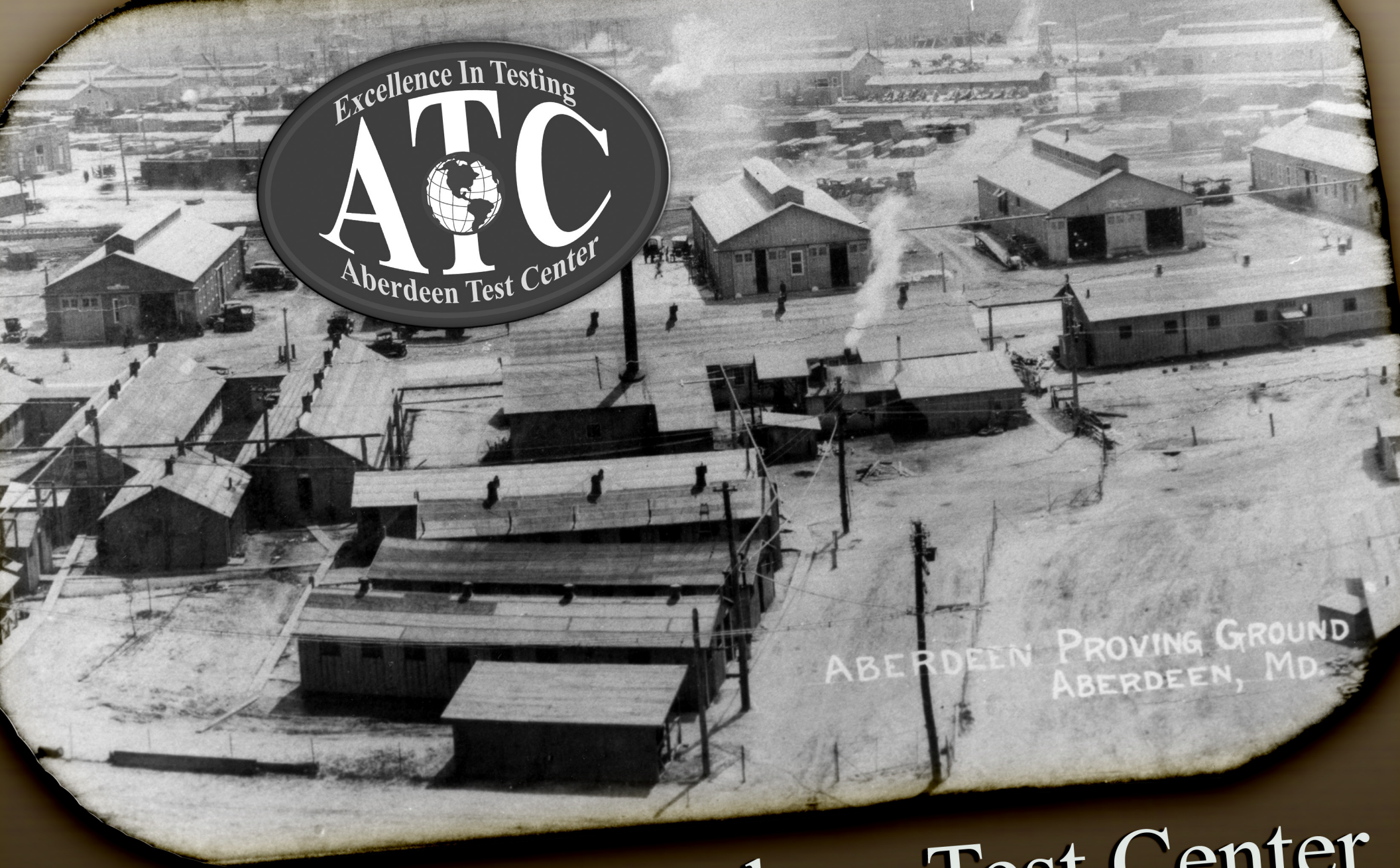
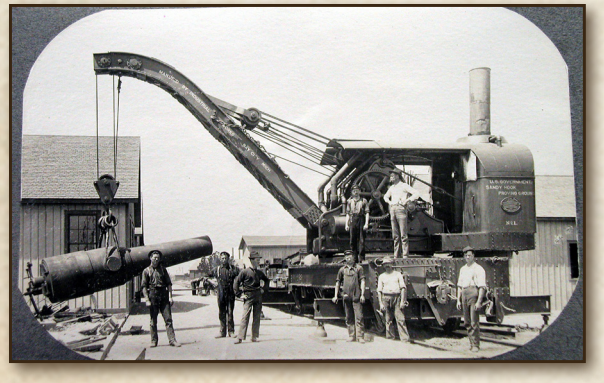


History of Aberdeen Test Center

1917-2011

Aberdeen Test Center is the premier testing facility of the United States Army: a reputation founded on the incredible work ethic and dedication of the people who work here. The astounding advances in technology, ranging from automotive and weapon development to breakthroughs in the testing process itself, demonstrate the capabilities of this great command. In the 90 plus years of ATC's service to the Department of Defense, as well as private industry, the people of ATC have always strived to provide world class, all-purpose testing to its customers. [32]



The command that we know today as Aberdeen Test Center came into existence as a result of the United States' engagement in World War I. Before 1917, all of the Army's proof testing, which was systematic testing to ensure the sound condition of munitions, was done at Sandy Hook Proving Ground, New Jersey. As wartime work and technology advanced, Sandy Hook's location and size proved to be inadequate for the Army's needs. Colonel Colden L Ruggles guided the search for a new, more ideal, location; a quest which would lead COL Ruggles to the northern Chesapeake Bay.

COL Ruggles first explored Kent Island as a possibility, but he met with great opposition from not only the local inhabitants, but the residents of Annapolis, Maryland, which was located nearby. Since Kent Island was so close to the historic and well populated city, COL Ruggles continued his investigation elsewhere.

COL Ruggles' attention was drawn farther up the Chesapeake Bay when the Aberdeen area was suggested to him by a fellow West Point graduate, the retired Major Edward V. Stockham. COL Ruggles found that the area, which was fertile farmland on the northwestern shore of the Bay, answered the Army's desires. The location of the land was convenient because it was only two hours travel to both Washington, D.C. and Philadelphia, important industrial centers. The Pennsylvania Railroad was easily accessible, assuring easy transport of materiel and personnel. The weather at Aberdeen was reported to be favorable year round, and the area was large and remote enough to permit work to go on uninterruptedly and without undue danger or disturbance to nearby communities. [29, p.3]

Following two Presidential Proclamations, one in October and one in December 1917, as well as an Act of Congress, the land came into the possession of the US Army and became known as Aberdeen Proving Ground. Construction of the proving ground began in December 1917 and the Proof Department, ATC's predecessor, began testing 2 January 1918.

Commencement of Testing: Mrs. Marion Stockham, wife of retired Major Edward Stockham, fired the first gun at Aberdeen Proving Ground on 2 January 1918. The ceremony celebrating the opening of the proving ground for testing took place in the middle of a "blinding snowstorm." Joe Sleeper, a member of the Military Police Detachment at Aberdeen Proving Ground, later recalled the events of that snowy day. He was assigned to crowd watching duty and was standing right alongside Mrs. Stockham when she pulled the gun lanyard, firing the gun. "The gun fired with a loud noise and I can remember some ladies screaming from the sidelines," he said. "The shell went down range and exploded as it was supposed to and then everybody cheered and applauded." "Joe Sleeper Arrived in '17—Spent a Lifetime at APG," 50th Anniversary APG News, Harford Democrat, 1967, 12

The harsh winter months at Aberdeen caused various dilemmas for the budding proving ground. Construction was hampered by severe weather as temperatures ranged from 0 to 15 degrees below freezing. The buildings where scientists and soldiers worked were unfinished; many times they had no floors or windows, and were unheated. This rough state also applied to the living quarters of the first soldiers and officers to reside at the proving ground. "A story widely circulated was to the effect that an officer woke one morning to find his room unusually warm; delighted at the circumstance and investigating the cause, he found that the water which he had left running during the night, had spread over the floor and had filled up the gaping cracks therein with solid ice, thus somewhat obstructing the usual chilly draughts." **4, p.10-11** *Despite those chilly first days, construction work and testing was unceasing and met all requirements as to time and accuracy. Occasionally, tests would go on for twenty-four hours and continue into Saturday and Sunday.* **37, p.175** *This reflected the urgency of the war effort, as safe, effective munitions were required for the safety and success of the Soldiers fighting overseas.*

