Text of Retirement Speech
Naval Station, Norfolk, Virginia
30 August 1968

Today I complete 35 years of active commissioned service. For me they have been satisfying years --- I have had the privilege of command ashore, in the air, and at sea. Perhaps of these, the most rewarding was that of leading a squadron of young, eager, and magnificently capable young pilots in combat.

It was my good fortune to participate in what may well be recorded as the most significant military operation in history --- the atomic bomb attack on Japan. At that time we thought, and it may well be borne out, that if we, the world, exercise wisdom, this weapon might well provide the influence that can keep major powers from fighting each other toward total destruction.

It was my privilege to command one of the most powerful and important Naval forces in the world --- our Sixth Fleet in the Mediterranean. For after all, and in spite of our trials in Southeast Asia, it is in Europe, the Atlantic, and the Middle East where the major confrontation of power between east and west exists.

Then, most importantly of all, my service in the Navy has provided me the privilege of working for, and with, some of the finest people I shall ever know.

Today closes this particular chapter of our lives for Nan and me. Tomorrow opens another. We anticipate it with eagerness and enthusiasm for many reasons, not the least of which is, that except for the first step, we have no firm idea at the moment where it will lead us.

Now I must express to the staff my appreciation for your help, your response and enthusiasm, and to pay tribute to your outstanding capabilities. You have made my almost a year and a half here one of the highlights of my career.

Finally, Admiral Holmes, I cannot conclude without stating particularly to you how much I consider it a privilege to have worked for you, truly one of the great leaders of the United States Navy.

These are my orders to inactive duty ---

To: Vice Admiral Frederick L. Ashworth, U.S. Navy, Deputy CINCLANTFLT via CINCLANTFLT

When relieved on 31 August you are detached from Duty as Deputy CINCLANTFLT and Chief of Staff to CINCLANTFLT; proceed to your home of selection. You will regard yourself relieved of all active duty effective at 2400 on date of detachment.

Your request to be transferred to the retired list was approved by the Secretary of the Navy, effective 1 September 1968. On 1 September, you will be transferred to the retired list with grade of Vice Admiral.

Signed: Charles K. Duncan, Vice Admiral, U.S. Navy, Chief of Naval Personnel.

Admiral Ephrim Holmes, Commander in Chief, U.S. Atlantic Fleet, pins on the Navy Distinguished Service Medal.

CHIEF OF NAVAL OPERATIONS

29 August 1968

Dear Dick,

As your retirement date rapidly approaches, I want to add my own best wishes for the future to those of your many friends and associates.

For over thirty years your devoted and inspired service has earned you the lasting gratitude and respect of all who have known and served with you. I congratulate you on the culmination of an outstanding career and extend my sincere appreciation for the many significant contributions you have made. From your early days in WEST VIRGINIA to your present and demanding position, it must be said that you have consistently met the myriad of demands and challenges without faltering a step. The Navy and the Nation are indeed fortunate to have had you on board.

From those of us in the Navy who stay behind on 1 September, I extend warmest wishes to you and Nan for continued good health and future happiness. Personally, I bid you smooth sailing, good luck and a long deserved "Well Done."

Sincerely,

Tom

T. H. MOORER
Admiral, U. S. Navy

Vice Admiral Frederick L. Ashworth, USN
Deputy and Chief of Staff
Commander in Chief U. S. Atlantic Fleet
Norfolk, Virginia 23511

THE SECRETARY OF THE NAVY
WASHINGTON

19 August 1968

Dear Admiral Ashworth:

At the conclusion of your eminent naval career, I would like to convey to you my sincere appreciation for your many years of dedicated service to the Navy and the Nation.

Early in your career you exhibited great promise as an outstanding naval leader which has been fulfilled throughout the years in positions of great importance. While serving as Commander, SIXTH Fleet, from May 1966 to March 1967, you were awarded the Distinguished Service Medal for exceptionally meritorious service to the United States Government. During this period of increasing world tension, you maintained the forces of the SIXTH Fleet in the Mediterranean Area in an unprecedented high state of constant vigilance and readiness through your efficient management of logistics, personnel and material resources. Additionally, you worked most effectively with the North Atlantic Treaty Organization in establishing improved relationship between the United States and the Western Arab states. Exercising the utmost in diplomacy, tact, and planning, you arranged the first visit in fourteen years of a United States warship to the United Arab Republic and also made arrangements for more frequent visits of navy vessels to Yugoslavia. These successful visits have created a most favorable image of our country and its Navy. Among your other awards are included the Legion of Merit with one Gold Star in lieu of a second award, the Distinguished Flying Cross, the Bronze Star Medal with Combat "V" and the Silver Star Medal awarded by the Department of the Army. In addition, your record is replete with commendatory letters and awards attesting to your outstanding contributions to the development and use of the first nuclear weapons and the subsequent contributions you made to our Nation's atomic energy program.

In your current assignment as Deputy Commander in Chief, United States Atlantic Fleet, you have proven yourself to be an excellent spokesman and representative for the Navy at both the national and international levels.

19 August 1968

You may take particular pride in the role you have played in the expansion of our Navy into the world's mightiest seapower. To my regrets at losing an officer of your caliber, I add my highest respect and personal best wishes for the future.

Sincerely,

Paul R. Ignatius

PAUL R. IGNATIUS
Secretary of the Navy

Vice Admiral Frederick L. Ashworth, USN
Deputy Commander in Chief
United States Atlantic Fleet
Norfolk, Virginia 23511

CHAPTER TWENTY-EIGHT

RETIREMENT
September 1968 - present (April 2001)

I was retired from the Navy on the first of September, 1968, at the age of 56, having completed more then 35 years of active commissioned service. As I have written, this was a precipitous decision. I didn't need to retire. I probably could have served until the mandatory retirement age of 62. Who knows what that might have held for me had I elected to do so? Yes, who knows? Remember Secretary Nitze's "little black book"?

It wasn't a difficult decision to make. Plainly stated, I had three stars and the rank of Vice Admiral. Circumstances were such that apparently the Navy did not see clear to promote me to Admiral with four stars. It had always been my philosophy that if I couldn't go up, I should go out.

We had not made any plans whatsoever as to retirement; where to live, or what to do. At the time it seemed as if that decision was to be made a long time forward. When we had some time off, around Christmas of 1967, we travelled to Vienna for a couple of weeks when we should have been thinking about our final plans for a place to live. But as usual, there was nothing lost by this. It was a fun trip and good to be back in Europe.

Although Mom had never been to the Seattle area, she agreed with me that Seattle might be a good place to start looking. And look we did. We ended up buying the first house that we had found, on Mercer Island. It was small, in good shape and seemed to be just what we needed.

I don't recall that there was any shock from the transition from military life to that of a civilian. I joined a local country club, Sahalee, and, more fun, I bought myself a 1969 brand-new red Porsche 912 automobile. Took some golf lessons from Mr. Paul Runyon, the professional at Sahalee but they didn't take too well, and we found that retirement was indeed fun, just as we had heard. Then the rainy season started.

From June to September, Seattle is magnificent. Everything is green, flowers are in bloom, and you can see Mount Rainier almost every day. From then on until the next spring one can count on a little, or a lot, of rain nearly every day. We began to have fond memories of Santa Fe from our previous stay at Los Alamos during the war. Maybe we should go back and see if it was as we had remembered it, warm, dry, sunny, snow in the winter time, all the things that Seattle didn't seem to have to offer. So we hooked up the Airstream and journeyed to Santa Fe.

