



## Wesley W. Myers *The Manhattan Project*

<b>Introduction</b>	<p><u>MUSIC</u></p> <p>Welcome to the Dahlgren Centennial Celebration – A Century of Innovation. We hope that this and our many other products, events and offerings will showcase what Dahlgren has accomplished during its last 100 years.</p> <p>Throughout our history, we’ve interviewed some of the most prominent minds, leaders and innovators that have been here, and we’re opening up the vault to share them with you this year.</p> <p>Today we are honored to listen to the story of Wes Meyers whose work at Dahlgren spanned from 1944 to 1974. During his tenure at Dahlgren, he was a leader in the development and engineering groups and headed the Special Projects Division from 1946 to 1956.</p> <p>Let’s listen to Mr. Myers . . .</p>
<b>Rouse</b>	<p>Could you relate the events leading up to the Manhattan Project and Dahlgren’s participation?</p>
<b>Meyers</b>	<p>Dahlgren had very little participation in the Manhattan Project. That Manhattan Project was a project undertaken by the government to determine whether or not fissionable material could be obtained to make it....That’s what they referred to them as an atomic bomb. The big problem, of course, is that once you get the normal uranium is to separate the fissionable isotope from the non-fissionable isotope and get enough of the enriched material that you can make atomic weapons. This is one of the aspects of the Manhattan Project. There were many others, but these were as divided, as I understand it now, in to the little bits and pieces scattered here and there, and very few people had the overall picture of what was going on. They knew that they were working on something super secret, but they didn’t know what the total picture was. Dahlgren had several little pieces. I think Dr. Kemper, in his paper, talks about determining ballistics, aerodynamic properties of a shape which could be dropped from an aircraft. At that same time, I was working in the Light Armor Division, and we tested peculiar little pieces of elliptically-shaped armor plate that we were told was highly secret and so forth, which I’m sure were parts of the armor plates that went around some sort of atomic device. We didn’t know that then. We just knew that we were doing something very urgent, and we couldn’t talk about it. Other than that, and there may be other pieces here and there that I didn’t know about. That’s about the extent of Dahlgren’s participation, as I understand it, in the Manhattan Project. Of course later on when they determined that they could have weapons after . . . I think that under the Manhattan Project, I</p>





think that the first atomic weapon device was built. I think that, I'm not sure about that. This was carried out to Alamogordo, New Mexico, and the device was set up on top of a 100-foot tower and tested, and it worked. This was called the Trinity Test to determine whether or not a weapon could be built from this material. I think the device used in the Trinity Test was probably built by the Manhattan Project. Once it was determined, as I understand it, that you could build fission-type weapons. Then, there was a corporation called Sandia Corporation set up in Albuquerque, and they picked it up then and took care of the weaponizing of the device. They had contracts with the University of California. Actually there were two primary laboratories built in the West then, one at Los Alamos and one at Livermore, California, which you were told when you went there were functions of the University of California, but these were the laboratories run by people like Oppenheimer and Teller. These were the real weapons building laboratories. We had several people go from here to some of those laboratories. Dr. Bradbury, who was for many years Technical Director at Los Alamos, was a Naval Reserve Officer at Dahlgren before the determination that weapons could be built. Actually, I think Dr. Bradbury left here soon after the time the first device was tested in Alamogordo and, I think, was a participant in the building of devices that were actually used in Japan. Admiral Ashworth, who was a Commander when he was at Dahlgren, was also, I think, the Chief Weaponeer on one of these. Actually, the reason why they pulled these people out at Dahlgren and took them out of there was Dahlgren was then considered as well as now to be the primary gun laboratory for the Navy. The first atomic weapon used in Japan was what they call a gun-type weapon. They needed somebody experienced in naval gunnery to help put this device together because it was essentially a gun. Actually, this is no secret, I think there are several ways atomic weapons can be built. One is to physically separate by a safe distance two subcritical masses with a fissionable material. These have to be assembled in with speed and held together for a short period of time, at least, as a critical mass of certain fission process and the atomic reaction. One of the ways to do this is just shoot one subcritical mass at the other—the gun against the target, so to speak, or a projectile against a target. Of course there has to be all sorts of safety devices with other things built into it, but this is essentially the first type of weapon—the gun type weapon where two subcritical masses were assembled into an overcritical mass and held there for sufficient number of generations of atomic fission and you could get the reaction that it would take. The other way, of course, is to take a critical mass and make a hollow sphere out of it because of the space it occupies from the hollow in the center and so forth, it spins subcritical. Then, this is assembled by being driven inward. It is called an implosion device. Instead of explosion where things go out, implosion makes things go in. A layer of explosive is placed on the outside of the hollow sphere, and of course, the big secret is to have a sufficient number of detonation points and enough symmetry in the time that you create an explosive detonation wave driving toward the center, and this has to be symmetrical, too. It drives the whole mass inward at the same moment, and they all arrive at the center, and the assembly then of this sphere in the center comes sort of critical felt some by the fresh in the incinerator by