During those first days, ammunition and gun testing were the principle functions of the proving ground. Large quantities of ammunition manufactured for the War underwent acceptance testing before being released and shipped overseas. Acceptance testing was essentially the systematic trial of standard munitions, which included arms, ammunition and vehicles, to ensure that they were not defective. Development work was also conducted and chiefly consisted of experiments with various types of fuses and igniters. Approximately 425,000 rounds of all different calibers were fired at the proving ground in 1918 (about five times more than the rounds fired during the Franco-Prussian War, which used more ammunition than any in previous history.) **37, p.190**

At the height of operations during World War I, Aberdeen Proving Ground employed about 7,500 people, 5,000 military personnel and 2,500 civilians. The number of military personnel in relation to civilians constantly shifted according to the mission of the Proving Ground and whether or not peacetime or wartime reigned. **37, p.56**

The first year of testing at Aberdeen Proving Ground produced great advances in test technology as well as weapons systems. The Aberdeen Chronograph, a velocity measuring instrument, was developed in order to improve the testing of projectiles and guns. It was first set up and successfully used on 1 March 1918. Its ability to provide accurate data was so impressive that the Army rapidly put three more instruments into use. **2, p.51**

Quote from Big Gun: *"The Proving Ground is a monster laboratory in which test tubes are replaced by gun tubes, reagents by metal and explosives. If the casual observer…had looked a little closer he would have found the scientist absorbed in his experiment as surely as though surrounded by alembics, beakers and Bunsen burners. There are the problems of gun construction, the study of stresses and strains, of screen distances and powder charges, the working out of range tables to give pause to the most scientific mind. Little do you realize, friend casual observer, the constant vigilance that is required to note at every stage of the test how gun and carriage are bearing up, what effect a new arrangement of powder bags is having or how a fuse equipped with a new "knik" is behaving. The untold number of valuable ideas which tests at APG have called forth speaks volumes for the keen, untiring devotion which the officers of the proving ground have brought to their work." SGT M. Clarke White et al. The Big Gun. Aberdeen Proving Ground, MD: Raine, 1919.*

Trench Warfare Explosion: *On 28 March 1919, one of the most alarming accidents in Aberdeen Proving Ground's history occurred. On the Trench Warfare testing range, a fire started in one of the munitions filling stations, soon followed by an explosion. The explosion was caused by molten trinitrotoluene, or TNT, being too near loaded projectiles. The explosion resulted in the complete destruction of the Trench Warfare buildings, totaling about one million dollars in damage. Thankfully, the accident occurred at 12:10 pm and most personnel were out to lunch. Thirteen employees were injured, but none seriously.*

Stephen J Martin, a native to the Aberdeen area from the days before World War I, joined the Aberdeen Proving Ground workforce on 28 March 1919, the very day of the accident. Later he recalled the incident: "I started working at the Proving Ground with a bang, in every sense of the word," he wrote in his recollections. "My first day on the job was March 28, 1919 and it was at noon of this day that the famous Trench Warfare Explosion occurred. As I recall, it was pretty windy and cold. I was working as a clerk in the commissary…and I went out to eat lunch at 12 o-clock feeling pretty happy about the new job. Everyone else went out to eat at the same time and it was for this reason that no one died in the blast. No one was close to it…I was eating in the PX restaurant which was situated just opposite where the Wind Tunnel is now. I heard a terrible explosion but figured it was an everyday occurrence here, what with the firing going on all the time. I kept eating even though a burning piece of wood fell through the tar paper ceiling of the room and landed near me. Other people began to leave, but I was young and hungry and still kept eating until I had finished my meal."

Leonard Weston, "Explosion in 1919 Caused Damage," Historic Vignette APG News, March 28, 1990.

Stephen J. Martin and PFC Marvin L. Gross. "Old-timer Remembers Tremendous Blast of 1919."

Rocket Science also developed greatly during this time. Dr. Robert Goddard, the famous physicist and inventor of the liquid-fueled rocket, conducted many tests at Aberdeen in 1918. Before his breakthrough in liquid-fuel, he worked extensively with powder propellant rocket fuel at the proving ground. Along with his colleague, Dr. Clarence Hickman, Dr. Goddard was able to create the United States' first air defense rocket prototype. The rocket weighed 12.8 pounds and was capable of a speed of 1,000 feet per second with a range of 100 yards. Dr. Goddard and Dr. Hickman successfully demonstrated this prototype a mere five days before the Armistice on 11 November 1918. As the war had ended, there was no immediate need for the newly developed rocket and the project was canceled. However, Dr. Goddard was able to return to the proving ground to work on his liquid-fueled rocket research, finally moving his project to White Sands Missile Range, New Mexico in 1923. Dr. Goddard's research at Aberdeen contributed to the later development of the Bazooka, the high profile rocket launcher of World War II. [12]

When World War I concluded, Aberdeen Proving Ground took on a peacetime mission of research and development while the facilities and capabilities of the proving ground amplified at a steady pace. Phillips Army Airfield was completed in 1923. The airfield was named in honor of Lieutenant Wendell K. Phillips who died in an aircraft accident at the new airfield that same year. LT Phillips died on 5 June 1923 when his Handley-Page bomber broke an axle and crashed on takeoff. LT Phillips was able to cut off the engine of the aircraft and avoid a fire, thereby saving all five of his passengers, though LT Phillips died from injuries soon after the accident[2, p.52]

The new Phillips Army Airfield witnessed a number of famous firsts with developments in aerial bombing. The world's first 4,000 pound bomb was dropped by Sergeant Stewart C. Smink, a bombardier who would later command the Proving Ground Squadron of the Aberdeen Air Unit as Lieutenant Colonel. Phillips Army Airfield was also the first place where dive bombing tactics were tested. Additionally, the first 75-mm aircraft cannon was fired from a B-18 aircraft piloted by Captain C. S. Thorpe on 12 October 1939.

Ordnance testing of artillery and ammunition persisted, and it was during this interwar time period that the test mission of the Proof Department expanded to include automotive testing. Vehicles, such as the Ford 6-ton tank, the Class B Liberty truck and various predecessors of the World War II Jeep, were tested at the proving ground. Construction began on an automotive test course in 1933 and vehicles were driven on its rough roads to test for endurance and speed. *An example of the successes of vehicular testing during this time was the experiments comparing caterpillar treads to wheels in 1931. Caterpillar treads, also called continuous tracks, were a propulsion system using metal plates linked together in a band driven by two or more wheels. Tests conducted at the Proof Department illustrated the caterpillar tread was clearly superior in mechanized vehicle movement because the width of the tracks distributed the weight of the vehicle better than traditional tires. As a result, new combat vehicles sported the improved tread.* [2, p.52]

From 1919 to 1940, new materials and items were brought to Aberdeen Proving Ground to be studied and proofed. Powders, projectiles, bombs, rapid fire weapons, interior and exterior ballistics, railway and seacoast artillery, tanks and tractors were all tested and developed. Even though the United States was at peace, it was important to keep the military well supplied and ready to face any new conflict.

Problems periodically arose when a test had an unforeseen effect on Aberdeen Proving Ground's environment. In 1923, bombs containing phosphorous nitrate were tested by being dropped in areas of the Upper Chesapeake Bay. Two years later, hundreds of dead waterfowl were found in the water and on shore by local sportsmen. The Maryland Conservation Commission launched an investigation, concluding that the chemicals from the bombs dropped in 1923 were the cause. The Army detailed soldiers to patrol the shores in boats, shooing away any ducks that attempted to land, as well as depositing mud and silt over the contaminated areas. **30, p.74**

Incidents such as these made Aberdeen Proving Ground more aware of the effects that proof testing and the construction of facilities had on the surrounding community and environment. In order to combat negative effects, a Civilian Conservation Corps was formed in July 1935. Several hundred men were employed to take on a number of projects to benefit the proving ground, as well as the environment. The Civilian Conservation Corps took on shore erosion work, drainage work at test courses, construction of firebreaks, the clearing of brush, poisonous weeds and shrubs, the planting of trees and the ditching of marshland. Aberdeen Proving Ground's extensive acreage became an informal reservation. Hunting was limited in the hopes that the area would become a game preserve. **4, p.21** These projects initiated the transformation of the Proving Ground from the flat treeless farmland which the Army had first purchased, to the richly wooded expanse that endures today.

Throughout the peacetime years, the personnel at Aberdeen Proving Ground were greatly reduced in comparison to the numbers during World War I. In a census taken in 1932, the number of military personnel totaled to 150, where the number of civilians was nearly three times that amount at 450. These numbers steadily increased and balanced, however, as a new threat to peace arose and the proving ground's workload began to evolve.