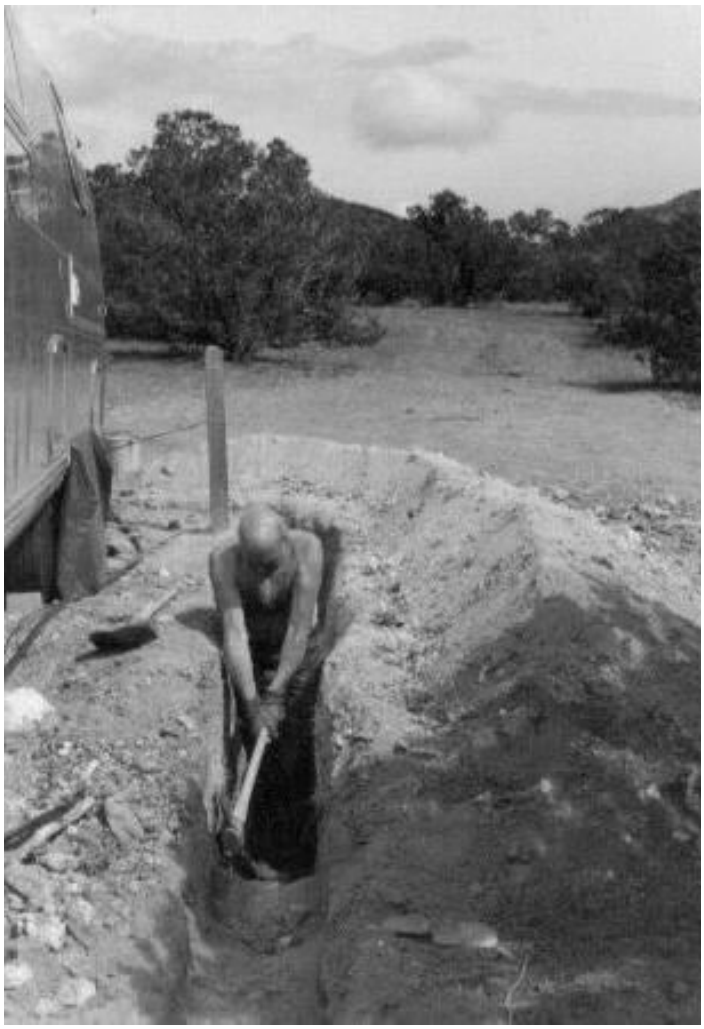
Santa Fe was about as we remembered. One day, shortly after we arrived, Mom was visiting old friends in town and I went out to "Nine Mile Road" to visit a friend from Navy Department days, Admiral Dick Mandelkorn. Before not much more than an hour later, I had toured with Dick a five-acre plot that seemed to provide an excellent building

After retirement, I attended, in San Diego, a class for training Convoy Commodores. In the event that convoys were ever to be required, we would be assigned to take command of a convoy as "Convoy Commodores".

After retirement I was asked to do a study of Naval Research and Development Laboratories for the Navy Director of Navy Laboratories. Here I am visiting the Naval Aircraft Modification Station, Johnsville, PA. One of the results of my study was to change this to a weapons research and development laboratory.

After retirement, this is a photo of the "Surface Warfare Advisory Committee" visit to the Naval Ordnance Laboratory, White Oak, Maryland.

site, met the owner, and made a deposit for the purchase of the land. I picked up Mom downtown and told her that I had just bought a lot in the south of Santa Fe.



Perhaps I was a little hasty when I turned down those high-paying consultant jobs! With the Airstream in place at the construction site, I am hard at work burying the sewer and water lines to the trailer which was to be our home for several cold months.

So, it was back to Seattle to put the house on the market and await a buyer. This didn't take long. We packed up our things, and what wasn't shipped professionally we loaded into a U-Haul trailer and headed for Santa Fe. I have forgotten now, but I guess that we had left the trailer in Santa Fe until we could make the move. How the Porsche got to Santa Fe also escapes my memory.

It was fortunate that we had the Airstream, because we moved it on the property that we had bought and used it for our living quarters, all the while designing and working with a local contractor in building our new house. It was not an elaborate house, but we designed it to meet our needs, with a two-car garage and even a car port where we could park the trailer and connect it to the septic tank system for post-trip sanitary chores.

Santa Fe had a local public golf course, not too far from our new home, and I made quite good use of it. I stumbled into a foursome consisting of me, Jack Kenney, a retired Army Brigadier General, Dr. Bill Keller, a Ph.D. in cryogenics working at Los Alamos and David McNeil who owned most of the land north of Santa Fe acquired by his wife's father, Governor Dempsey. Except for the fact that David McNeil didn't seem to be able to count beyond six and insisted always to drive the cart and frequently left me to walk from green to tee, we had many a good game together.

Jack never ceased telling me that he had no respect for the Marines. Once I asked him why. He told me that came from his experience in Korea during that war there. One day he stumbled into a Marine Corps command post and asked them if he could have a

cup of coffee. One of the Marine enlisted men just nodded to the coffee pot close by and said, "Help yourself, Colonel". Apparently that is not the way an Army Colonel expects to be treated, even under combat conditions! Jack Kenney died after a short bout with cancer. Then a year or two later David McNeil passed on. Mom and I went to the wake to pay our respects, and were met by David's eldest son. "Well", he said, "I guess Jack is gathering his foursome."

As one might expect, having spent nearly five years in Europe, the urge to go back was irresistible. We decided to "just do it" and we took off for Paris. We had made arrangements to hire a Volkswagen "bug" there, and, remarkably, it was ready on arrival. The deal was that we would pick up the car in Paris and turn it over to the agency in Lisbon, Portugal, whenever we were ready to return home. We did just that 45 days later, having travelled in France, Germany, Austria, Switzerland, Luxembourg, Liechtenstein, Italy, Greece, Spain and Portugal. We made it a leisurely journey, traveling mostly on the back roads and visiting the smaller towns rather then the major cities. We would stop on the side of the road for our lunches, usually a bottle of wine, cheese and good French bread. If we arrived in a town that looked interesting we would stop, take a hotel room, explore the area for a day or two and then move on. The fact that both Mom and I were pretty good at speaking French made such an itinerary feasible. After 45 days it was good to get home and resume the same retired routine.

That sounds as if our retired life might be a bit boring. On the contrary, we both found that there was never enough time in the day to do all the things that we wanted to do. It was, and still is, hard to say just what it was, constructive, that was accomplished during the day. Well, its the little things. I have been steadily bombarded for autographs as a result of my atom bomb experience, and find myself answering questions, and describing my experiences, all of which takes two-way correspondence. Editing the oral history, the basis for this autobiography, required a lot of time. I did attempt a "book", which was never completed, but which has helped in this preparation.

One Sunday afternoon we invited one of our neighbors to come by and join us for a martini. During the course of the visit, I was asked that, if I wasn't too busy, could I help her organize a volunteer fire department that was badly needed to protect that part of town where we lived south of Santa Fe. I agreed that I probably would have time to do it and would be glad to do so. She asked me to come by her house in a day or two, and she would show me what she had already done in getting the organizing started.

