, more importantly, what you produced, to get back up and running smoothly. The rest of the information included was similar to many of the other brochures and pamphlets. Advice on building a safe shelter, or making a facility that you currently have, safer from radioactive fallout, what to stock in your shelter, and how to protect your livestock. This particular instructional effort did include a new piece of information regarding protecting livestock. In addition to the usual

¹⁴ U.S. Department of Health, Education, and Welfare, Office of Education, *What People Can Do About Rural Civil Defense* U.S. Department of Agriculture (Washington D.C.: United States Government Printing Office, 1963), 4.

entreaty to ensure that dairy cows received the most protected spots in the livestock shelter, breeding stock should have the next best areas in the shelter. The protection of good breeding stock was secondary only to the protection of dairy cows. A farmer's breeding stock was as important to his future as the land itself. Without breeding stock to continue a robust and healthy herd or flock a farmer would have a bleak future. The herd or flock would die out or worse, face inbreeding problems, and the farmer would have survived the attacks only to lose the sustainability and value of his herd or flock. Any leftover space should go to the rest of the animals.¹⁵

This was also one of the few Civil Defense produced items that discussed a very important subject, fire prevention. In the event of a nuclear attack many populations were potentially going to be isolated. The government did not want to acknowledge that fact, but they came close in this section. If the government openly acknowledged that in the event of a nuclear attack, populations may be on their own without governmental help, it would acknowledge that the government was not in total control of the country's immediate reaction to a nuclear attack. The United States' government had thus far built themselves up to be the sole expert on all things nuclear. All information flowed from the government or its agents. The most important idea that the government sought to convey was that through early preparation the people of the United States and their government could survive a nuclear attack. If the government could not maintain control after an attack, chaos could reign. This section listed various steps that rural residents could take to help prevent fires. Among the suggestions listed were removing fire hazards from around and inside buildings, having tools like fire extinguishers, shovels, and water on

¹⁵ Ibid., 11.

hand at all times, and providing a large body of water on the farm earmarked for fighting fires. In addition, neighbors should form their own firefighting teams to ensure that they could handle emergencies on their own. This is as close as the government comes to acknowledging that local services probably will not be available and people might be on their own for some time when it comes to facing life after a nuclear attack.¹⁶

Protecting fertile and productive cropland was another issue that the federal government thought important to the continued survival of the population of the United States. As with the dairy milk, the growth of fresh food would prove important to the long term survival of the United States. The extent to which the nuclear fallout contaminated farmland in the agricultural areas was of grave concern to the federal government. There were items produced for farmers that addressed this issue. The United States Department of Agriculture addressed these concerns by producing a comprehensive report and a pamphlet that offered a greatly abridged version of the information contained in the report. Both addressed soil, crops, and how fallout would affect them. Both agreed that in areas with light fallout, farming would hardly be affected. However, if an area experienced early and heavy fallout, agricultural production could face challenges for years to come. The eight page pamphlet does not do justice to the subject matter covered in the full report. One interesting note though, there is a disclaimer in bold print on the second page of the pamphlet that reads, “This publication discusses radioactive-contamination conditions that may occur as a result of heavy fallout

¹⁶ Ibid., 12-13.

from *massive attack*. The information given here is *not related in any way* to conditions that result from distant, controlled *testing* of nuclear devices.”¹⁷

An expansive report from the Agricultural Research Service, produced in 1962, included very detailed information for agricultural producers about virtually everything that one would need to plan for a nuclear attack or determine when it was safe to come out following one. The first section provides the details of a potential nuclear attack. Included are the area of destruction, fallout formation, area of severe fallout, gamma and beta radiation, hazards of various types of radiation, and a very detailed account of how to figure out the intensity of radiation in your area and its time of decay. The latter also features a table listing the variable involved to help illustrate the method. The next section explains the amount of protection provided from various types of shelters, again complete with pictorial examples. Another section addresses the unique situation of farm families, and the need to care for livestock. They are faced with the conflicting desires to protect themselves and their livestock at the same time. While urban and suburban shelter dwellers would not face this dilemma, every farm family would inevitably need to balance the health and safety of their family with that of their livestock. By extension, this decision will have ramification long after they emerge from the shelter. If they emerge too early to protect their livestock they risk their lives. If they do not protect their stock and land sufficiently, they will not have anything to emerge to. As the report states, “Even during an early period following fallout, farm families will be faced with the

¹⁷ United States Department of Agriculture, *Soil, Crops, and Fallout from Nuclear Attack*, U.S. Department of Agriculture (Washington D.C.: United States Government Printing Office, 1962), 2.

necessity of doing such farm chores as caring for livestock.”¹⁸ Further down the page is a table that breaks down how long after a nuclear explosion a person could work outside per day without getting a deadly dose of radiation.¹⁹ For example, in the second twenty-four hours after a nuclear explosion a person could only work outside their shelter for one hour. Compare that to the fifteenth through the twenty-first days when a person could work outside their shelter for up to four hours per day without getting too much exposure to radiation.²⁰