May 1931: *"An incident of a very different sort occurred when two local men seeking to circumvent the federally mandated prohibition laws in a wooded area just off the main post were spotted at or near their still by an Army plane which had taken off at Phillips Field. They were arrested, and their still, which had a capacity of 15,000 gallons, was confiscated." This incident took place two years before the 18th Amendment (Prohibition) was repealed. Sterling, 74*

Women in World War II: *The hundreds of women who joined the Women's Army Auxiliary Corps (WAACs) and the Women Ordnance Workers (WOWs) were also a significant part of the war effort. The WOWs moved in as the majority of the male workforce joined the Armed Forces. According to a Life Magazine Article, "The women come from everywhere. Many have husbands in the army. Others have husbands who also work at Aberdeen. They wear bright-colored slacks, and their 'firing fronts' are a rippling blend of pink, blue and orange, mixed with white and black powder from the guns." These women worked on weapons up to the 99-mm AAs and handled many highly technical instruments. WOWs drove all sorts of tracked and wheeled vehicles, swabbed, cleaned and painted guns and vehicles, served as bike messengers and were even tested as tank drivers. They loaded and filled shells and did railroad work in addition to cleaning and firing big guns.*

The Women Ordnance Workers were not without obstacles. They had to overcome the preconceived notions that women were too delicate to do the heavy labor that had previously been carried out solely by men. The Commander of APG and his staff considered a number of questions before ultimately accepting women into the APG workforce: 'Would women faint when a big gun went off?' 'Would they be nervous about handling gun powder?' 'Could women be relied upon to stick to the "recipe" and not experiment in loading a shell?' and 'Would they mind getting dirty and greasy?' Another notion that women had to overcome was the popularly held view that women shouldn't wear slacks. It took great efforts on the part of numerous celebrities and hard work by Mrs. Eleanor Roosevelt, as well as her husband President Franklin D. Roosevelt, to wear down the prejudices of the time.

The WOWs and WAACs contributed greatly to the war effort at Aberdeen, but when the war was over, Soldiers returned home to claim their jobs and women moved back into the traditional roles of wife, mother, schoolteacher, secretary and nurse and remained in those roles until the late 1960s.

"Aberdeen: Army's Oldest Largest Proving Ground," Life Magazine, February 1, 1943, 65

Leonard Weston, "History of Women at APG," June 1983, 4

War clouds in Europe signaled a new testing era for Aberdeen Proving Ground. As the nation carefully followed the events across the Atlantic, US Armed Forces stepped up defenses, creating more work for the Proof Department. President Franklin D. Roosevelt, concerned about possible US involvement in the war, visited the proving ground in October 1940 to take note of the nation's state of readiness. President Roosevelt toured a number of facilities and test programs before departing to Washington, D.C., which caused an increase in activity at the proving ground.

Results of this busy time at the Proof Department included the completion of an indoor firing range at Michaelsville, which protected testing from interfering weather conditions, and Munson Test Course in 1941. The latter was a series of rough roads constructed for testing tanks, trucks, tractors, and trailers, both wheeled and tracked. On these roads, vehicles were chiefly tested for endurance, speed and handling. The course was named after Lieutenant Max Munson, who died in 1941 when an experimental vehicle he was testing rolled over on him. These test courses, as well as the courses built later at Churchville and Perryman, were extremely helpful in advancing the development of automotive testing for the US Army.

The 7 December 1941 attack on Pearl Harbor hurled the United States into war with Japan, and soon the US was embroiled in the war in Europe as well. This heralded the expansion of the US Armed Forces, which in turn created an even more urgent need for increased activity at Aberdeen Proving Ground. Almost overnight, war production increased dramatically. This meant not only heightened testing, but also the rapid expansion of the proving ground itself. The US Government purchased 7,000 more acres of land, extending the proving ground to the very limits of the town of Aberdeen. Spesutie Island was leased for use, and later purchased completely in 1945, from the estate of the famed American financier and banker, J. P. Morgan.

This expansion was not limited to land acquisition, however; an increased workload calls for an increased staff. Personnel working on the proving ground during World War II grew to an incredible 32,664 people; 27,185 military and 5,479 civilian. These extraordinary numbers help illustrate the important mission of the Proof Department, which later grew into its own entity called the Proof Center in 1942. These employees served the war effort in every possible capacity, fully aware of the vital importance of their contribution to the American soldiers in service around the world.

The Bazooka: *The bazooka was the first man-portable anti-tank weapon, as well as the only completely original, all-American weapon of World War II. Colonel Leslie A. Skinner began developing the rocket launcher during his free time in the early 1930s. Since the nation was at peace, the project was not revisited until 1941. The development of the bazooka was kept secret, since it was such an original weapon. The main machine shop had to manufacture each round individually. It was first test fired in April 1942, and by early October the weapon was deemed ready for the battlefield. The bazooka was first used against German troops in North Africa. It was so effective that Nazi Germany rushed to develop a similar weapon: the Panzerschreck, or "tank terror."Brittain, 47*

During World War II, every type of weapon ranging from a pistol to a 16-inch gun, and numerous variants of the tank, tractor and jeep were tested, fired and driven at Aberdeen Proving Ground. The hours were long and grueling as personnel labored on tests day and night, including weekends. Between 200 and 350 test projects were usually going on at once and from five to a dozen directives for new projects were received each week. [1, p.59] This was a huge number of programs that needed evaluation and testing, and the personnel of the proving ground continued to work ceaselessly to attend to each one.

These projects underwent two basic types of testing: experimental and acceptance. Experimental testing was applied to newly designed weapons to test them in all competencies. Acceptance testing was conducted on standard weapons to ensure that they were operating properly. Noteworthy results of this testing include the standardization of many rocket items, the bazooka (the only completely original all-American weapon of World War II), the M3 submachine gun, the M8 armored car, the M12 tank destroyer and the M15 half track. Other extraordinary developments include the recoilless rifle and the VT fuze, also called a proximity fuze or "the fuze that thinks." [2, p.59] *This fuze contained a small radio which could detonate a shell, bomb or rocket when it was in the perfect position to cause the most damage to its target.* [11, p.90] *Each of these items certified that the soldiers overseas had the best weapons technology possible to accompany them in Europe, Africa and the Pacific.*

All of these accomplishments were recognized when the post received the Army-Navy "E" award for excellence in achievement in the production of war equipment on 28 September 1942. Aberdeen Proving Ground was the first Army operated plant to ever earn the award and the ceremony was witnessed by the over 30,000 military and civilian personnel who made it possible. [2, p.58] *Today, Aberdeen Test Center has continued this tradition of excellence, taken it very seriously and still applies it to every project that it undertakes.*

Dr. Edwin Hubble: *Dr. Hubble, the brilliant astronomer and namesake of the famous Hubble telescope, worked at Aberdeen Proving Ground from 1942-1945 as the Chief of the Exterior Ballistics Branch of the Ordnance Research Laboratory. He was awarded the Medal of Merit for his great works in that position. His most outstanding development while at the Ordnance Research Laboratory was the high speed clock camera. This new technology made possible the study of characteristics of bombs and low velocity projectiles in flight. Through this study, the design, performance and military effectiveness of bombs and rockets were greatly improved.*

Dr. Hubble later reflected on the weapons technology that he had witnessed at the proving ground and during World War II. In 1946, he gave a speech in Los Angeles called "The War That Must Not Happen."

"Warfare with the new weapons will be the ruin of civilization as we know it," he wrote. "The world today has become so small, so to speak, in the accessibility of all its regions that it is no longer possible for any nation to achieve safely in isolation. We are part of an organic whole, members of one body. Even if against our wishes, we must cooperate successfully in order to survive."