When I did call on her, she presented me with two letters, both from the State Fire Marshal, which described what was required to organize a volunteer fire department. At that point she handed me the letters and said that she appreciated my help and that she would help me in whatever way I might need. Clearly, I was on my own.

All that was needed to get started, when approved by the Fire Marshal, was the accumulation of a $10,000 worth of equipment which needed only to be such things as some rope, an axe or two, some shovels and most important, a roster of bona fide

volunteers. We had commitments for most of the stuff and a list of local residents who were willing to join the project as volunteer firemen, both male and female. After a lot of discussion among the volunteers, we named the new department "The Hondo Volunteer Fire Department". Needless to say, I was elected to be the first Chief.

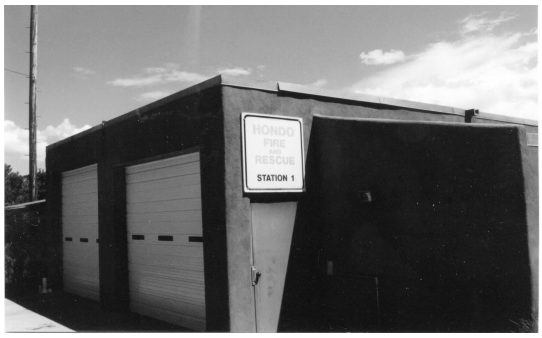
I thought that if we ever intended to be a real fire department we needed to have more than the stuff that we had earmarked. We needed a fire engine. It wasn't long before we found a used fire truck advertised in the Albuquerque newspaper for sale, price $1,250. We had no money in the treasury at this time, so I went to the First National Bank in Santa Fe, and arranged to borrow $1,250. We bought the truck and brought it to Santa Fe. Obviously we had no place to store it, but we were offered space in a large horse barn in Arroyo Hondo, nearby. This uneducated move got us into a bit of trouble because the Fire Marshal came down on me because we had not followed the state purchasing laws and procedures requiring advertising for bids and the like. We had a legal advisor who was also the legal advisor for the State Police, and his advice was to forget it, it would all pass over, which it did.

By this time we had sent most of our volunteers to Las Cruces for training at the State-run fire protection school. Now we were in business with our new, old fire truck. I recall that during one early winter cold spell we were called to assist the Santa Fe Fire Department fight a fire in their district of responsibility. When we arrived with our equipment ready for work, we found that the truck pumping equipment was frozen solid. There was no heat in the horse barn. From then on the Hondo Volunteer Fire Department was known as "The Popsicle Fire Department".

However, in any event, we were organized, had a fire truck of sorts, and it was time to expand. I located a piece of property in our area of jurisdiction that belonged to a major real estate company in Albuquerque. I approached the owner, who happened to be the State Lieutenant Governor, with the idea that he might donate to us the piece of property where we could build a fire station, with the proviso that if the land was ever not to be used for a fire station the land would revert to the original owner. We arranged to obtain a grant of Federal money in the amount of $20,000 with which we would build our fire station using the volunteers to provide the labor.

As a result of an article in the *Santa Fe New Mexican* about our struggles as a rising fire department, one of our members learned from relatives living in Long Island, New York, that their local volunteer fire department, well established from being in existence from the 1700s, threw away more than enough fire protection clothing every year to meet our needs for a long time. All we needed to do was to ask for it. Further, they had a used fire truck pumper that they would be willing to sell to us. They first talked about a price of $99.00, but their Board of County Commissioners wouldn't let it go for less than $999.00 provided that we send a driver to drive it back to Santa Fe. I found in the store yard of the local National Guard Armory a couple of Army 4x4 trucks. Two should provide enough parts to make one operational truck. There also were some

large aluminum tanks which could be mounted on the one good truck. So we had a water tanker to add to our equipment, quite a necessary item because fire hydrants had not been installed in the rural areas south of town.



Now we had an approved fire department, two pumpers and a tanker, a station to put them in and about 20 volunteers trained in the State fire school. All together it represented perhaps $250,000 worth of land and equipment. To top it off, the new fire station was named after me, "The Admiral Ashworth Fire Station."

I took on the job of writing the by-laws for the department. Among others things, I wrote that the retirement age for the fire fighters would be 65. It wasn't just coincidental that I was just about to reach that age, and I retired from the department.

It has been gratifying to watch the department grow to three fire stations with fire trucks for each, a tanker, a rescue crew of trained and qualified Emergency Medical Technicians and a rescue truck. One of our best truck drivers who managed the square-cut transmission gears in our oldest pumper better than most of the men, has since been trained for and is qualified as a Registered Nurse. All in all it was a great experience.

New Mexico and the Southwest was a grand place to have a Porsche, and we took maximum advantage of it as we toured the area. It wasn't long before there were about 90,000 miles on the odometer. It was about then that I learned from a Porsche automobile publication that it was not a matter of if, but when, after about 90,000 miles, the engine crank shaft would break from fatigue failure. It had been my custom, when in the open country, to drive the car at about 95 miles per hour for hours on end. That is what Porsches are made for. But the warning about crankshaft failure convinced me that I should have it done, or try myself, to install a new crankshaft in the engine to avoid that disaster. The big two-car garage that we had built on our new home in Santa Fe should be just right as a shop for the purpose. I decided to give it a try.

It took about three months of study of an overhaul manual to give me enough courage to start the overhaul of the engine. I bought some metric measuring instruments to check bearing clearances and the like, and the metric tools that I would need. I decided, while I was at it, I should go the whole way and give the engine a complete overhaul; new pistons and connecting rods, new cylinders, new valves, a new oil pump,

carburetors and about every moving part that I could identify and get replacements for. I built a dolly out of two by fours, on casters, which would fit under the car after I had hoisted the rear end as high as I could and had disconnected all control cables and the engine retaining nuts and bolts. This was possible because the Porsche was a rear-engine drive car. Hopefully the engine would rest on the dolly and be clear to roll out from under the chassis. I had purchased a fixture that I mounted on the bench on which the engine would be mounted so that I could have all the access to it I needed. Then from a catalog I ordered all the new parts that I would need.

I had decided that I would do the best job that I could, and part of that would be to see that all the moving parts were in good dynamic balance. I found a shop in Albuquerque that was equipped to do that work. I gave them the new crankshaft and the connecting rods to test for balance. Some adjustment had to be made to the connecting rods, and the crankshaft, surprisingly, checked out perfectly. I was ready to start the overhaul.

Everything started to go together nicely until I tried to install the crankshaft. I found that the supplier had sent me a shaft for a 356 Porsche and not one for my 912 engine, and one of the main bearing journals would not fit properly into the crankcase of my engine. The shaft had to go back to the supplier for exchange.

When the new one came, of course I checked to see that it would fit properly. By this time I was getting a bit impatient, and since the first crankshaft checked out to be in perfect balance I decided that I could chance it that the new one would also be in balance. So from there the reassembly progressed with out any problems and the engine was ready to re-install into the car and be tested.