The section specifically mentioning livestock furnished much more detailed information about protection for animals, their food and water. In addition to the usual stuff about dairy cows, there was information on how to protect animals that are unable to be sheltered in buildings. The pamphlet states that “[a]nimals that are not placed in a barn or under a roof might, if possible, be placed under trees or where they are covered to some extent. It is better to keep animals alive on contaminated feed and water than to let them die from starvation.”²¹ If a farmer is unable to protect his animals from fallout the report offers the following advice for cows, “If practical, they should be thoroughly washed off as soon as it is possible for the farmer to stay outside for a limited time.”²² In addition, scientists conducted a study to determine the amount of exposure that specific types of shelter would provide to the various domestic farm animals. The most effective

¹⁸ Agricultural Research Service, *Protection of Food and Agriculture Against Nuclear Attack: A Guide for Agricultural Leaders*, U.S. Department of Agriculture (Washington D.C.: United States Government Printing Office, 1962), 9.

¹⁹ See Appendix D

²⁰ Ibid.

²¹ Ibid., 11.

²² Ibid.

type of shelter would be the basement-type barn with a loft full of hay and the least effective type of shelter would be a tight wooden barn. If no shelter were provided for animals cattle, hogs, and sheep suffer approximately the same number of deaths based on exposure to roentgens. They suffered thirty percent death rate at five hundred roentgens, one hundred percent death at both one thousand and three thousand roentgens. However, chickens were the exception with ten percent death rate at five hundred roentgens, sixty four percent at one thousand, and one hundred percent death at three thousand roentgens.²³²⁴

This page also included a mortality chart that listed various domestic farm animals and how long they would survive if left exposed to different doses of radiation. This chart allowed farmers to decide how likely their animals were to die given the duration and amount of radiation their area was expected to experience. It is interesting to note that poultry apparently tolerate radiation exposure better than most other domestic animals. Their midlethal dose of radiation, the radiation dose that you would expect half of your animals to die within thirty days, is nine hundred roentgens; while cattle have a midlethal dose of five hundred fifty roentgens.²⁵ The report continues with more on poultry, including that since most poultry have shelter to protect the flock from predators and the environment, poultry stands a better chance than most other farm raised livestock of being protected from radioactive fallout. In addition, since chickens eat a commercial feed product, their food would be safe from contamination due to being stored in large

²³ Ibid., 12.

²⁴ See Appendix E

²⁵ Ibid., 11.

bags inside the barn. The result is that following a nuclear attack poultry would be the least likely contaminated meat source available for the surviving population.²⁶

One of the most interesting and unique sections of this report covered the dangers of internal radiation poisoning. The key way to get internal radiation is from eating or drinking a contaminated item. Initially the process would be straight forward; a person would eat fruit, vegetables, or grains that had particles of fallout on it. Eventually though, the radioactive fallout that contaminated the soil would be absorbed into the plants. Then animals and the contaminated animals eaten by humans either ingested the plants or humans would eat the contaminated plants directly. In both cases radiation entered the food chain, causing illness and probable death at every stage. This is crucial information to disseminate to the general public so that they do not ingest contaminated food or water. The danger would be masses of people surviving the initial attack only to disregard the dangers of fallout contamination and dying after the attack from internal radiation poisoning.

There is a detailed section on radioactive iodine and radioactive strontium. These two isotopes were critical because they were the most common isotopes to contaminate fresh milk. Due to the importance of milk and milk products for the nutritional health of babies and children and the quantities required to satisfy that demand, scientists had extensively studied milk's radioactivity and the half-life of that radioactivity. The extreme risk of radiation entering the fresh milk supply of the United States was why there was such an emphasis in the literature. The emphasis in the literature was due to the fact that the government wanted to ensure that the importance of the shelter and

²⁶ Ibid., 11-12.

protection of dairy cows and their food and water supplies was understood by the rural population. Secondary to the dairy cows, the safekeeping strong breeding stock was the next priority. To this end, the danger of strontium ninety and the difference between it and strontium eighty-nine was discussed in some of the literature. Strontium ninety was a radiation with a half-life of twenty-eight years. In other words, it lost half of its potency every twenty-eight years. This is in contrast to strontium eighty-nine which has a half-life of only fifty-three days. This meant that every fifty-three days the strontium eighty-nine lost one half of its potency. Both of these chemicals are important to fresh milk production because the chemical in the soil behaves much like calcium and is absorbed through the plant via the animal eating it. In addition, the strontium is secreted in milk and collects or is stored in bones. Tests revealed that children are sensitive to the radioactivity present in strontium. Since children drink a larger proportion of milk than adults and are more sensitive to the strontium, it is crucial that all effort is made to prevent it from entering the milk supply in the first place. The result of children with exposure to high doses of radioactive milk is an increased rate of bone cancer.²⁷

Another section that introduced new information into the discussion concerned the croplands that formed the foundation of so many agricultural families' homesteads. This section included use of the contaminated land and a table for determining that use by strontium ninety levels, calcium levels, and type of crop. If one's cropland had low levels of calcium pre-fallout, then the land was less likely to retain strontium ninety, and pass it on to foods grown on that land through the root system of the plants. Another consideration was the calcium level of the plants; potatoes and corn had lower levels of

²⁷ Ibid., 14.