Aleksandr Sergeevitch Sharov and Igor Dmitrivitch Novikov, Edwin Hubble: The Discoverer of the Big Bang Universe (Cambridge University Press, 1993) 101-102

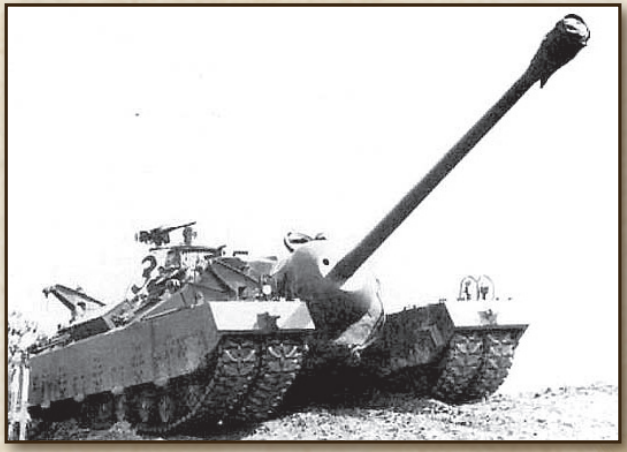
It was during these days that Aberdeen Proving Ground's Proof Department earned its colossal reputation. Through its hard work, Aberdeen had become known as a "get it done," organization. "There was an undertone, a leitmotif, beneath the main front's coughing mortars and barking guns. That undertone sounded something like the clicking of war-bound, materiel-laden freights over the joints of Aberdeen's own rails. It was a pithy, slangy slogan, and it was in the minds of all who were dedicated to Aberdeen's job and whose mission it was to inquire, to prove, to test and to develop…It went like this: "It's gotta be right…It's gotta be right…It's gotta be right. We can now say, 'It was!'" This sentiment didn't fade when peacetime came around; to get a project done quickly and to get it done right is still its highest goal.

The beginning of the end of World War II was announced with V-E, or Victory in Europe, Day on 8 May 1945. This triumph spurred the Ordnance Research and Development Center, as the proof center was called at the time, into a final push which ended on 14 August 1945 with V-J, or Victory in Japan, Day.

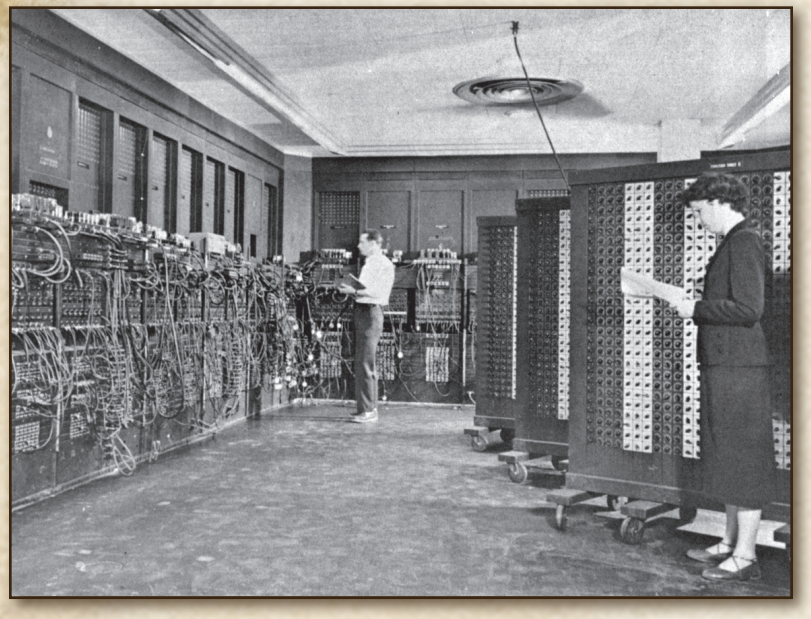
Activity at Aberdeen Proving Ground slowed significantly after the war was over, though personnel never lost their dedication to the mission. The force was reduced and the number of projects taken on by the Ordnance Research and Development Center, or ORDC, dwindled. **2, p.60** Facing a new period of peace, the organization threw itself into the task of redefining its purpose and mission.

The ORDC reorganized in 1946 into three distinct tenants: Development and Proof Services, Ballistic Research Laboratory and the Aberdeen Ordnance Depot. Development and Proof Services (D&PS) became the central hub of testing for the US Army. It carried on the Proof Department's mission, which had broadened significantly as a result of World War II's heavy workload. The Ballistic Research Laboratory separately pursued scientific development and research. D&PS covered testing of all types of materiel (with the exception of some long range rockets and communications equipment) and combined the vehicular, weapons, munitions and fire control missions to make sure the offensive and defensive potentials of every single item were thoroughly investigated. "Experiments with new weapons, ammunition and vehicles [were] a continuous operation in this unit and the sounds [could] be heard throughout the county." **2, p.62**

The United States Government wanted to streamline the military and create a modern, highly mobile Army. This meant that D&PS focused heavily on research and development. This concentration resulted in great improvements to existing equipment and the conception of many new items.



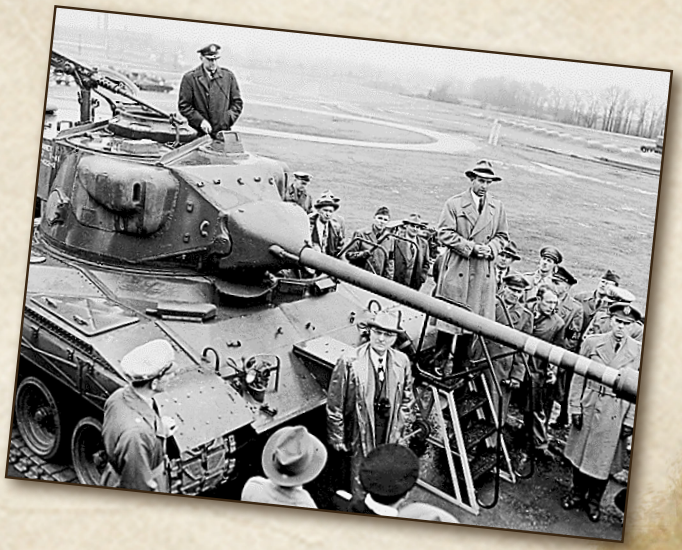
In October 1946, a few of these latest articles were unveiled to the public. A 100-ton T28 super-heavy tank armed with a 105-mm gun was uncovered, as well as fully automated Garand rifle, a 75-mm recoilless rifle fired from the shoulder, and a 75-mm and 105-mm recoilless rifles fired from lightweight tripods. The following year a 60-ton mobile dynamometer vehicle was designed to analyze the power characteristics of Army tanks and other heavy vehicles, began testing the next year. This new technology saved time and effort on the part of testers who had previously had to gather that test data manually.



The world's first digital computer was developed at APG and was completed in 1947. The Electronic Numerical Integrator and Computer, or ENIAC, weighed 30 tons, required 18,000 electronic tubes, had a 100-ft front panel, and was purportedly tended to by women in roller skates.[9, p.114] In 1948, construction on the Supersonic Wind Tunnel was completed. At the time, the machine at APG was the largest supersonic wind tunnel capable of producing an airstream that could exceed Mach Number Four, or four times the speed of sound.[11, p.69-70] *The ENIAC and the Supersonic Wind Tunnel were both significant parts of the war effort of the Ordnance Research and Development Center. Later, they became a part of the Ballistics Research Laboratories, when that organization was separated from Development and Proof Services in early 1946.*

A new road test earned ample publicity in 1948, as an entire vehicle convoy set off on a 24,000 mile road test. Dubbed "Operation Greaseball," the purpose of the test was to analyze new and improved lubricants. The test began on 2 August 1948 when the motor column departed D&PS. The convoy traversed the country, taking eight months to complete the journey. Each vehicle was tested extensively under various conditions, like the extreme heat of the Mojave Desert and the freezing cold of winter in Alaska.

In June 1950, North Korean forces invaded US supported South Korea as Cold War tensions increased by the division of Korea at the end of World War II. As the United States moved to aid South Korea against the invasion, Development and Proof Services raced to pick up the pace of testing in support of the most recent war effort. Construction projects and new developments were taken up with renewed vigor from where they left off from the end of World War II.