	the explosives. Then, of course, you have a whole critical mass which will start an uncontrolled chain reaction—a chain reaction which continues until it blows itself apart.
<b>Rouse</b>	What were the differences between the “Sewer Pipe” bomb addressed at Dahlgren and the “Fat Boy?”
<b>Myers</b>	Well, as I said previously, there are two ways to achieve an atomic reaction by assembly of two subcritical masses in what they called gun-type weapons. That was what people referred to as a sewer pipe weapon. Weapons of this type were built. To the best of my knowledge, only one has ever been used, and that was first one in Japan, but the Navy, and I think the Navy is probably the only activity which has undertaken development of atomic weapons outside the Sandia Corporation and the Los Alamos and Livermore Laboratories. But the Navy in the late 40’s and early 50’s undertook the design and development of two bombs. The first one designed and developed was called the MARK 8 and the second one was an improved version of the MARK 8 called the MARK 91. These were gun-type weapons, and they were designed to penetrate the hard targets and detonate underground and things of this type. Dahlgren became the primary test and evaluation activity for the design and development of these weapons. This was done because to simulate the launching from the aircraft and get up and achieve the velocity—achieved by a bomb drop 50,000 feet in the air which was dropped at 50,000 feet. When it reached the ground, it was going pretty fast. Guns were modified so that they could accelerate these devices up to that terminal velocity that they would achieve by free-air fall. The guns had to accelerate but not exceed a certain G-load level. The G-load is loading under acceleration. This had to be held low because the bombs were not designed to really withstand high G-acceleration forces like what you get when you fir a projectile from a gun. So there were several guns that were developed that had a multitude of charges. As the device would go down the barrel, these charges would be let off relatively slow acceleration, but then you would achieve the final terminal velocity. These guns were put in the battery areas here.
<b>Meyers</b>	This was after World War II, but during the development phase of atomic weapons.
<b>Meyers</b>	Well, this was followed from the Manhattan Project, but Manhattan, of course, then, had essentially dissolved, and the AEC (Atomic Energy Commission) had taken over. But Dahlgren was the primary test and evaluation facility for these weapons because we could fire from guns, and we could set up big targets. Some of those old targets are still sitting out in the test area out there, great concrete targets. They were too expensive to dismantle after they had been built, so they’re still out there—concrete targets 30 or 40 feet thick. The old test butt where you would catch the fired projectile is still out there, too. We had to fire all that stuff in that. We couldn’t afford to lose it out in the water because it did have, in some cases, the normal uranium components. Actually, we did lose one out in the water one time. It