calcium and would absorb less strontium ninety than leafy green vegetables which are higher in calcium. Contaminated irrigation water would not appreciably add to strontium levels. Most of the strontium would be diluted by the water, with a large portion of the remaining being absorbed by the earthen banks and sides of the water source.²⁸

The reclamation of contaminated croplands and grazing fields could take years. The methods to decontaminate valuable agricultural lands varied from removing the ground cover and crops to removal of the entire topsoil layer. The effectiveness and cost of the latter method makes it questionable for large scale reclamation projects. For areas on a grander scale, the method of deep plowing seemed more practical, if not as comprehensive. The deep plowing method aimed to turn the contaminated topsoil as much as eighteen inches under the surface. This would be deep enough to allow most crops to be grown without fear of the root systems reaching the contamination. There were a couple of major problems with the deep plowing method. First, the idea that one could plow under all of the topsoil without it mixing with the soil it was pulling up to replace it was not credible. Second, the soil that replaced the once fertile topsoil would not necessarily be as productive.²⁹

The appendices contribute to the usefulness of this report. While not technically part of the appendices, the glossary is placed between the last page of the report and the first appendix. However, the three page glossary is extremely thorough. It is a short primer on all things nuclear, not only the common terms like “contamination” and “shelter,” but the more obscure terms like “curie” and “equivalent residual dose.” Appendix A explains how to measure fallout radiation. Included are good pictures of a

²⁸ Ibid., 21-23.

²⁹ Ibid., 24-26.

dosimeter, a machine that tracks an individual's radiation exposure, and a Geiger counter, a machine that detects and measures radioactivity in a specific area. Appendix B lists various building types and their protection factors. Appendix C features several different fallout shelters appropriate for agricultural use. Included in this appendix are two different designs that combine shelters for both the animals and the people that must care for them. These designs are similar in nature to the potato storage shelter and cattle shelter previously mentioned released by the United States Department of Agriculture. One design is a forty cow dairy barn with built in family shelter and feed storage. This design was intended to be used as a barn and milking facility during normal times and as a shelter following a nuclear attack.³⁰ The dual purpose made it a better investment than a designated use shelter only.

This report is a concise, complete compendium of information for farmers and other agricultural producers. If the information is studied and used to prepare the homestead for possible nuclear attack, the chances of survival would greatly increase for rural families and their livestock. The only other thing that would need to be added was a listing of the recommended types and amounts of items to store in one's shelter. Considering those lists were available at the same extension agent that distributed this report, farmers likely received both.

The tone of all the information aimed at rural populations emphasized preparedness and self-sufficiency. More than any other population in the United States, the rural and agricultural population had a high probability of being isolated following a nuclear attack. Rather than wait for the government to help them or provide them with

³⁰ Ibid., 27-39.

shelter, the information aimed at this population stressed taking care of themselves and their responsibilities.

The information provided by the government provided agricultural producers with scientific information that was designed to help them prioritize their preparation and survival efforts. The first line of recommendations was shelters large enough for prized stock and their family under one roof readied ahead of any disaster. If that advice was not followed, then they offered suggestions for preparing last minute shelters. One of the most important things that the government provided though was undiluted information.

More than any other population, the government treated this population as a partner in the massive effort of getting the country up and running again. As such, the government needed their help to continue to provide a valuable service and product even after the attack. To do this, the farmers and agricultural producers needed to have the information to make the best decisions. This included the reiteration of the need to protect the dairy cows, first and foremost. This was of paramount importance to the government, so that information was up front and central in all the information provided to rural populations. The protection of the food production mechanism was vitally important to the continuity of the United States following a nuclear attack. Without fresh food coming from farms and ranches, any population that managed to survive a nuclear attack in their fallout shelters, would not survive beyond the length of their canned food stash.

AN ANALYSIS OF THE VARIOUS APPROACHES TO PREPARATION

There were many similarities in the preparations that the federal government published for the various target audiences. After all there were some commonalities between the urban, suburban, and rural populations. All demographics were urged to prepare shelters in advance of any possible attacks, this included stocking them with adequate supplies. Children's introduction to the possibility of nuclear attack and what to do in case of one was a nationwide effort.

Fallout shelters were a previously unknown reality that all Americans became familiar with. Whether they actually built them or just studied the plans, people could not help but be aware of them. In 1961, following President Kennedy's speech in July and letter in the September 15th edition of *LIFE* magazine urging the American people to prepare, there were twenty two million copies of *Family Fallout Shelter* distributed.¹ This is equivalent to approximately twelve percent of the total population of the United States in 1960.² That does not account for the millions who planned their shelters on their own, through plans in their copy of *LIFE*, or through their extension agent.

Another commonality across demographics was the directive to stock up on food, water, and other supplies so that one could stay sheltered for at least two weeks following a nuclear attack. There were many different types of lists distributed. One of the most popular was the "Grandma's Pantry" list. Printed on paper shaped to resemble a black

¹ Walter Karp, "When Bunkers Last in the Backyard Bloom'd," *American Heritage*, February/March 1980, 86.