President Harry S. Truman visited APG on 17 February 1951 to emphasize the importance of developmental testing and proof work for the war effort. He witnessed demonstrations of a number of new mortars, jeeps and machine guns that were being tested for the war effort. The high point of the Commander-in-Chief's visit was the presentation of the brand new T41 light tank. This tank was designated the Walker Bulldog in memory of the late GEN Walton H. Walker, an Eighth Army Commander, who was killed in the Korean conflict. The T41 was the very first tank ever built around a gun, instead of an engine. It was built primarily for reconnaissance, and its 76-mm super velocity gun was automatically stabilized so that it held on the target even when the tank was pitching and rolling. *The Walker Bulldog, was on the cutting edge of tank design, and set the standard for new tanks everywhere. The Walker Bulldog and other advancements in munitions which President Truman observed were great examples of the advancements that were accomplished everyday at D&PS.*

In 1952, the first atomic artillery piece was brought to Development and Proof Services at Aberdeen for testing. This test project was cloaked in secrecy, and those scientists and technicians who worked on the test were not permitted to speak of the project outside the proving ground. Several events during this test project reminded D&PS personnel of the importance of safety while testing. The very first time the piece was fired, a part of the recoil system failed: "the gun reared, jerked, almost tore loose from its platform and the gun carriage was left in shambles." [38, p.35] *Thankfully, proper safety procedures had been followed and no one was hurt because of this accident, revealing just how important safety is, especially when working with experimental gun systems. The test had to be reworked, however, and the gun had to be repaired before the artillery piece could be fired again. Finally, four months after the first incident, the piece was fired successfully. That successful shot was not the end of the long testing process. The shell that was fired from the atomic artillery piece was highly secret, so every single shell had to be recovered after firing. "One day…a shell was fired and lost. For two days the range was closed down while all hands went in search of the erratic missile, finally locating it in marshland."* [38, p.35] *This atomic artillery piece revealed a trend in weapons development during this Cold War time period. Atomic weapons were a formidable part of many countries' arsenals. The fear and apprehension that surrounded them set a large part of the tone for Cold War conflicts.*

During the Korean Conflict, new developments were made in test technology as well. A flak tester was constructed at Development and Proof Services in 1952 to test weaknesses in aircraft. Various aircraft would be suspended in the air by cables and charges would detonate nearby. After the explosion, the plane would be inspected meticulously and any defect would be discovered and prevented in later aircraft.

Personnel at Development and Proof Services totaled 1,354 people, a number that was exceptionally smaller than the number of workers at the same organization during World War II. The ratio of military to civilian personnel was in flux, though the number of civilians remained consistently higher. World War II veterans made up a large part of the populace, and their experience and dedication to the work brought a very special dynamic to testing.

Armistice negotiations in Korea eventually led to a ceasefire in 1953. At that time, the proving ground had tested thousands of vehicles over nearly six million miles, fired over one million weapons using more than one billion rounds of ammunition, and spent over one hundred-million man hours in perfecting new weapons and equipment. APG covered 74,435 acres of land, and was valued at approximately 125 million dollars.[2, p.51] The impressive amount of work accomplished in this short time period reflects the vital importance of the proving ground's mission during the Korean War.

Tensions continued to rise during the Cold War between the United States of America and the Soviet Union. Testing at Development and Proof Services remained at a high pace throughout the late 1950s and early 1960s, while tensions also increased in Vietnam.

In order to accommodate the ever widening scope of D&PS' mission in the early 1960s, testing was split in three directions. First, Engineer Design Testing was dominated by physical measurements and observations, and human influence was minimized as much as possible. Second, Engineering Testing provided basic data for the determination of the acceptability of a newly developed item. These tests were considered highly important due to the evaluation of potentially serious design flaws. Finally, Quality Assurance Testing covered all of the work after the item was accepted as standard. Types of testing included: initial production, routine production samples, samples to verify adequacy of production changes, and tests to check materiel after storage in the field. Quality Assurance Testing took up about 50% of the proof work of D&PS. [8]

D&PS also took on a crucial secondary mission, which covered the development of proving ground instrumentation and test techniques. D&PS wanted to gain the benefits of modern technology, expand testing capability to meet new requirements, establish appropriate test conditions and standards, and improve the economy of operations. [8] This secondary mission supported the primary mission of developing and testing munitions by enhancing the testing process. By broadening testing capabilities at D&PS, the effectiveness of testing and the fulfillment of its mission were ensured.

With the expansion of the test mission, D&PS extended a number of its facilities. Munson Test Course dramatically enlarged in 1962 with an addition of 25 different test courses. New additions included longitudinal slopes up to 60% with side slopes of 40%. Roads from all over the world were reconstructed at Munson so vehicles could perform a wide-range of testing. Belgian block roads from northwest Europe and an Asiatic Burma style road were types of roads constructed at Munson Test Course. Munson earned the reputation for having the "world's worst roads." Other roads tested vehicle vibration response and frame and suspension clearances. Both uniform and staggered bump courses, hard surfaced simulations of shell holes, controlled bridging devices, and hard surfaces and gravel surfaces were included for endurance testing. Specially prepared mud, clay and marsh courses became available for limited soft soil testing. Most of these courses and areas are still in use today. All sorts of vehicles, tanks, trucks both wheeled and tracked, and tractor trailers were, and still are, tested at Munson Test Course.

The Sheridan: *"Researcher's primary responsibility remained the same—catching flaws in equipment and weaponry before they malfunctioned in the field. But the war's escalation and the onslaught of military spending sometimes overwhelmed the testing process, allowing a lemon such as the Sheridan to slip through. Despite warnings of defects from Aberdeen's testers, who gather the data but don't make the final decisions, the Army put the $1.3 billion vehicle into action. Subsequently, it suffered numerous breakdowns and was a spectacular flop at reconnaissance. During congressional hearings, a general admitted that the Army knew the Sheridan's turbocharger was so loud that it could be heard under 'quiet, tropic conditions' as far as three miles away." Kiger, 72-75*

In 1966, facilities increased in preparation for proof work on two lunar surface mobility research vehicles, or “mobility test articles.” These tests were conducted in cooperation with the National Aeronautics and Space Administration, or NASA. Later, these tests moved on to Yuma Proving Ground in Arizona.

In 1967, Aberdeen Proving Ground celebrated the 50th anniversary of its foundation. Over a 50 year period, the proving ground’s facilities had expanded enormously. Forty firing ranges were used to test small arms, mortars, artillery, mines, rockets, bombs, and armor plate. Twenty-nine courses were used for automotive testing with conditions of mud, gravel, slopes, rough road, bumps and amphibious landings. Bombs, rockets, fuzes, antiaircraft systems, and pyrotechnics were tested at Phillips Army Airfield. Eight laboratories were equipped with instrumentation to provide for research and development. All of these facilities were supported by extensive shop facilities. Over 50 years of development and proof testing had built a humble Proof Department into an organization that was flourishing.

With the Vietnam buildup, automotive and artillery testing continued around-the-clock.[20, p.8] By the end of its time in 1968, Development and Proof Services had conducted 674 tests of automotive and artillery materiel on a budget of 24 million dollars. In February of that year, the Automotive Division set an astounding record of 96,417 accumulated test miles. Incredibly, that record was broken again in March with 101,811 test miles. More than ninety vehicles of about forty different types were involved in these tests, with sixty drivers and supervisors collecting data for the engineers on trucks, truck tractors, trailers, cargo carriers, jeeps, and tanks. This effort reflected the dedication of those testers, which was not limited to the automotive department.

Also in 1968, the Development and Proof Services re-formed into the Materiel Testing Directorate, or MTD. As before, MTD’s mission was to support the Army’s arsenals and the commodity commands by performing engineering and production tests on Army Ordnance of all kinds (with the exception of large caliber rockets and missile systems) and to test and evaluate all types of materiel as assigned by the freshly organized Test and Evaluation Command, or TECOM. MTD was arranged into four branches: the Operations Branch, followed by the Supply Branch, Engineering Services, and the Engineering Measurements/ Analysis Branch.

The Materiel Test Directorate was staffed by 1,354 people, according to a census taken in 1967, just as the organization was in the process of approximately 1,200 of that number were civilian scientists, engineers, and support personnel, revealing the continued trend of a decreasing military presence on the proving ground. Veterans of previous wars brought incredible experience to their work, since they had witnessed firsthand how munitions work in the field and how Soldiers use them. They were proud of their work and realized the incredible value of the testing that they conducted, even if the Vietnam conflict that they were committed to supporting was unpopular with the public.[33]

One of the most important projects that MTD took on at this time was Automatic Data Acquisition and Processing Techniques, appropriately shortened to ADAPT. The ADAPT project consisted of the change from the analog recording of data to the digital recording and collecting of data. This change, which accompanied the development of the computer, had an outstanding impact on not only the Materiel Testing Directorate entirely, but on the world. The engineers and technicians of MTD had to adapt to an entire new thinking process in the conversion from analog to digital information. Testing became increasingly efficient as data that would have previously taken weeks to analyze and compute was compiled in one day. ADAPT allowed engineers to receive real-time automotive and artillery test data during testing at multiple test sites. This saved time and infinitely improved the testing process; because more data could be collected at once, more tests could be conducted at a greater rate of accuracy.