	<p>bounced out. We finally had a diving team come in to find it, but we got it. We had a mark on it in the river. The divers went out there, and after a few days, they found it, and brought it in. But we had fired these devices up against those targets from guns, recovered them, bring them back into the Butler Hut which is now the Mail Room which was at the time a very secretive type of operation. We had a big chain-like fence around it, and it was equipped with all sorts of securities, alarms, and so forth, so that if you actually knew what you were doing when you went in, you'd trip an alarm. Immediately, Marines from the barracks would surround the place. An investigation would be started to see what caused the alarm to go off. These were the armed marines with machine guns ready. It was sort of a spectacular operation at times. Everybody was real curious about it, but you had to have special clearances to be even in the building.</p> <p>Security wasn't too much of a problem because people were pretty well impressed with the need for security, and they were given these special clearances. When you would get the Q-clearance, which was a special clearance, (you'd get) a pretty stern lecture about what would happen if you violated security. People were really believers in those days. Things had to be secured. So far as I know, there was never a security violation of any type at Dahlgren.</p> <p>Marines were not cleared. They could only stand outside the building with their guns. Then, you would talk with a sergeant or lieutenant in charge and tell him what your problem was, but it was only a test. You'd tell him, "We were just checking to see how quickly you could get here." They really got here fast. Generally, it would not be more than a minute by the time the alarm was tripped and they had the guards around the building. Unless you had special clearances to get into the place, you were not even supposed come inside the gate out in front. It had a chain-linked fence. We had Captains here then who were officers in charge who couldn't come in the building because they didn't have the clearance to come into the building. There were other people who could not come into the building. One was the Fire Chief. He actually came to the door and knocked one day and said, "I'm coming into the building." [We said,] "What are you coming into the building for?" [He said,] "I've got to inspect the building." [He said,] "I'm the Fire Chief. I've got to know what's going on in here if this place catches on fire." He was told that his instructions were that if it caught on fire, to watch it burn and not let the fire spread. He was told nothing would blow up, but that he was not to come inside the fence, just let it burn. Those were the instructions.</p>
<b>Rouse</b>	Who were the other people involved significantly in the project?
<b>Meyers</b>	Of course, there were several naval officers, but in those days the head of departments were—well, they call them laboratories in those days. T Department Head was a naval officer. The one who was here most of the time during the Elsie Project was commander [Ben] Sarver, who later was Admiral Sarver before he





retired. The civilians involved... Well, the first division head in this Special Projects Group when it started was a man by the name of Don [L.] Winchell. He here in, I think 1953 and went out to Los Alamos with work out there. Then I took over. I was Plate Battery Division Head before he left, and then I was shifted from Plate Battery Division Head to Special Projects Division Head. As Plate Battery Division Head, I was in charge of all the tests, work, and so forth going on out in the Battery Areas on this weaponry. We spent quite a lot of time in the Butler Hut with people working these special projects. When Winchell left, I was moved into the Special Projects Division as Division Head and stayed there. Actually, we finished up the work on the MARK 91 in 1956 when the testing and evaluation were finished and the design was finalized. After 1956, then after the finalization of the MARK 91 design and winding up that project, the atomic weapons design development work at Dahlgren essentially came to an end. That was really the time when the first major reorganization of Dahlgren took place from the naval proving ground concept to the naval laboratory concept. This major reorganization took place, as I recall, in 1956, and the place was functionally reorganized, and there were several activities set up that were new to Dahlgren like the attempt to design and develop ordnance devices. After '56 after the Special Projects work sort of waned and tapered off, and when this reorganization took place, I was then made the Development Division Head in the Terminal Ballistics Laboratory. My job then was to get into the design development of naval ordnance, primarily warhead and new projectiles and things of this type. I moved into the A&P Lab, which is over in Building 152, and with headquarters there for a good many years while we made the attempts and succeeded in developing that design development capability. I think the first thing that we released out of that division was the Bullpup-A warhead. That was one of the first jobs we had, and we released that design sometime in the 1960's as I recall—it took about that long, I guess, to cranked up into this new type endeavor. So far as I know, the Bullpup-A warhead—there were two sizes of Bullpup missiles. An A-size which would carry a 250-pound warhead, and a B-size which would carry a 1000-pound warhead. These were conventional warheads, and Dahlgren developed both of these warheads, first the A and then the B. John Glancy was in my division, and he was made the project manager for Bullpup-A. He headed up the team that did this design development. The Bullpup-B project manager was Frank McCleskey. He was the team leader that developed the Bullpup-B warhead. This design was released about '62, as I recall. There were other warheads that we developed—the warhead carried by the Phoenix missile, the conventional warhead that Dahlgren designed and developed. The group that was in charge of this development was headed by Charlie Cooper. He had a lot of help from Jack Glancy on this because of Jack's previous experience in the tests. Then we designed and developed quite a number of projectiles of various types. We had a major portion in the development of the 16-in projectile that was used in Vietnam. That's when they reactivate the New Jersey. Primarily, they fired this new type of projectile we developed in the anti-personnel type which is unusual for 16-inch. Well, it was very effective to neutralize large area as far as personnel is concerned. They only had to be used a few times before they got the message. I think