² United States Census Bureau, "United States Urban and Rural," *Population: 1790 to 1990* August 23, 1993. Accessed February 24, 2014 at <http://www.census.gov/population/www/censusdata/files/table-4.pdf>.

soup pot, these lists and the accompanying matching displays were an attempt to link the current efforts with the previous generations' overall preparedness. The government even produced a freestanding display that invoked images of elderly women putting home canned goods on shelves to help feed their families and stave off hunger.³

The educational effort aimed toward children was another commonality of all localities. Bert the Turtle was universally marketed to children. The coloring book and cartoon starring the character provide further evidence of this marketing. In addition, large school systems provided their students with dog tags for easier identification of the bodies. In some rural areas the schools themselves were fallout shelters. Built entirely underground, the elementary school in Artesia, New Mexico doubled as a community fallout shelter. The cafeteria featured a sign that read, "Normal Conditions: Food Storage. Fallout Conditions: Morgue."⁴ This was in addition to some schools actually using the FCDA's *Survival under Atomic Attack* as text for fourth grade students.⁵

There were many ways in which the preparations for the various demographic groups differed. The most obvious was during the Eisenhower administration's push for mass evacuations. While the urban and some of the suburban populace was being prepared to evacuate their homes due to their proximity to Target Areas, the rest of the suburban and all of the rural populace was being prepared to host all the refugees. In general, the more rural a location, the less likely the area was to be targeted. This

³ Elaine Tyler May, *Homeward Bound: American Families in the Cold War Era* (New York: Basic Books, 1999), 91.

⁴ Tom Vanderbilt, *Survival City: Adventure Among the Ruins of Atomic America* (New York: Princeton Architectural Press, 2002), 113.

⁵ John Dowling and Evans M. Harrell, ed., *Civil Defense: A Choice of Disasters* (New York: American Institute of Physics, 1986), 16.

changed in the mid to late 1960s with the placement of the Minuteman missiles in many rural locations. However, for the scope of this study the Target Areas were largely in heavily populated metropolitan areas or those areas with strategically located military bases.

Another major difference in the preparations that was unique to the rural population was the need to protect livestock, feed, and other agricultural resources. In addition, rural populations were facing the possibility of being isolated from outside help for at least a short period of time. Several of the government provided preparation materials stressed the ability to take care of themselves or band with neighbors to help each other out.

Due to the unique qualifications and needs of the rural and agricultural communities, the information provided to them was different than that given to the general public. The United States Department of Agriculture provided technical and scientific information directly related to the protection of livestock, crops, and land so that the rural and agricultural communities would be equipped to survive a nuclear attack. Their survival was crucial to the rebuilding of the United States following an attack. Survivors needed to have healthy and safe food to eat when they emerged from the shelters.

Rural families needed to protect their valuable resources for several reasons. First and foremost because they were possible sources of food and other sustenance for the family following a nuclear attack. While many families living in rural areas were accustomed to stocking up on food items and other supplies due to their isolated locations, following an attack restocking would be virtually impossible for some time.

This meant that they needed to consider their livestock and crops as potential sources of food to keep themselves and their neighbors alive until life returned to normal.

Another reason was the government's grave concern about protecting the food production system so that the United States could get up and running as soon as possible after an attack. Provided the nuclear attack did not significantly impact the producer's local area, they would be tasked with keeping food production output functioning at as close to pre-attack levels as possible. The government was counting on rural populations to help them return the country to normal operating conditions as quickly as possible to reinforce the legitimate United States government.

Finally, the resources represented financial assets that the family owned and needed to protect. Many families that own agricultural land have done so for generations and consider it a family legacy. These families pass the land and business down to their children and grandchildren. To survive the nuclear attack, yet lose their entire herd or have all their land be contaminated for decades by nuclear fallout would be catastrophic for them not only on a business level, but a personal one as well. The bloodlines of their stock needed to be carefully protected to ensure their family's heritage would be protected. They would have the added bonus of being able to offer their breeding stock to help repopulate the areas that had been decimated by radioactive fallout.

CONCLUSION

The history of Civil Defense took many turns between Presidents Roosevelt and Kennedy. Each President determined how he wanted to steer the direction of Civil Defense preparedness while in office. Roosevelt appointed his wife Eleanor as one of the advisors and felt strongly in the idea of Civil Defense preparedness for the American people. The buildup of the German war machine and the advent of World War II convinced the American people of the appropriateness of those actions. However, with his death in 1945, President Truman took over. Truman believed that with the end of World War II Civil Defense preparedness had outlived its usefulness. Truman had been complacent in the idea that the United States was the only country with an atomic weapon. Following the successful detonation of the Soviet Union's first atomic weapon in 1949, Truman changed his mind. With Eisenhower's election the focus shifted from preparing shelters, to mass evacuations for the first time. In large part due to the Eisenhower administration's mandate to significantly improve the interstate highway system. The administration did not want to divert any money from its primary mission of expanding and improving the highway system, so they found a way to incorporate the highway system into Civil Defense. Despite many experts advising that mass evacuations were grossly improbable, the Eisenhower administration stuck to its guns. The focus shifted again with President Kennedy's election. Kennedy's tenure in office featured heightened tensions with the Soviet Union over a number of issues including the Berlin Wall and Soviet missiles in Cuba. President Kennedy made a number of personal appeals to the American people, urging them to prepare themselves for nuclear war. This is arguably the time when the world came closest to nuclear war.