According to the present Technical Director, John Wallace, the analog system was less forgiving and didn't naturally comply with computing. ATC was the first test center in the US military to make this momentous change and it was a very difficult process. Digital was a completely different way of thinking and measuring, and it was difficult for many of the engineers, who were educated and experienced in the ways of analog. Mr. Wallace said, "As a test center, it was incumbent on us to collect the best quality data that we could.... What the digital world did when we went to that media, was allow us to collect more data, faster, to a higher fidelity; with more accuracy."

During the mid-1970s, the Main Battle Tank and what was to become the Bradley Fighting Vehicle, found their way to the Materiel Testing Directorate and began their long history of testing. The Jeep, which had been used exclusively throughout World War II, the Korean War and into the Vietnam War, was replaced by the High Mobility Multipurpose Wheeled Vehicle, or HMMWV, a new and more powerful type of transport. By the mid-1980s, this change was complete and the HMMWV became one of the principle transports of the US Army, with over seventeen variations. The arrival of these new vehicle systems symbolized the beginning of a new era at MTD. The modern battlefield was ever changing, and weapons technology constantly adapted to ensure the Warfighter had the most up-to-date equipment available.

***Change from analog to digital**: Digital recording and collecting of data improved testing tremendously. It allowed for things to be tested more thoroughly and more accurately, overcoming the difficulties and obstacles the engineers encountered. Present ATC Technical Director John Wallace, says, "The challenge that ATC had endured was that vast amounts of data collected needed to be moved and analyzed, which caused ATC to increase their storage capacity to overcome this challenge."*

In 1985, the Materiel Testing Directorate underwent reorganization and became the US Army Combat Systems Test Activity, or USACSTA. The mission of this command remained much the same as ever: to plan, conduct, record, and report the results of engineering, production, safety verification and Soldier operator/maintainer testing. Combat weapons, combat weapons systems, combat vehicles and other automotive equipment, ammunition components, munitions and general equipment, radioactive environment simulation, and research and development programs for test instrumentation, test methodology, and test facility performance requirements were all tested at USACSTA. The purpose of USACSTA was to test and develop Army materiel, from the Soldier's uniform to the Main Battle Tank, ensuring that the United States Soldier would have the best equipment possible on the modern battlefield. As technology became more sophisticated, Army Testing also developed to meet ever-increasing requirements for precision in assessing material performance. USACSTA was always at the forefront of that effort. **26,p.1**

As testing advanced and changed, USACSTA was forced to consider what effect these changes had on surrounding nature. USACSTA became much more environmentally aware, partially as a result of an incident in the late 1980s. Three senior Chemical Research Development and Engineering Center, or CRDEC, employees were tried and convicted on charges of not complying with federal environmental laws. **15** The USACSTA community became aware of the effects that testing could, and did have on the surrounding environment. The National Environmental Policy Act, or NEPA, which was established in 1969, started assessing all testing activities and there environmental impacts, resulting in testing becoming safer and more environmentally friendly.

In addition, programs were created to address specific areas of environmental concern. The Noise Abatement Program monitored off-post noise levels and regulated test firing to limit their effects on the surrounding community. The Chesapeake Bay Protection Program addressed the Spesutie Island Causeway Initiative, which had changed the flow of water along the coastline of Aberdeen Proving Ground and caused some channel sedimentation problems. This situation was monitored; a dredging project, and the addition of culverts were all proposed to help the sedimentation issues.

Environmental developments: *"Deer by the thousands have taken refuge in the 76,000 acres of the Aberdeen Proving Ground. Undeterred by big blasts set off around them as new weapons are tested, the animals have become a nuisance—breaking into storehouses and overrunning the roads. They are unbearably blasé, as was this four-point buck which barely bothered to make way for an onrushing tank recovery vehicle."*
"New Problem in Buck Passing," Life Magazine, December 8, 1958, 156

The Chesapeake Bay Protection Program also addressed the test firing operations which had fired into the waters of the Upper Chesapeake Bay since APG's establishment in 1917. Once ammunition was fired, it was extremely difficult to retrieve. As a result, there was quite a collection of munitions along the shoreline, especially in the area around Poole's Island. At the time, it was not a feasible option to clean up the entire shoreline; the funds just did not exist to move 70 years' worth of munitions buildup, and it would interfere with testing. The solution was to move the long-range artillery work, which required a large range which would result in water impact, to Yuma Proving Ground in Arizona.[27,p.3-9]

As a result of these and other measures, USACSTA commenced a tradition of environmental awareness and protection, which has carried out through today.

Live fire testing was one of the major developments in the early years of the US Army Combat Systems Test Activity. Live fire testing is, essentially, the realistic firing of live rounds of ammunition of all shapes and sizes on vehicles and other systems to search for vulnerabilities. This new testing process was launched into the spotlight with the controversy surrounding the Bradley Fighting Vehicle, a light and swift moving troop carrier, around 1986. This vehicle accrued a lot of scrutiny in Washington, D.C. because it was a troop carrier with a large anti-tank weapon system mounted on it. Mr. Charles Valz, Director of Survivability/Lethality, was the project leader on the Bradley Live Fire program, says, "To learn and test and understand the changes that were made in the Bradley and subsequent vehicle systems, through live fire testing. I know without a doubt this testing makes a difference in survivability in theater. I have that passion now that what we do makes a difference. Soldiers come back alive because of what we've done as a test center, and that's something I'm really proud of."

The Bald Eagle: *Aberdeen Proving Ground has become one of the most important bald eagle nesting places on the eastern seaboard, some say the most important. As the forest was allowed to reclaim the farmland, more and more of the national bird of the United States of America moved to Aberdeen Proving Ground's heavily wooded acres. "Remarkably, these creatures flourish in a wilderness dotted with toxic sites and continually jarred by explosions. The habitat had become so precious that the Army must tread carefully on its own testing ranges. Before a weapons test can be conducted, the wildlife biologists scrutinize it for potential effects. Often, screens are erected to protect the national bird from even the sight of gun crews. 'The loud noises go off and the eagles don't even flinch. But when somebody gets out of their car and slams the door, they fly away. It isn't the noise that disturbs the eagles, it's the people.'"*

An Endangered Species Protection Program was put into action in order to provide the best possible protection for the endangered bald eagle. This program, which is still carried on today, monitors eagle nesting sites and ensures that traditional habitats are undisturbed. As a result of these measures, the bald eagle population has flourished at Aberdeen Proving Ground. Kiger, 76

The Bradley Fighting Vehicle: *The Bradley came into being in 1977, and almost immediately, prototypes were sent to the Materiel Testing Directorate for testing. It was meant to be a light and swift-moving fighting vehicle which would follow the M1 Abrams Main Battle Tank into conflicts, protected by the more powerful and more heavily armored tank. However, the relatively light armor raised concern among military authorities and "drew perhaps more intense scrutiny than any piece of military equipment in US history."*

The commander of MTD, COL Ronald Hite, turned his attention exclusively to the Bradley project. A team worked ceaselessly on testing the Bradley in every conceivable way. This team worked through weekends and holidays and through all twenty-four hours of the day. Live fire tests would create authentic battle situations and fire live rounds of all sorts of weapons systems at the Bradley vehicles, searching out vulnerabilities and dangers. After these tests were conducted, the vehicles would be repaired, and in some cases rebuilt, overnight in preparation for the next round of testing.

Charles Valz, Director of Survivability/Lethality, was the project leader of this team. He remembers what they called "Houdini shots," when a vehicle was loaded up to full capacity ammunition and then fired upon, the end result being the total annihilation of the vehicle. Mr. Valz recalls three or four Houdini shots in the year of Bradley live fire, and three to four vehicles were lost completely beyond reparation. "You have to envision these vehicles fully loaded with live ammunition," he said, "just as it would be in theater, in combat. And so there were a myriad of threats we fired at the Bradley and so fairly early in the program one penetrated the vehicle and actually caused it to pretty much disappear."

He recalls a specifically horrific event: "It was an improved TOW vehicle, modified M113 vehicle and it actually had ten TOW missiles onboard as stowage items. Well, when you shoot a rocket propelled grenade into the side of the vehicle and you hit the flight motor of one of those missiles, you have a really huge blast going off. And during that event there was just a tremendous explosion and the only thing you could see on the TV monitor was smoke. As the smoke cleared, everyone's was saying, 'Where's the vehicle? Where's the vehicle?' The only thing on the pad was the engine. Parts were falling from the sky. It was just a horrendous event. A great data point, but a horrendous event."

"The best way to describe the event on the next day was, when we went up in a helicopter and we flew around the test site with a camera and it literally looked like a plane crash. The area around the pad where the vehicle was had all burned from the tremendous fireball that was there. And scattered two to three hundred yards out from the perimeter of that pad were parts and pieces of that vehicle. That's what I call a Houdini shot."