The installation of the engine into the chassis turned out to be as easy as the removal, and the great day came to take the car out for a test run. Everything operated very nicely except that at fairly high engine speeds I thought that I detected what appeared to be a minor dynamic vibration in the engine. After all the trouble that I had gone through to balance all the parts to avoid just such a thing I believed that maybe I should have checked the new shaft for balance as I had done for the first. It was a tough decision to make, but I decided that having gone this far for perfection I should have the new shaft checked. This required completely disassembling the engine to remove the shaft to send to the balancing shop. Not surprisingly, the shaft showed, under test, to be in perfect balance. The vibration, if there really was one, must have come from somewhere else. I have no idea of the number of man hours of labor this all required, but what difference did it make, I was retired!

Nine Mile Road was about nine miles from downtown Santa Fe. While it had been a good place for us to live at the time, as we were growing older, we thought that it was about time to move closer in to the center of town where we might be able to find housing. We made one false move by buying property on the north side of town which, for one reason or another, turned out to be a mistake. Then we found a new development

going up on the road to the ski area, about a mile from downtown. We made our down payment for purchase and watched it being built, from afar. Of course, we had to sell the place in the country first. As it frequently does when you least expect it or even not want it to, the first person who looked at our home on Nine Mile Road bought it and wanted it immediately.

So there we were, about to be moved out and with nowhere to go since our new home was not yet finished, and going very slowly. We were lucky to find a small apartment north of downtown that we could live in during the interim, with most of our things placed in temporary storage.

It was about this time that I was beginning to have rhythm problems with my heartbeat. The New Mexico Heart Institute in Albuquerque was my point of contact in attempting to diagnose exactly what was going on. I had been prescribed some medication and told to come back in a month and be checked as to its effect on my problem. That would have been a Monday, a month later. That Sunday night, before my appointment to report on the medication effects, I experienced some pain in my chest and some tingling pain in my left arm. It was late, but I awoke Mom and told her that we had better get to the local hospital emergency room. There they put me on oxygen and took an electro-cardiogram. I was told that if the results of that test resembled what they might have on file in my record, then I could go home. At about 2:30 in the morning I was released from the emergency room.

That morning we went to the Heart Institute for my long scheduled appointment. I reported to the cardiologist about the effects of the medication on the rhythm problem, which were nil, and then told the doctor about the incident of chest pain the night before. I was immediately given an angiogram which revealed heart artery blockage in three arteries, one as much as 75% blocked. The others blocked about 25%. With that I was admitted to Presbyterian Hospital and scheduled for triple heart by-pass surgery.

Recovery from the surgery went about as advertised and, in accordance with the cardiologist's instructions, I started a walking program. It was no problem walking a mile or so, which I did, on a regular basis daily.

Finally our new house in the development known as "Twelve Hundred East" was completed, and we were able to move in. This was located about a half mile up the ski basin road, which made it ideal for my rehabilitation walking program. If I were to walk to the top of the hill, about to the "Ten Thousand Waves" Japanese "hotsi bath" spa, and return, I would have completed five and a half miles. All told, I walked a total of about 2,500 miles in this program, just what was needed to get my heart back in good operation.

It has often been said that when couples retire after a long and active life, the marriage suffers from lack of outside interest and action, and the real basis for the marriage is severely tested. It probably is the case that if this occurs, the partners may have forgotten their vows "to love and to hold until---".

Family photo taken in front of our new home in "Twelve Hundred East". The occasion was our 50th wedding anniversary, June 1985. Left to Right: Dave, me, Nan, Steve, and Rick.

I don't know whether or not this explains the fact that I found that Mom and I were slowly drifting apart. Somehow it seemed that we had let love fall by the wayside. Perhaps love had never really been infused into our lives together in the first place. I readily admit that I was never sure what love is all about. Surely there was little enough in my family as my brothers and I were growing up. Not that there was no love there; it was just one of those things that you never made evident; it was just not necessary. There was good evidence that Mom's extended family was missing much that should have been binding them together rather than driving them apart.

For whatever reason, I decided that our marriage was close to ending and that we both were unhappy the way things were. We were granted an uncontested divorce on March 2, 1990. I am sure that Mom was shocked when it came to her, full circle, that this was happening.

We had gained many friends during our life in Santa Fe, even though, unfortunately, Mom had a way of alienating some of our friends, not any one especially, but when, for some reason known only to her, it just happened. I had seen it while we were active in the Navy, and more often than not, those who were "given the treatment" were some who admired and liked her the most. I have no explanation for it, that's just the way it was.

Among our many friends that we had known for 20 years or more in Santa Fe, were Dr. Don and Ercie Bell. I admired Ercie, and I realize now that I had loved her in my own way, from a distance, for most of this time. Then, suddenly, in January 1982, Don passed away as a result of a major heart ailment. For reasons that should be clear, Mom refused to make a courtesy call on Ercie so that we could extend to her our sympathy in the loss of her husband. Several weeks passed, and I decided to do what we should have done before. I visited her to tell her that I was sorry about her loss. When I left, I asked Ercie if I could see her again.

Ercie and I were married on May 15, 1990 in Prescott, Arizona in the Methodist church where Judy and Murray, Ercie's daughter and husband attended. I was delighted that all three of you stood with me for that ceremony.

It was from that time, when I shared my life with Ercie, I learned for the first time what it was like to love and to be loved. Ercie taught me that love between two people is nurtured and grows as that love is shared. Without sharing, and a knowledge that the love is indeed being shared, love dies. She taught me that you do that with three simple words that must never be neglected and that come from the heart, "I love you".

Our life together has been a joy for both of us, and we have been happy. That is not to say that there have never been occasions where misunderstandings have reared their heads, mostly misunderstandings that I have caused. Sometimes, not surprisingly, I was not as good a learner as I might have been. After all, much of the way we lived our life together was a new experience for me. But I am learning. Hopefully, I am learning too, that there is a need for that love to show and thrive in my relations with you boys.

The Otero House we occupied in Santa Fe.

I also have learned from Ercie that one's happiness will also thrive when you get outside of yourself, so to speak, and join the world and the people around you. We find that more than just our personal friends, the waiters and waitresses in places where we try to go to eat as frequently as possible, and the bank tellers and clerks in stores become friends as well, of a different sort, of course, but still friends. We need that personal relationship with that world outside our own small world.

Most important of all, I think, for the stability of our lives together, I have tried to share Ercie's deep and uncomplicated belief and faith in God and to make witness to that belief myself as we attend church together regularly and live the life that this entails.

After Ercie and I were married we moved in together in the home that she and her husband had rented some years earlier. It was a genuine Santa Fe adobe home in a compound with nine other buildings. Our home as well as the others, had been designed and the construction supervised by the wife of a past Territorial Governor of New Mexico. Miguel Otero. She was Katherine Stinson of the Stinson aircraft family. They had met when she was in Santa Fe under treatment for tuberculosis. She became acquainted with an adobe home architect and became so engrossed in the art that she took on the design and construction of all the homes in the compound. We lived in the home that had been occupied by Governor Otero.

As Santa Fe grew from a small town of some 9,000 or 10,000 to around 90,000 people, with all that goes with that growth, we felt the need to find more peaceful surroundings. Santa Fe was originally laid out for ox-cart and wagon travel and those trails had become the main arteries of traffic in the modern Santa Fe. Automobile traffic became unbearable and, as it happens with most growing cities these days, crime abounded. We had been renting our home in the compound, and when the current landlord raised the rent with periodic raises to come, we decided that it would not be to

Lincoln, New Mexico Post Office cancelation stamp.
At right: Lincoln Post Office (town center)

<u>Middle photo</u>: Main Street, Lincoln, New Mexico
<u>Above</u>: Here we are in the front of our Lincoln home. Looks, on the outside, much as Billy the Kid might remember it. The inside was extensively remodeled to suit our lifestyle.
<u>Above right</u>: The back of the house with the second house behind. This second house was used as a guest house, my office, and the garage.

our advantage economically to stay there.