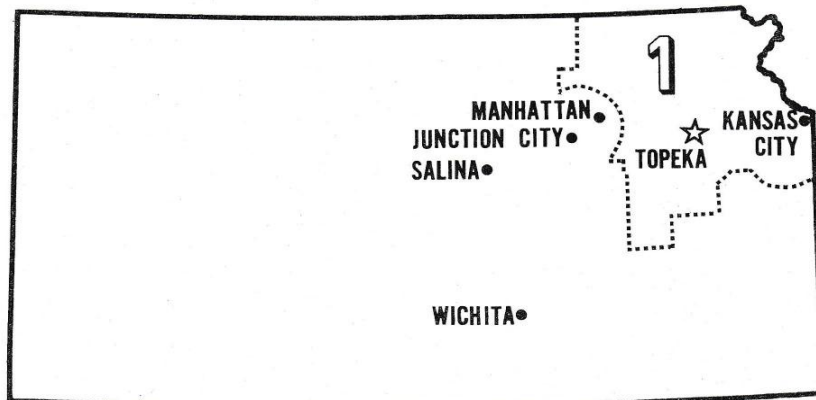
Urban and suburban populations shared many of the same preparations. Although urban populations had access to more public shelters, public shelters were found in all sectors of American life. The focus of suburban preparations was generally the home shelter, either in the basement or the backyard. The government offered home equity and improvement loans to facilitate the building of these home shelters. Introduced in the late 1950s, mass evacuation plans were a complete one hundred and eighty degree change in preparations. People needed to have their supplies ready to go on a moment's notice and to know which sector they lived and worked in and the corresponding evacuation routes. Rural populations had a much more complicated time when preparing for survival. The population in agricultural regions had not only themselves and their families to think of but hundreds, if not thousands of heads of livestock to protect as well. Realistically they knew that it would be impossible to protect all the livestock they had. However, preparations needed to be made to protect as many important producers as possible. After all, the livestock and crops represented the financial future of these families.

KANSAS, TARGET AREA ONE

3. In order to carry out the responsibilities placed upon him by conditions of extreme emergency the Governor must necessarily be granted full powers for control over manpower and essential supplies.

C. Support Areas

1. The State is divided into six (6) Support Areas which serve as administrative districts for the State Emergency Government. The organization and functions of the several Support Areas may vary in detail according to their location, but in general they will follow the patterns set forth herein for Support Area 1.
2. The authority of the Director of a Support Area extends over the Target Areas within the Support Area boundaries as well as over the reception counties within such boundaries. Essentially the Director of the Support Area is a regional deputy of the State Director of Civil Defense.



D. Target Areas

1. There are six (6) Target Areas in Kansas designated by the U. S. Department of Defense and the Office of Civil and Defense Mobilization.

The Target Areas and their qualifying factors are:

JUNCTION CITY - MANHATTAN, KANSAS (In Support Area 2)

Army Divisional Headquarters Post
Fort Riley (UTM 14SPU9226)

BA-2

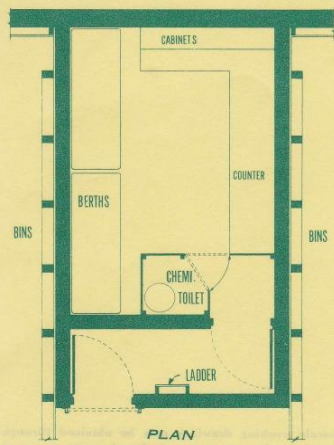
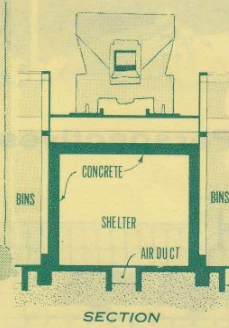
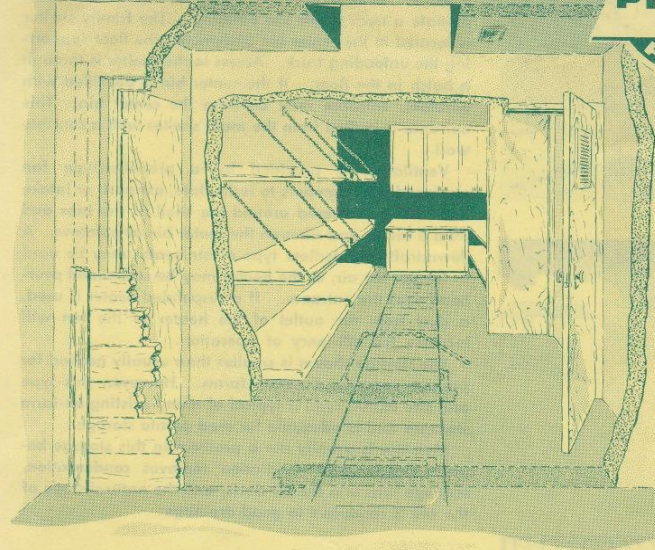
FALLOUT SHELTER IN A FARM POTATO STORAGE