Lessons learned from the testing conducted at USACSTA resulted in numerous modifications, including heavier armor and a more powerful engine. The Bradley Fighting Vehicle became one of the most significant vehicles in the US Army; it led the way in the First Gulf War and is still used notably today.

In addition to the Bradley Fighting Vehicle, the M1 Abrams tank underwent extensive live fire and vulnerability testing. Production of an M1 main battle tank began in the late 1970s, and culminated in the M1 Abrams tank in the early 1980s. Designers and engineers working on this tank strived to fulfill the three main design areas: mobility, lethality, and survivability. They succeeded in creating a tank that was faster and more maneuverable than any before it, as well as being suitably armored for greater crew protection. The advanced turbine engine provided reliability and quieter operation than the diesel tank engines of the M60 tank series, which had preceded the Abrams. Through the arduous live fire testing at USACSTA, the M1 Abrams tank proved to be a truly formidable force, and still is on the modern battlefield. Current Technical Director John Wallace said, "It's evolved, if you will, from a very good tank, to the very best tank, both in survivability and lethality."

The First Gulf War began in August 1990 and immediately boosted the testing activity at USACSTA. It was in this conflict that the Bradley Fighting Vehicle proved its worth alongside the M1 Abrams tank. The Gulf War lasted a little less than a year, ending in February 1991, but in that short span of time, many of the weapons systems and vehicles tested at USACSTA were proved competent in theater. [14,p.4] During Operations Desert Storm and Desert Shield, testers at USACSTA could see the direct results of their hard work on the news reports coming in from the field. The media coverage of the conflict provided confirmation of the accomplishments of the workforce at home at the proving ground. Charles Valz recalls the impact of this, "I don't know of any other job, where you can work all day on something and then go home at night and see on TV where you're helping preserve life. You know, guys and girls are coming home alive because of the things you're working on. There's no greater reward then that."

USACSTA's later years saw many improvements in testing and test technology that had previously been impossible. In December 1991, the Automotive Tilt Table, a hydraulically powered platform device, was completed. This new piece of technology tilted wheeled and tracked vehicles to determine roll and pitch stability under a number of load conditions. [6,p.3] The device allowed vehicles to be tested in a shorter amount of time and in a more controlled setting. This meant that the data gathered from this test was more accurate and therefore more useful.

At Michaelsville, a covered three-hundred meter firing range was completed in March of 1992 and was very beneficial to small arms weapons testing. Previously, most small arms weapons accuracy tests were conducted outdoors. Surface winds and other adverse weather conditions caused many delays. Some tests had to be postponed for days on end until the weather improved. Not only was this frustrating, but precious time was lost. The new covered range completely negated all weather interference and was big enough (being three-hundred meters long, thirty feet high and sixty feet wide) to house a light combat vehicle for test firing. The Tilt Table and the new range saved money and provided accurate and precise testing, ensuring that USACSTA's mission was carried out efficiently and expeditiously.

On 2 June 1995, the US Army Combat Systems Test Activity became the present day Aberdeen Test Center (ATC). The name change expanded the potential of the testing activity and regained the historical link to the Proof Department of Aberdeen Proving Ground. As a principle test facility, for the Developmental Test Command (DTC), ATC, tests all military materiel as assigned by the Army Test and Evaluation Command (ATEC). The test and support facilities of ATC allow instrumented firing of weapons, automotive testing over specially engineered courses, live fire vulnerability and lethality testing, general equipment and transportability testing, and a wide variety of laboratory type investigations.

A medley of projects were taken on by ATC in those early days. During the first year of operations, one of the largest projects that the test center had ever taken on was completed. The Underwater Explosion Test Facility, also called the UNDEX or UTF, officially opened on 19 July 1995. The UNDEX facility consists of a large pond 1070 feet long by 920 feet wide by 150 feet deep and is used by the US Navy and US Army to test underwater explosives. The UNDEX was built because underwater explosives could not be set off in open water without endangering marine life. An open water testing environment has many disruptive variables that could be done away with in the new tightly controlled facility. This saved both time and money for the Navy as well at ATC, since testing could go on uninterrupted. The UNDEX test facility was a great example of the Army's and Navy's consideration of the environment.

The Accelerated Corrosion Test Facility opened on 6 January 1999 at Munson Test Area. At this facility, vehicle corrosion testing is combined with durability testing so that the interaction between corrosion and the physical stresses that act upon a vehicle can be observed. A Fire Safety Test Enclosure, nicknamed the Firebox, was opened later that year as well. In June 2001, the Bridge Crossing Simulator was officially opened to test fatigue prone areas of bridging programs. These new facilities expedited testing, allowing tests that would normally require weeks or months to take place in a much shorter time period.

After the World Trade Center attacks on 11 September 2001, the United States entered into the Global War on Terrorism and a new era in testing for Aberdeen Proving Ground. ATC's mission was to plan and conduct developmental tests (DT), and joint developmental tests/operational tests (OT), to develop test procedures, methods, and instrumentation to meet the needs of advancing technologies in support of the Army, and to provide test and training support to the joint Warfighter. ATC also took on the role of supporting the Future Combat Systems (FCS) Combined Test Organization (CTO) Node, the second largest FCS test facility in the country.

ATC took on a number of test projects and picked up the pace on others. Major combat vehicle systems, munitions, small arms, components of uniforms, tents, and even vessels used by the US Navy and Marine Corps were tested.

In Iraq and Afghanistan, US troops faced a new type of guerilla warfare, in which Improvised Explosive Devices, or IEDs, and roadside bombs were the main threat. With the pressure of getting safe and efficient equipment to the troops in theater as soon as possible came a feeling similar to the "get it done" attitude of World War II and in Vietnam. Testing needed to be done quickly, done efficiently, and done right.

New troop transportation vehicles, which would provide optimum protection against insurgent attacks, were brought to ATC for extensive testing. The Stryker Mobile Gun System arrived at ATC in late 2002. Mine Resistant Ambush Protected vehicles, or MRAPs, followed the Stryker.

In April 2004, armor vulnerability was discovered in the Stryker vehicle. The ATC team led the effort to design, fabricate and test prototype add-on armor for the tank, taking only seven days to develop the new armor concept. This was an immense undertaking. Charles Valz was a part of that effort. "I can remember I was golfing on a Sunday when I got a phone call that said, 'Hey, we need to meet at our shop, building 315, or welding machine shop because the General [Major General George Armbruster] wanted to talk to us about what we could put on the Stryker vehicles to defend against rocket propelled grenades," recalls Charles Valz. Their conclusion was that slat armor would be the most effective measure to temporarily armor the Stryker.

The prototype was so successful that slat armor was put on all variants of the Stryker, and by October all fielded Strykers were equipped with slat armor. "The neat thing about slat armor," Mr. Valz said, "is we kept getting reports back from theater that 'Hey this vehicle got six hits, this vehicle got eight hits, this vehicle got two hits, but nobody died because of the slat armor. The slat armor performed the way it was supposed to and that's what it's all about. It proved to be a very worthwhile intermediate solution…ATC should be very proud of what was done with slat armor."

The Roadway Simulator was opened on 16 April 2003 to conduct performance, safety, and durability tests on military and commercial trucks with a gross vehicle weight of up to 13 tons at speeds up to 120 miles per hour. In 2006 ATC added the Littoral Warfare Environment, or LWE. This important facility is four-hundred feet wide and four-hundred and fifty feet long, and is capable of creating waves of up to six feet tall and is able to handle underwater explosions of up to five-hundred pounds of TNT equivalent.

Both of these facilities reveal how test technology has grown in leaps and bounds over the years. ATC constantly explores the opportunities to improve testing and test technology in support of its mission. In this way, ATC carries on the tradition of excellence, which was established as soon as the first gun was fired in 1918.

Over ninety years have passed since the Army occupied the flat and fertile farmland on the northwest coast of the Chesapeake Bay. Nearly a century of changes have transformed that land from a few ranges dedicated to the firing of arms and ammunition, to a heavily wooded expanse where tests are conducted on every piece of equipment that the soldier touches. ATC's mission is constantly expanding to adapt to the needs of the modern Warfighter according to the current battlefield. The dedication and hard work of the people at ATC is steadfast and confirms Aberdeen Test Center's place as a center of excellence in testing.