These are happy times. 1995 photo taken at the First Presbyterian Church, Ruidosa, NM.

In1994, we closed out everything in Santa Fe and moved to the small village of Lincoln, in southern New Mexico. After renting for a couple of years, we found some desirable property to purchase in town and spent the next seven months remodeling the house and garage into its present condition. It is just right for us.

We haven't forgotten that there is more to life than just being happy together. We have found that we share the fun of travel. Europe is our favorite destination. We have visited Rome and the Italian country side. We shared one Christmas Eve at mass in the Notre Dame cathedral in Paris. A trip to Russia, visiting Moscow and Saint Petersburg was an especially worthwhile journey. And, we have found that with a few trips into Death Valley, that has become our favorite destination here.

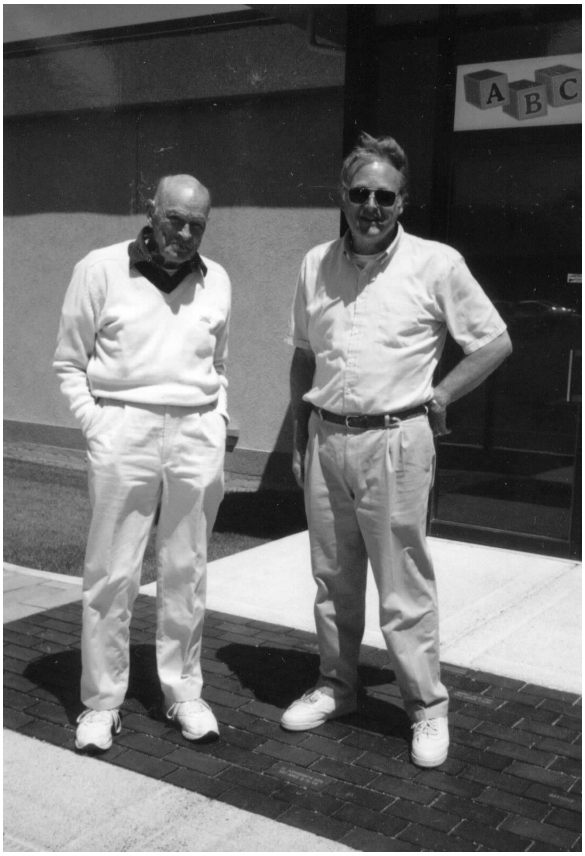
Ercie has maintained her good health during these years together, with only the usual small ailments of Cholesterol and some blood pressure variations. My life has not been quite so trouble free. It goes with the territory, age, I presume. For the past few years, as I have read the obituary news in the Naval Academy Alumni Association magazine, *Shipmate*, I began to notice more and more casualties from ruptured abdominal aneurisms. This bothered me, for as long as I was able to remember, I had noticed the existence of a "lump" in my abdomen which seemed to be getting larger, and it was a perfect place to feel the pulse of the heart beat. It was identified by the cardiologist as an aortic aneurism. We had this measured by ultrasound for several years and noted that it was growing larger. Finally, when it measured about six and a half centimeters it was deemed time to have it repaired before it might rupture with catastrophic results. The surgery didn't turn out to be child's play exactly, but the operation was successful. The post-surgery recovery wasn't going too well when I became anemic, which totally sapped what strength I had left. Some iron pills and B-12 vitamin shots quickly pulled me out of

Many years ago, when I sold my Porsche, I bought my first Honda and have not yet switched. Here we are having just purchased our latest Honda, a 1998 Accord, Tudor, V-6.

that situation and my recovery went fast after that.

During this abdominal surgery the contents get rather rude treatment as things are put back where they belong. It was from this, apparently, that, a couple of years later, I experienced a blockage of the small intestine. There were adhesions and overlaps that were causing the trouble. After tests to determine why and just where the blockage was, surgery was indicated, and 17 days later I was released from the hospital. This recovery has gone well and I have to report that I have rarely felt better than I do right now.

Our stay here in Lincoln has been enjoyable and worthwhile. However as time went by we found that places where we could enjoy eating out, which we tried to do as often as possible, began to dry up. "The Silver Dollar" in Tinnie changed hands. "Mom's" small eating place in Capitan where we could find wholesome home-cooked like meals closed. "Mom" just got tired. The Inn of the Mountain Gods close to Ruidoso was still there, and we thought that it was the best "deal" around, and even if it was a 40 mile drive to get there it was our favorite place to go. Then the "Burrito Express", our source of Mexican fare, priced themselves out of business and it folded. Each trip by automobile was never shorter than 35 miles or so.



Rick, Dave, and Steve honored me with the purchase of a commemorative brick which is placed at the front door of the Columbia River Exhibition of History, Science & Technology in Richland, Washington. It was in Richland at the Hanford Atomic Energy Commission site that the Plutonium was made for the Nagasaki bomb. Here I am with Rick having been shown the brick for the first time. The brick is engraved as follows:
FL ASHWORTH, USN
FAT MAN 8/9/45

Our small, about-one-acre lot that we had brought up to our standards of landscaping, seemed to get larger and more onerous to keep the weeds cut down and the lawns mowed. And as the years piled up we began to feel that we had become slaves to the place. You boys kept telling us "find a young Mexican" who can help, but strangely, even here in Southeast New Mexico it seems that no one wants to work like that. Yes, we want to work, "but not that hard."

When we moved to Lincoln we maintained our medical and dental services in Albuquerque and Santa Fe, so at least each quarter it was 180 miles to Albuquerque or a couple of hundred to Santa Fe for medical and dental checks.

On the plus side we now had a significant capital asset in our paid-up home.

One day we were asked if our home might be on the market. "No, it is not", was the answer, but the query stirred up our thought processes. Maybe it should be. Now might be the time to leave this country location and get back to civilization, but where to go?

There seemed to be only one place that made sense for us to go, back to Santa Fe.

Our new home in Santa Fe

We still had friends there, we were familiar with the town, our medical and dental services were close by and yes, there were any number of restaurants available from which to choose each day. All we would need would be to find a place close enough to the center of activity for us to be able to walk there. So our home here in Lincoln went "on the market", and the search in Santa Fe began, ably assisted by an old friend whom we had known earlier.

As is our customary habit, nearly the first place that we looked at turned out to be just what we wanted. Less that a half mile from the center of town, almost new, a unit in a ten-unit condominium. Ah, no more lawn work, no more long trips to the eating places, a secure place in a convenient location. We closed on the place on the 20th of September, this year (2000).

And now here we are still in Lincoln waiting for someone to come along who wants to live here and decides that ours is exactly what they need. We know that it will probably be some time for this to happen so we keep things picked up and await the realtor with a hot prospect in tow. We have no problem with leaving the condominium in Santa Fe vacant. It has been vacant for some time now and is in an enclosed area with its nine sisters. It is known as the "Diez Senoras de Santa Fe."

So, our life together goes on for us happily and with meaning for both of us. Now, Rick, I think that you are going to have to write the last paragraph of this my story of my life in the United States Navy and my life for these many years since .