A1.38:949



Fallout Shelter IN A FARM POTATO STORAGE

COOPERATIVE
FARM BUILDING
Plan No. 5951
(5 SHEETS)
PLAN EXCHANGE



0 5
SCALE IN FEET

Documents Dept.
Forsyth Library
Fort Hays State University

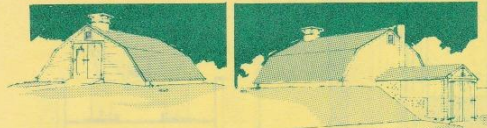
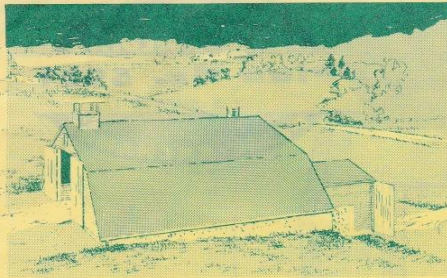
Washington, D.C.

Issued January 1964

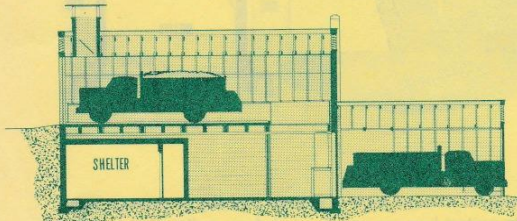
UNITED STATES DEPARTMENT OF AGRICULTURE Miscellaneous Publication No. 949

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Office, Washington, D.C., 20402 - Price 5 cents

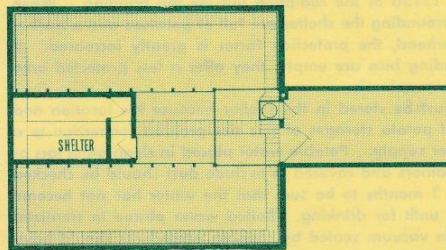
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Perspectives



Section (LONGITUDINAL)



Plan

In emergencies, with six people in the shelter, a natural draft of air will be created to ventilate the shelter. Air will drift down the side walls into the floor duct. Upon being heated in the shelter, the air will rise through the hatch to the upper spaces in the storage.

The potato storage can be entered from two levels. The upper is for unloading potato trucks into storage bins, and the lower for loading potato trucks out of storage. Both levels have doors and floors to accommodate a truck inside the building. The family shelter is located in the center bin underneath the floor supporting the unloading truck. Access to the shelter is through a hatch in the floor. If the center bin is not filled with potatoes, entrance may be from the center bin. This entrance is baffled from the main shelter with a concrete wall.

Ventilation is provided by a propeller-type fan equipped with dampers to recirculate, exhaust, or intake air. Air is delivered around the shell of the bins and from a center duct through the center bin of potatoes. A downdraft, counterflow type of air heater may be used to temper the air, or the heater may be suspended overhead near the entrance. If a suspended heater is used, a duct from the outlet of the heater to the fan will increase the efficiency of operation.

The storage shown is smaller than usually needed for present commercial potato farms. However, this type and size (6,000 cwt.) is typical of many existing on-farm storages and is adequate for seed potato storage.

Moisture is usually not a problem in this storage because ample wall ventilation removes condensation, seepage runs into the air ducts, and the natural slope of the site is conducive to good drainage.

Complete, large-scale working drawings may be obtained through your county agent or from the extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 5951, 6000-CWT. FARM POTATO STORAGE WITH FALLOUT SHELTER

If the large-scale drawings are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings but will direct you to a State that does distribute them.

U.S. GOVERNMENT PRINTING OFFICE: 1963-O-710-649

BUNKER-TYPE FALLOUT SHELTER...FOR BEEF CATTLE

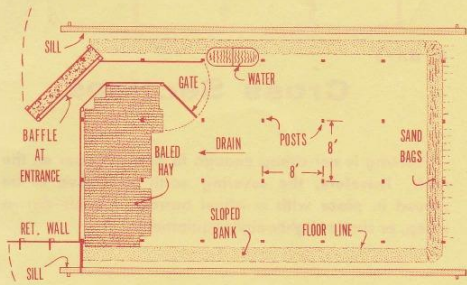
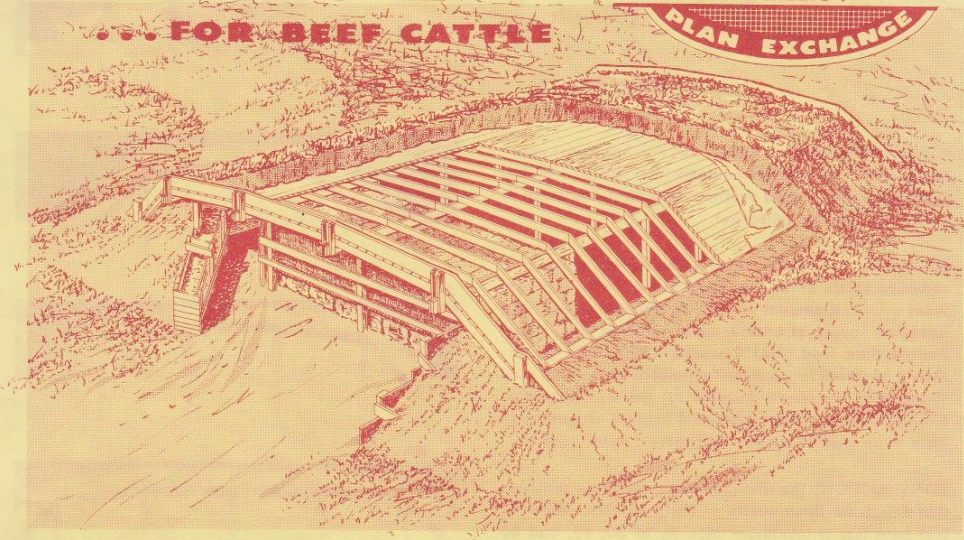
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Bunker-type Fallout Shelter