QUOTE: *"If there is one thing that hasn't changed, it's the work ethic. I mentioned the World War II veterans here. They were here in an era when it was an unpopular commodity to be because of the Vietnam War. They had a very high work ethic. They knew why they were here and what they were doing. That work ethic, though, has come full through to the people that are here now, every step of the way. As you go along, people see what they're doing. People understand the value of what they're doing. People understand the criticality of what they're doing. That's to get it right for the Warfighter. The work ethic is incredible. The one thing that I am always amazed by, is that people will literally compete hard just to get to do the job. That is incredible. They want to do the work. Rarely a day goes by on this range when people are not elbowing one another to get their job onto the range and get it done. Because they understand: It's important." -John Wallace, Technical Director, ATC*

QUOTE: *Mr. John Wallace, Technical Director of ATC, acknowledges the hard work and wonderful dedication of all the employees at Aberdeen Test Center. "The dedication of the people: I cannot, cannot understate that," he continues to say that, "I don't want that to ever be understated. I want to overstate it in this regard because it is so impressive to watch people dedicated to the point that they want to see it done right. They want to see it done safe, they want to make sure that the equipment that they're putting out there is safe, they want to make sure the equipment they're putting out there is reliable and they want to make sure the equipment they're putting out there is effective. Every single person understands that."*

Thank You

I would like to thank COL Jeffrey Holt, Commander, Aberdeen Test Center, for giving me the opportunity to complete this project; members of the ATC and APG community, including Larry Birchfield, Kimberly Fillinger, Mark Gallihue, Mildred and Beth Harrison, Diana Karakos, Lisa Lonabaugh, Joe Ondek, Heather Passwater, Donna Shandle, David Strawbridge, Charles Valz, and John Wallace for their great information and enthusiasm for the history of ATC; Patricia Craten and Heather Hilton for mentoring and supporting me through the entire project; and my parents, COL Andrew and Beth Nelson, for all of their guidance.

Thanks!

Lauren E. Nelson

Lauren E Nelson

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ORDNANCE DEPARTMENT, A. P. G.
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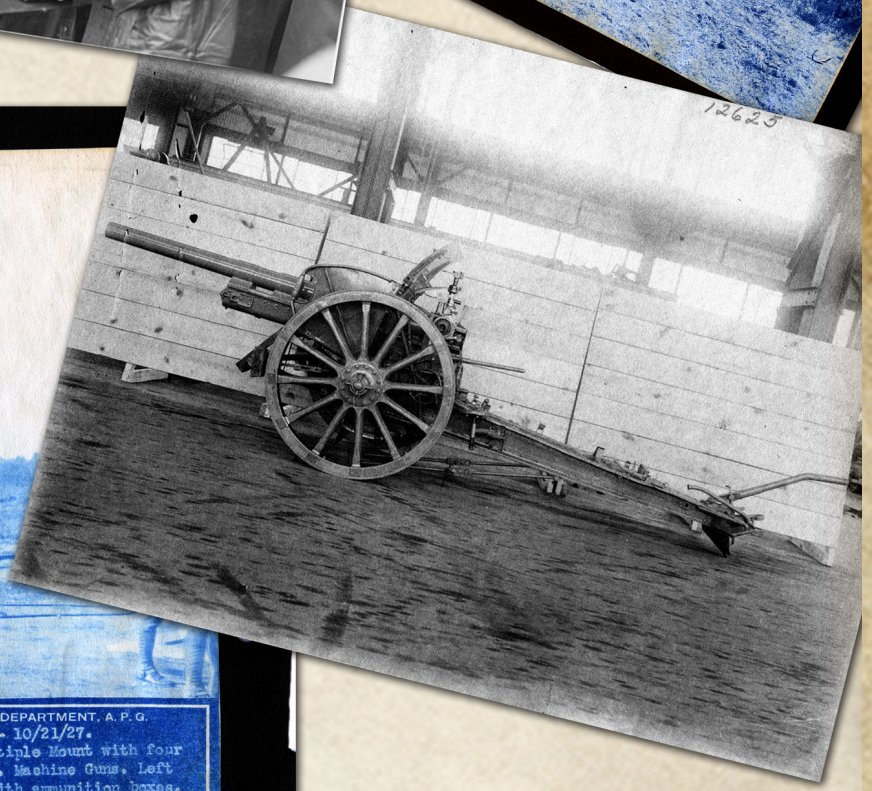
A group around the 16-inch Gun.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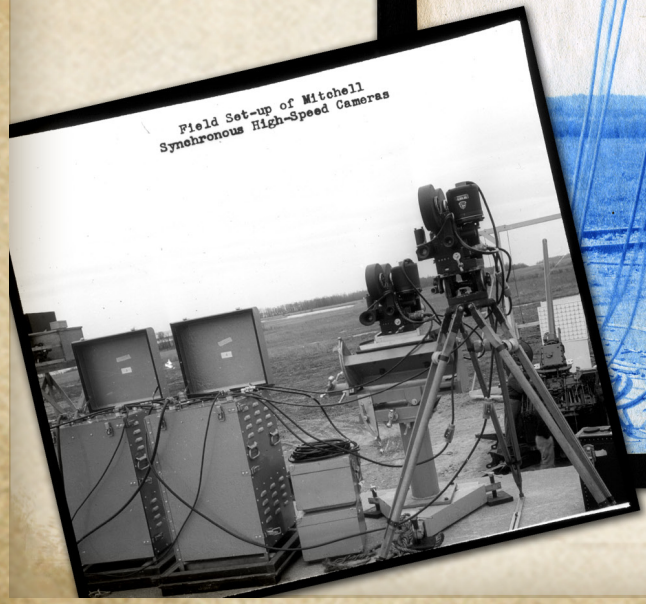
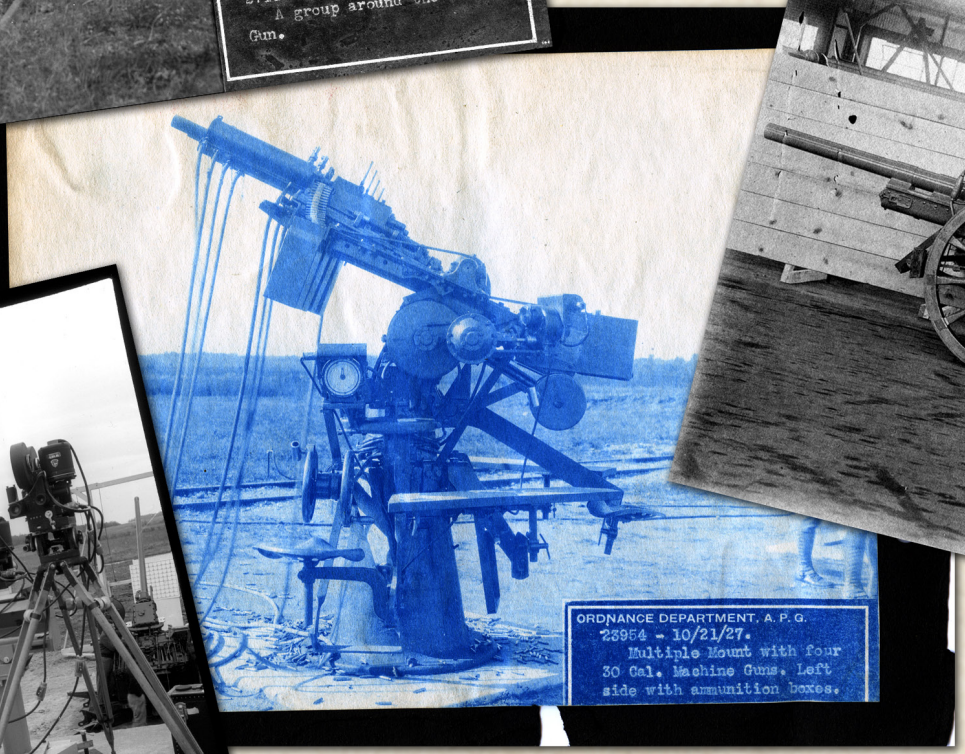

Field Set-up of Mitchell
Synchronous High-Speed Cameras


ORDNANCE DEPARTMENT, A. P. G.
23954 - 10/21/27.
Multiple Mount with four
30 Cal. Machine Guns. Left
side with ammunition boxes.


ABERDEEN PROVING GROUND
4 November 19
a14830
Project 4712. B.T.D., T1, M.M. Co. 1944. Firing at approximately 4
12387
ABERDEEN
PROVING GROUND
2
VULCAN
Gasoline-Electric Locomo-
tive, 50 ton.

U.S. Army Aberdeen Test Center
400 Colleran Road
Aberdeen Proving Ground, Maryland 21005