OK Ercie, let's go raise some hell!

(Dave, the family biker, gave this photo to me and I just couldn't help myself.....guess the "editor" can do things such as this.....Rick

THE FINAL CHAPTER

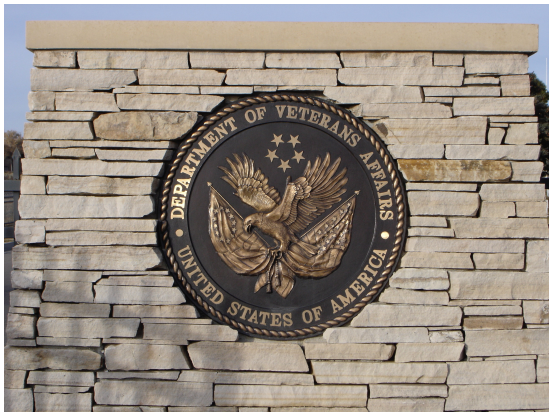
Frederick Lincoln Ashworth
January 24, 1912 - December 3, 2005

The last sentence in Chapter 28 reads: "Now, Rick, I think that you are going to have to write the last paragraph of this my story of my life in the United States Navy and my life for these many years since". For three years after Dad's passing, I struggled to write this last chapter and each time I was not satisfied. Then, exactly three years to the day of his passing, these words came to me.

Rick
December 3, 2008

In the fall of 2005, Dad strangely began to lose his voice; words coming only with a forced exhale of breath. For a person of his vitality and need to continue to communicate with the world, this was something not to be taken lightly. A series of many tests and false leads finally located the problem: his old nemesis: the aortic artery. Years ago he had an abdominal aortic aneurysm repaired, and now it was the thoracic aorta that had grown dangerously large and was somehow applying pressure on his vocal chords. An aortic aneurysm is a ticking time bomb; it can go at any time, anywhere, and go very fast. Yes, he was wanting his voice back, but most of all his concern was the possibility of causing harm to an innocent bystander that pushed him to act. His age made surgery very risky, but he chose to go ahead. The repair to the aorta was successful, but post-surgical complications (Dave and I think negligence) developed, and he was unable to recover. A very difficult death followed on December 3, 2005.

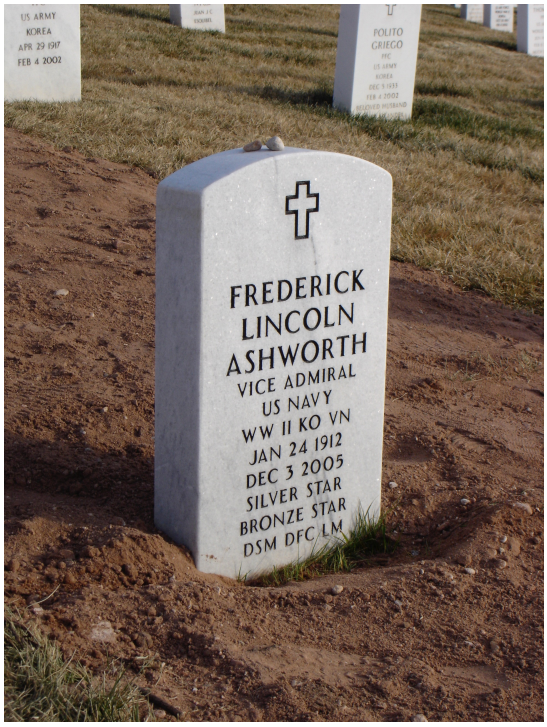
In his will, Dad expressed the desire to be buried at the Naval Academy; this did not come to pass. His and Ercie's estate was controlled by a living trust which relegated the will to insignificant details. Through a series of events that need not be remembered, Steve, Dave and I lost control in the decision-making. The wish for burial at the Naval Academy was not heard. On December 8, 2005 Dad was buried with full military honors at the Santa Fe National Cemetery. An Air Force Honor Guard fired the last salute as he was attended to by eight Navy sailors and a Navy Chaplain who performed a short and very Navy ceremony punctuated by the



playing of the Navy Hymn.

Ercie has retreated into a world of her own and is living in a superb Alzheimer's unit in Santa Fe where she is receiving the best possible care just as Dad would have wanted.

Some philosophers tell us, when we dare to think we make a lasting impression in the world, to put our hand into a bucket of water and watch what happens when we withdraw that hand. Well, from where I sit, the bucket I see just might surprise these philosophers.



Santa Fe National Cemetery
Section 5, Grave 331E

APPENDIX A

CONGRESSIONAL RECORD - APPENDIX
February 24, 1966

Vice Adm. F.L. Ashworth Is Acclaimed as an Example for American Youth

———

EXTENSION OF REMARKS
of
HON. WILLIAM H. BATES
OF MASSACHUSETTS
IN THE HOUSE OF REPRESENTATIVES
Thursday, February 24, 1966

Mr. BATES. Mr. Speaker, almost coincident with his 54th birthday last month, announcement was made that Vice Adm. Frederick Lincoln Ashworth had been named commander of the U.S. Navy's mighty 6th Fleet. This event lead the Beverly Times, of Beverly, Mass., to acclaim this naval leader's service to our country as an example which today's American youth well might follow. In the hope that it may inspire others, therefore, I am pleased to present the editorial from the Beverly Times of February 1, 1966, as follows:

A Real Hero

It is always an honor to a community when one of its sons or daughters achieves unusual distinction. Such is the case with Beverly and Frederick Lincoln Ashworth, recently named a vice admiral and given command of the U.S. Navy's 6th Fleet, mainstay of our defense in the Mediterranean and Middle East.

Admiral Ashworth whose mother lives in Wenham, which, incidently, he also lists as his home address, was born in Beverly on January 24, 1912. His career has been adventurous and distinctive. It is a story which makes fascinating reading even in the today's make-believe world of James Bond, the Man From U.N.C.L.E., and the Batman.

But Frederick Ashworth's accomplishments are fact not fiction. And they set a pattern of old-fashioned virtues, such as loyalty, bravery, and patriotism, which are too frequently overlooked or ignored by 20th century youngsters.

In high school, as president of the student council, he began to set the high standards which carried him through life. He graduated from the Naval Academy in 1933 at the age of 21 and as a junior officer served aboard a battleship, but soon transferred to Pensacola for flight training.

On December 7, 1941, when Pearl Harbor was attacked by the Japanese, he was attached to the Bureau of Ordinance in Washington. A few months later orders came through for transfer to an advanced carrier training group and finally in 1942 he took command of his own aerial torpedo squadron.

Operating out of Henderson Field on Guadalcanal, he won his first decoration - the Distinguished Flying Cross. His job was a dirty one. It took leadership and old-fashioned guts. Daylight raids on Japanese shipping in the Solomon Islands. Bombing missions against enemy positions and always the dangers of hostile fighter aircraft.

For canny planning in helping direct several key amphibious operations the Bronze Star was next.

Then came a turning point in his life. He was assigned to a supersecret mission in Santa Fe, N. Mex., with the unromantic title of 'Project Y." In reality it was the development and perfection of the atomic bomb.