... FOR BEEF CATTLE



the ends should be shielded and a ventilating system installed.

The most desirable site for the shelter is sloping ground adjacent to the pasture or lot where the cattle are normally kept. A hillside facilitates disposal of surface water, and closeness to pastures or lots expedites herding animals into the shelter in an emergency. The shelter may be built on a level site, with due consideration for drainage and height of the water table.

This shelter was designed specifically for emergency use. During this period of use by livestock it most likely will be crowded, damp, and difficult to clean.

The shelter has a protection factor of about 90.

All nonessential items have been omitted, but the operator may wish to spread a layer of bedding over the floor.

If time permits, the operator should cut the ties on the hay bales on the inner face of the stack before driving the cattle into the shelter.

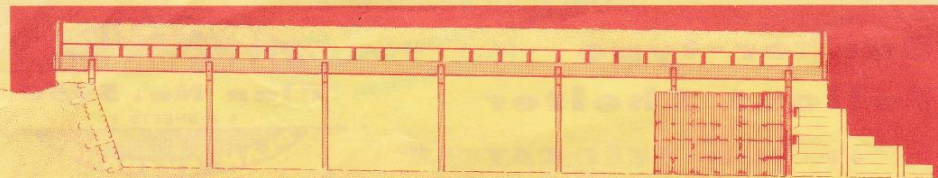
This shelter provides low-cost and adequate radiation protection for unattended farm animals. Although designed primarily for beef cattle, the shelter could be modified for use by sheep, hogs, or poultry. The basic structural system with modification could be used for a rural community shelter for people. If used for people,

Washington, D.C. Issued January 1964

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Section (LONGITUDINAL)

VENTILATION: Natural airflow through horizontal openings under the rafters ventilates the shelter. Burlap sacking may be draped over the opening if dust tends to sweep into the ventilation slot.

FOOD AND WATER: The stack of baled hay serves as a radiation shield at the lower end of the shelter and provides a limited amount of feed for about 2 weeks. An adequate supply of uncontaminated water is more important than feed. For 2 weeks, 110 to 250 gallons should be stored for each beef animal housed. The plan shows only the correct location for the watering tank. Since conditions vary, supply and storage of water will have to be worked out for each specific installation.

CONSTRUCTION: The working drawings show construction details for three widths of shelters. The shelter 48 feet long has a maximum capacity of 30, 45, and 60 cattle for the three widths shown at the right. This allows 21 square feet per animal. Width may be varied in units of 8 feet, length in units of 16 feet.

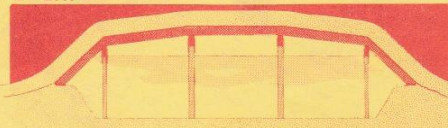
The structure is built of rough, pressure-treated lumber. Because of the very heavy roof loading (175 pounds per square foot) careful workmanship is strongly recommended. Posts are cut from 12- and 14-foot lengths at a slight angle to suit the longitudinal slope of the shelter.

Construction costs vary widely in different localities. However, the lumber required—from about 170 board feet per animal housed in the 30-head shelter, down to 130 board feet in the shelter for 60 head—gives a rough idea of the materials involved.

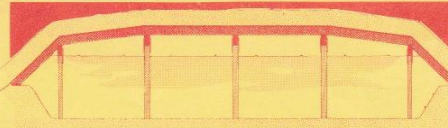
Unsurfaced roll roofing or 6-mil polyethylene film placed over the preservative-treated board covering prevents seepage of rainwater through the roof. This protection should extend beyond the structure to the drainageways along each side of the shelter. Since water will percolate through the soil covering, the bottom 2 inches of the covering should be sand topped with 3 inches of pea gravel to provide a lateral drainageway for the percolating water. Drainageways at the sides of the bunker should have a minimum slope of 2 percent (2 feet drop in 100 feet of run).



2 BAYS



3 BAYS



4 BAYS

Cross Sections

Framing is not strong enough to hold a tractor on the roof. Therefore, the covering earth will have to be moved in place with a wheel barrow, a cable-drawn scoop, or similar lightweight equipment.

Complete working drawings may be obtained through your county agent or from the extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 5950, BUNKER-TYPE FALLOUT SHELTER FOR BEEF CATTLE

If the working drawings are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-710-848

¹²¹ United States Department of Agriculture, "Bunker-type Fallout Shelter... for Beef Cattle, Cooperative Farm Building Plan No. 5950," *The Superintendent of Documents* (Washington, D.C.: United States Government Printing Office, 1964), 1-2.