	probably one of the first times they showed willingness to come to the conference table during the Vietnamese Conflict, and NEW JERSEY didn't have to stay over there too long. It was recalled and deactivated.
<b>Rouse</b>	We were talking about Admiral Parsons in the beginning. Did he make periodic visits to Dahlgren?
<b>Meyers</b>	He did. The Manhattan Project was over by then, and he was considered to be sort of in the category of a senior advisor, and his acquaintance at Dahlgren made him useful in trying to determine the future of Dahlgren. Actually, there was real talk and real serious talk of closing the Naval Weapons Laboratory, phasing it out in the late 50s after this 1956 reorganization. The next big question facing the Navy was, "Do we have any further use for Dahlgren, or should it be closed up?" This was studied very carefully both by committees not at Dahlgren and committees set up at Dahlgren. The committee set up at Dahlgren operated under the code name of Operations Bootstraps. Do we go, or do we pull ourselves out by our bootstraps and make ourselves useful and necessary to the Navy. We had a local committee. I was on it and several others. Art Jones, who retired 2 years ago, represented K Laboratory, and I represented T Laboratory, Russ Lyddane, who was then Technical Director, was on this committee. It wasn't a large committee. We just took a long look at Dahlgren on what our capabilities were and made a presentation where we showed that we could be useful to the Navy in certain ways, and the Navy then just decided that this was worthy of support, they support us and our pitch included the option that if the if the Navy though Dahlgren was no longer useful, it would be phased out and closed up, but apparently the presentation was effective enough that we showed the Navy that there was a real use for Dahlgren in its future and they decided directly then that it would not be closed up, that it would be supported. It was a major turning point in the history of this laboratory. Really, where we changed our orientation from a proof and test concept of gun firing and the armor testing that went on during the war to becoming a research and development type laboratory. Prior to this decision, about 80 percent of our money and finances and rental came from proof and test type work. About 20 percent was for research and development of various types. That soon turned around until it became almost the exact 80 or 85 percent of our work was research and development and 15 percent was firing the guns and testing. It's a vastly different place now than it was when I came in 44. As I say, this committee has something to do with the change in concept. Other people involved in the atomic type work with the atomic testing weapons was a very small group.
<b>Rouse</b>	What is a Q-clearance?
<b>Meyers</b>	Q is a code word that meant that you were cleared to engage and participate in the design development of atomic weapons if you go into laboratories like Los Alamos.





<b>Rouse</b>	It was used only for the atomic weapons?
<b>Meyers</b>	<p>That’s right. It was a special clearance. There were not too many involved in it. The design development was run out of the old Bureau of Ordnance. It was a special section set up up there which was . . .even to walk into the place, you had to have clearances. There were all sorts of security devices up there, too. At Dahlgren, there was a group that worked in the Butler Hut who access to that place. It was probably not over to 10 or 15 people .</p> <p>Out in the battery areas anybody who involved in the loading of the gun or the recovery of the test site, the gun crew had to be cleared. They only knew that they were working on something very secret. They knew that they were not supposed to discuss event the size and shape or length and diameter of whatever it was they were working with. We had some people who became curious and tried to get in, Again, the marines, you know, would come out. When we were getting ready for tests, we’d close up the area. Actually we would condition these things—the Butler Hut—temperature conditions, and we’d have to get them up to the battery in a hurry. When we went up the road, we went up the road pretty fast. I had a marine chase me all the way from Butler Hut to the test site one day and he accused me of going 50 miles an hour, and I told him it was faster than that. It was 55. It was as fast as the jeep would go. He said, “Well, I’m going to take you in.” I said, “You’re going to go right over there and go in that building and stand there and not make another peep.” Of course I got away with it because rules and regulations said when tests are underway, the person in charge had absolute authority to do whatever he considered necessary, and speed was necessary.</p>
<b>Rouse</b>	Who was the head civilian who worked on the Manhattan Project? It was headed by a naval officer, wasn’t it.
<b>Meyers</b>	The laboratory head, what is now department . . .The head of the Terminal Ballistics Laboratory had clearance and his assistant, whoever that might be. One of the assistants was a man by the name of Rubble. I think it was Commander Roy Rubble. One of the things we had to do in those days was we had to lock the safes and things of this type where we kept special projects’ material. We had to change the combinations on them periodically. Rubble came in one day and changed the combination on the safe and didn’t write it down and locked it. Then we had to get safe crackers in there to open them up.
<b>Rouse</b>	Did they have to have the right clearances, too?
<b>Meyers</b>	<p>Yes, they did. We got the safe people in to open those things. There was not a large number of people involved.</p> <p>Ordinarily, captains, when they’d come, would not have clearance; but if they</p>