Admiral Ashworth helped supervise and coordinate field tests of the bomb, and then on August 9, 1945, he flew with the Army B-29 bomber which dropped the second atomic weapon on the Japanese city of Nagasaki. For this he was awarded the Legion of Merit and the Silver Star.

Back to the United States after the war, he helped in the basic planning of the Bikini atom bomb test and the first stages of the underwater delivery of nuclear weapons.

In the last 15 years, top commands: the giant aircraft carrier Franklin D. Roosevelt, commandant of midshipmen at the Naval Academy, carrier divisions, Deputy Chief of Staff, European Command, and finally, Commander, U.S. 6th Fleet.

You can have your television and movie stars. Such is the stuff of real heroes.

APPENDIX B

Wenham Historical Association and Museum, Inc.
Wenham, Massachusetts

IN APPRECIATION OF MINNIE E. ASHWORTH
April 7, 1881 - March 23, 1970

WHEREAS the Wenham Historical Association and Museum has suffered a great loss in the death of a charter member, officer, trustee, and long-time friend, Minnie E. Ashworth, it seems fitting that the Board of Trustees express its deep sorrow on this occasion. Mrs. Ashworth's long and useful life, lived actively to the end, has had great impact on all who knew and worked with her.

From her earliest years in Wenham, Mrs. Ashworth identified herself with all that was worthwhile and forward looking in the town. She was a member of the School Committee and for many years an officer of the Wenham Village Improvement Society. But her field of greatest interest was the Wenham Historical Association. She was a member of the small "Historical Committee" and assisted Mrs. Adeline P. Cole in the publication of the early town records and other books of historical value.

When the Historical Committee became incorporated as the Wenham Association and Museum, Mrs. Ashworth, a charter member, became a board member and officer. Her field of interest expanded and included chairmanship of the Historical Research Committee. She spent many hours in work of high quality, tracing early ownership of Wenham properties and in compiling - as just one example - the list of Wenham soldiers in the American Revolutionary Army, this in anticipation of the national independence celebration in 1976.

In addition, Mrs. Ashworth was a loyal and dedicated member of the museum hostess group, knowledgeable in every aspect of the Claflin-Richards House and museum. She knew and enjoyed showing the doll collection and was at her best with the many groups of children and young people who came to visit us. Her gift to the museum of an unique collection of wooden embroidery stamping blocks from her mother's shop in Lowell formed the nucleus around which the exhibit "Fancy Goods" was planned for last fall. This replica of the little shop of 1870 proved to be one of our most popular exhibits and gave great pleasure both to Mrs. Ashworth and to the many visitors who came to see it.

VOTED unanimously at a meeting of the Board of Trustees on Tuesday, April 7, 1970, that these words of appreciation of Minnie E. Ashworth be included in our records and that copies be sent to the members of her family.

APPENDIX C

Address made by Vice Admiral Frederick L. Ashworth, U.S. Navy (ret) on the occasion of the dedication of a B-29 aircraft, "THE DUKE OF ALBUQUERQUE" acquired by the Atomic Museum, Kirtland Air Force Base, Albuquerque, New Mexico. (1993).

Thirty-five years ago I stood on the flight deck of the aircraft carrier *Franklin Delano Roosevelt* in the New York Naval Shipyard, speaking to the assembled crew of the ship as I turned over command to another Captain. The ship was moored to a pier in the industrial area of the shipyard, being prepared for its routine overhaul following an extended deployment in the Mediterranean with the United States Sixth Fleet.

Roosevelt was a live ship. You could tell from the hum of the blowers and the myriad of sounds that emanate from a live ship.

Standing before me were more than three thousand proud and dedicated officers and men of her crew who had carried her through her successful operations in the Mediterranean under my command.

Moored to an adjacent pier was the aircraft carrier *Enterprise*, one of the most highly decorated carriers from the war in the Pacific. But she was a dead ship, resting in the glory of her days gone by. There were none of her crew on board. The only life one could detect was that of the Yard workmen as they proceeded to dismantle this proud old ship. Her island structure was being removed for shipment to some location unknown to me, where it would stand indefinitely as an inspiration to the thousands of visitors who would thrill to her well documented history of service in World War II.

As I stand here today, seeing and hearing modern jet powered military and commercial aircraft leaving and arriving at this military air base and this commercial air port, I can not help but recall that day on the flight deck of the U.S.S. *Roosevelt*.

Here, all around us flows the life blood of modern jet age aviation. And here before us a proud aircraft of days gone by. She will never again have on board a pilot, or a navigator, or a bombardier, nor the rest of her flight crew. She will never fly again.

One might say that like the *Enterprise* she too is a dead instrument of warfare. But as we dedicate this B-29 Super-Fortress as an exhibit at this National Atomic Museum, she, like the U.S.S. *Enterprise*, will continue to live on as an inspiration for the thousands who will see her, and relive the glory days of her sisters as they carried the war to Japan and the successful conclusion of World War II.

Let us review just a bit of her history.

The B-29 Super Fortress, the successor to the venerable B-17, the Flying Fortress, was the ultimate in heavy bombers. At the time of its appearance in service at the end of 1943, it represented three years of intense development work. The Boeing Aircraft Company had already projected some very long range bombers back in the 1930s, and one prototype, with a 5,000 mile range, the XB-15, had actually been built. Further development led to a project in which Boeing was asked, in 1940, to develop a bomber capable of carrying a 2,000 pound bomb load for more than five thousand miles, with a speed of four hundred miles per hour.

The aircraft was ordered straight into production, late in 1941, without going through the usual prototype stage of development. Colonel Paul Tibbets, who later commanded the 509th Bombardment Group that carried out the atom bomb attacks against Japan, did most of the test pilot work for the new aircraft. He was a superb bomber pilot.

Four, twenty-two hundred horse power Wright R-3350, super-charged radial engines, gave the new aircraft a top speed of 358 miles per hour.

For high altitude operations the aircraft was fully pressurized, in two sections, front and rear, joined by a sealed tunnel passing above the bomb bay. The plane could easily reach altitudes of over thirty thousand feet.

Remotely controlled gun turrets, covering all arcs of fire, were provided for defense against enemy attacking fighters.

As the war progressed, combat experience led to the use of larger bombs, and the bomb carrying capacity of the aircraft was increased to a total of 20,000 pounds, a capability which would serve her well when it came time for the atomic bomb operations. It was the only bomber in our inventory that would be able to do that job.

This was the Boeing B-29, Super Fortress.

Super Fortresses were deployed in the Pacific area at bases in India, China and later in the Mariannas for operations against the Japanese homeland. Through 1944 and 1945, the B-29s hammered Japanese targets mercilessly. Raids on Tokyo with incendiary bombs burned out sixteen square miles of that vulnerable city. Few other cities were spared the devastation wrought by these magnificent aircraft.

Then, the B-29 was instrumental in the sudden end of the war. The ultimate weapon, the atomic bomb, had been developed by the United States and on August sixth, 1945, a B-29 named *ENOLA GAY* dropped on the city of Hiroshima, the first A-Bomb ever used in warfare. A second B-29, *BOCKSCAR*, three days later, dropped the last A-bomb ever used in warfare, on the city of

Nagasaki.

When the full horror of this type of aerial attack struck home, the Japanese sued for peace, and the second World War was over.