ADULT WORK SCHEDULE FOR AREAS CONTAMINATED BY FALLOUT

of the source of radiation (fallout). The fallout should be removed from a location where it is a hazard to a place where it can do little or no harm.

Thus, there are two procedures, removal and disposal.

Work Schedules in Fallout Areas

Even during an early period following fallout, farm families will be faced with the necessity of doing such farm chores as caring for livestock and making other necessary trips into the open. If supplies of food and water have been protected from contamination and are readily available to the shelter, appropriate schedules of work and time in the shelter can be devised that can save lives and reduce injury to men and animals. Schedules will depend upon the severity of the fallout radiation hazard and the urgency of the task to be performed. **In planning emergency work schedules the guiding principle should be to keep radiation exposures to the lowest practical limit consistent with saving the community, family, and self.**

All but the most important tasks should be postponed as long as feasible to take full advantage of the decay of the radioactivity. Where possible the radiation exposure should be more or less evenly divided among the adults available to perform the necessary tasks. Exposure to radiation can increase the probability of genetic defects and may cause other harmful late effects. For these reasons, tasks involving radiation exposure should,

where feasible, be performed by adults past the reproductive age.

Civil defense emergency exposure criteria indicate that an acute (short period of time) gamma radiation exposure dose of 200 roentgens is not likely to incapacitate more than a small fraction of the adult population so exposed, and that the body can gradually repair a large fraction of the damage resulting from nonlethal radiation doses. Consequently, a person's total radiation exposure may exceed substantially 200 roentgens without seriously incapacitating him, provided the radiation exposure is so distributed over a long period of time that the unrepaired portion of the injury does not exceed the injury that would result from an acute exposure of 200 roentgens. For convenience, the estimated unrepaired portion of a person's radiation dose is referred to as the Equivalent Residual Dose (ERD).

Table 1 presents an example of a work schedule for areas contaminated with radioactive fallout. Of course, where feasible, the periods out of shelter should be much less, particularly during the first few days when dose rates are high.

TABLE 1.—Example of maximum adult work schedule for areas contaminated by radioactive fallout (4-week basis)

(ERD 100 roentgens; H+1 dose rate 1,000r/hr—equivalent to about 100r/hr at H+7, or 22r/hr at H+24 hours;¹ shelter factor of 100—1% of unsheltered dose)

Time after explosion	Work period (time out of shelter) ²	Time after explosion	Work period (time out of shelter per day)
	<i>Hour</i>		<i>Hours</i>
12 hours (same day or during first 24 hours)	½	4th through 7th day	2
2d 24 hours	1	8th through 14th day	3
3d 24 hours	1	15th through 21st day	4
		22d through 28th day	6

¹ Equivalent dose rates for H+7 and H+24 hours are stated in order that those possessing "citizens instruments" be able to measure the degree of fallout contamination in their specific areas and adjust the work periods to suit their situations. See text.

² Work periods may be split—part morning and part evening, for instance. It is assumed that most of the work period on the first day would be spent in a barn or similar structure and that on succeeding days at least one-fifth of the work period would be spent in such structures which provide some protection. First 2 weeks—off-duty hours spent in shelter allowing no more than 1 percent of unsheltered radiation to penetrate. Third and fourth weeks—major portion of the worker's off-duty hours spent in shelter but limited fraction of time could be spent in a typical basement or cellar.

For other degrees of contamination the example may be "scaled" to a degree. If the fallout contamination were double that assumed for table 1, humans might work for half the length of the indicated work periods, provided they had shelters with twice the protection. Unless it has been determined that there is no radioactive fallout in

the area, all members of the farm family should remain within their shelter during the first 24 hours. Also, if fallout is heavy, say above 1,000 roentgens per hour at 1 hour after detonation, there would be little value in attempting to care for livestock unless they were protected by a shelter at least as good as that provided by a basement.

9

EFFECT OF SHELTER ON THE MORTALITY RATE OF LIVESTOCK

TABLE 3.—Effect of shelter on the mortality rate of livestock¹

Kind of livestock and radiation exposure— unsheltered dose (number of roentgens—1 day)	Mortality rate by nature of shelter			
	No shelter	Tight wooden barn (protection factor of 2)	2-story barn with loft full of hay (protection factor of 5)	Basement-type barn with loft full of hay (protection factor of 10 or more)
Cattle				
500	Percent 30	Percent 0	Percent 0	Percent 0
1,000	100	30	0	0
3,000	100	100	80	0
Hogs				
500	30	0	0	0
1,000	100	30	0	0
3,000	100	100	50	0
Sheep				
500	38	0	0	0
1,000	100	38	0	0
3,000	100	100	80	0
Poultry				
500	10	0	0	0
1,000	64	10	0	0
3,000	100	100	20	0

¹ The reduction of radiation by shelter is described as the "protection factor." For example, if the protection factor of any given structure is 2, then the intensity of outside radiation is reduced by one-half. See appendix B for additional information on protection factors for other types of farm dwellings. In fallout areas, one-half or more of the radiation would be released after the end of the first day.

12

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