	<p>wanted clearance, we could make sure they go it, so that they could come in and be briefed on what we were doing. The Captain, sitting up here, should know what's going on in his activity, but he could not be briefed until he got the clearances.</p> <p>Now, there was one incident that was interesting on this whole thing. After the MARK 91 designed was firmed up, the Navy decided that they had a lot of these old MARK 8 bombs that they were going to get rid of. At that time, we could still visualize that we would be active as a design and development activity because we had many requests to consider other designs and so forth. When they made these MARK 8 bombs surplus, they asked us if we wanted them, and we decided, "Yes, we'd take them." Those had to be shipped across the country from Albuquerque and loaded on a special train with marine guards on that train and ran all the way across country with marine guards hanging all over it. . . At that time the Dahlgren railway was still active. When the train finally pulled into Dahlgren, there were probably a half dozen cars and a couple of freight cars full of atomic bombs, cars for the marines to live on, things of that sort. That finally pulled into Dahlgren, and they parked it in the back of garage on the back track there. Of course, everyone in the area got curious about why that train was there with armed marines running around and so forth. The bombs were unloaded and taken out and put on the magazines of the magazine area.</p>
<b>Meyers</b>	<p>At that time they were classified secret-restricted data. This is more secret than secret by quite a lot, sort of like top secret, I guess. Later, I think they were declassified to secret which is a step down. Anything with secret-restricted data was guarded very carefully. Of course, you were held strictly accountable for everything. They had inspection teams from AEC who would show up periodically without warning, go through the books, go through the ledgers and weigh all the materials we had. We had to account for any type of fissionable material right down to the fraction of a gram. They would really inspect us and make sure that we were maintaining all security clearances. A lot of this material was shipped in and out of her by rail. We'd meet the train in Washington and pick up the material there from the guard who brought it through on the train. A lot of it we would take to the AEC Building in Washington and make the change there with the driver of the truck or an automobile. Some of it came in by air every once in a while. When an airplane landed over in the runway, we'd know exactly where the airplane was or pretty precisely. All the way across the country, we were involved when it took from Los Alamos, Albuquerque, and where it stops. We're notified of this when it cleared stop in Chicago for refueling or takeoff. We'd know because it was supposed to appear in the sky here and we'd go meet it. Uranium, you know, is very heavy material. We would get shipments of mostly normal uranium components but those little boxes consisted of 8" square, a foot high. Then we'd go to the plane and take some sailors along to help us load and unload these materials, and we'd tell them to pick up that little box over there and set it in the truck. It was a small box. The guys would go over and grab hold of it, and they'd think it was nailed to the floor—the most</p>







	surprised expression you ever saw! Those little boxes would weigh 100 pounds.
<b>Rouse</b>	Did you have a plan in case you were invaded?
<b>Meyers</b>	<p>We pushed a button and depended on those marines to shoot the machine guns. That's the reason why they should get there quickly.</p> <p>The plan in case of fire was try to lock file cabinets, clear the building, and let it burn. Then, of course, you'd have to bring a special team to clean up the debris or whatever is left. Just get the people out of the building. Try to secure it. Slam the doors and secure the safes and vaults, particularly if there was exposed paper like charts and drawings of components' and correspondence and all that was classified secret restricted data and try to protect that. If you can't protect it, let it burn. These instructions were very specific. Let it burn.</p>
<b>Conclusion</b>	<p>Thank you for listening to this week's Dahlgren Centennial Podcast, and hopefully you have learned another interesting aspect of what our people accomplish for the Navy and for our nation.</p> <p>We will continue sharing how Dahlgren is a one-of-a-kind location where innovation is heralded as the hallmark of each individual.</p> <p><u>PAUSE</u></p> <p>Tune in next week to hear from Walter Mason whose significant work at Dahlgren spanned from 1938 to 1974. His podcast will focus on his contribution in Public Works.</p> <p>Thank you for celebrating this century of innovation with us at Dahlgren.</p> <p><u>MUSIC</u></p>