I was a member of the crew of *BOCKSCAR*. I was aboard in accordance with an order from General Norstad, the Chief of Staff of the Twentieth Air Force, in command of all B-29s. He directed that an officer specialist would be on board the bomb carrying aircraft , who would have the final judgment should technical or tactical decisions be required in the event of deviations from the operational plans. I believe that General Groves, the Commander of the Manhattan Project wrote this directive because he insisted that there be aboard these aircraft a crew member familiar with the technical characteristics and the tactical limitations of the bombs --- one who could make these crucial decisions should they be required.

Navy Captain Parsons, who had important technical responsibilities at Los Alamos, performed these duties as a member of the crew of *ENOLA GAY*. We were known as "Weaponeers"

As the Operations Officer of the Los Alamos technical group deployed to the island of Tinian, from where the 509th Bomb Group operated, I was not closely associated with the men from the 509th. I had my own responsibilities and they mostly involved matters of a technical nature and relations with General Groves's headquarters in Washington. But there was one member of the crew of *BOCKSCAR* that I would like to take this opportunity to tell you about, and what he did to make the Nagasaki attack the success that it was. He was Captain Kermit Beahan, the bombardier in the crew of *BOCKSCAR*.

Unfortunately Captain Beahan died before his time, some years later.

Beahan was a young and handsome officer. He sported a well groomed "Douglas Fairbanks" kind of mustache. You might call him suave. He was also a superb Bombardier, a veteran of many bombing missions over Europe while a with the Eighth Air Force. He must have been good because he was known among his contemporaries as "*The Great Artiste*". He was the bombardier in Major Sweeney's crew, and they loved him so that the crew named Sweeney's B-29 after him, the "*GREAT ARTISTE*".

This is a story that has never been told about this unsung hero of the Nagasaki mission. Let me set the scene for you.

We had spent almost an hour attempting to attack our primary target, Kokura, an industrial town on the island of Honshu and close to the city of Yawata. It was an excellent target for an atom bomb because there was located in the center of town the largest manufacturing arsenal in Japan.

Try as we might we found that it was impossible for Captain Beahan to see the aiming point through the telescope of his Mark XV Norden bomb sight. Smoke and haze from an earlier

attack on the city of Yawata was the cause. We had strict orders from Washington that these atom attacks were to be made only using the visual bomb sight. After three separate bombing approaches from different directions were of no avail, Major Sweeney, the pilot, and I, made the decision that we must proceed to our secondary target, Nagasaki.

One city spared. One city soon to be destroyed.

For reasons that are not important here, we had earlier loitered for about forty-five minutes at our rendezvous waiting for our accompanying B-29s to join. Adding this time to the time over the primary target it now became evident that we were nearly in a crisis situation from fuel expenditure. Could we attack Nagasaki and return to our base? Could we only reach the nearest friendly air field on Okinawa?

The Flight Engineer had calculated our flying time with the fuel remaining and had serious doubts about reaching Okinawa. And he knew that we could not reach our base on Tinian island.

To add to the crisis, the weather over Nagasaki had deteriorated, and it appeared that we would not be able to see the target because of clouds below.. It was decision time.

I served once during World War II with an Admiral who told me that his motto was, "Fortune Favors The Bold." Now it was my time to adopt that motto.

In spite of our orders to attack only with the Norden bomb sight, I ordered that the approach be made on radar and that, if necessary, the bomb be dropped using the electronic bomb director. Hopefully there might be clearer skies when we neared the target and Captain Beahan could take control and release the bomb with his bomb sight.

So...., one half of the efforts of the entire Manhattan Project, about a billion dollars worth, fell on the shoulders of a young Army Air Force Captain. He knew that he had only one chance for success should that chance be offered to him. The bombing approach continued.

Seconds seemed like hours. Then Beahan cried out over the plane's inter communication system, "I have control." Not more than twenty seconds later the bomb was released, the aircraft turned hard to the right in a diving turn and we retreated from the point of the bomb detonation. We must be as far away as possible to avoid the shock waves from the bomb blast.

The rest is history.

But, before we leave this story, I would like to state to you the coolness, the skill and expertise, and just plain guts demonstrated by this fine officer that day, probably could not have been duplicated by many, if any, bombardiers in the Army Air Forces.

On December twelfth, 1984, then Major Beahan wrote, "A note from: Kermit K, Beahan."

entitled, "Thoughts Concerning the Nagasaki Bomb Missions." It is too long to quote all of it, but let me read to you some of the parts that are pertinent.

"August 9, 1945 is a day which I shall never forget, for it was the date on which I flew aboard the B-29 aircraft, "*BOCKSCAR*", as the bombardier on the second atomic bomb mission during World War II."

"We proceeded to take a direct course to the secondary target, Nagasaki, Japan. En route it was determined that only enough fuel remained for only one bomb run."

"We proceeded on the bomb run under radar control until about 20 to 30 seconds from bomb release, when I saw a hole developing in the clouds over the target area. I took control of the bomb run and selected an aiming point in the industrial valley of Nagasaki. Fortunately the radar team had made an excellent bomb approach, and in the very brief time remaining I was able to synchronize the cross hairs of the bomb sight on the target and released the bomb with "good" results being achieved. It was as if a great weight had been lifted from our shoulders since we did succeed in following our orders, "Visual drop only!". Fuel was now critical and we made a bee-line to our emergency landing on Okinawa. We had enough fuel left for one landing attempt. We landed OK and as we taxied up to the air field ramp both outboard engines sputtered to a stop --- fuel starvation. It was really a "sweat job". After we finally returned to Tinian after being debriefed did I realize that it was my 27th birthday. We celebrate into the night." Signed Kermit K. Beahan.

There is not much more to be said except that these sister ships of the B-29 now going on display here at this museum not only brought the war to an end but also were importantly responsible for keeping global peace for close to half a century. It was the start of the national policy which came to be known as M-A-D, Mutually Assured Destruction. "You attempt to destroy me --- I'll destroy you." Perhaps not a popular policy, but no one seemed to be able to enunciate a better one, and it survived for more than forty years of peace during the Cold War.

So, Super Fortress, B-29, serial number 45-21748, "*THE DUKE OF ALBUQUERQUE*" join your sisters here on display with *BOCKSCAR* at Wright Field, and *ENOLA GAY*, soon to be restored, at the Smithsonian Institution in Washington.

You are not as bright and shining, and even not as huge as your brother, the B-52, standing over yonder, but you can stand just as tall with pride --- you, and all your sisters, have earned, in a very special way, a place in history, a way that we all hope will never be needed again.

APPENDIX D

The following is the text of a secret report written by Dr. Norman F. Ramsey[1] to the Director of the Los Alamos Laboratory of the activities of Project ALBERTA. It has since been declassified. Project A or Project ALBERTA was the code name for the Los Alamos (referred to in the text as Site or Project Y) scientists and engineers who were sent to Tinian to perform the bomb assembly and test operations. The quite rare photos which have been inserted into the text are courtesy of Mr. Robert Krauss, a collector of World War II memorabilia.

The most important significance of this Appendix is that it illustrates very clearly the time pressure that not only the people on Tinian, but also those at the laboratory were working under to bring these bombs to fruition and use against the enemy. As for the Fat Man attack against Nagasaki, note that it was only seventeen days from the time that the Plutonium device was tested successfully at "Trinity" that it was used operationally against an enemy. This may well be the shortest time between development and combat use of any major weapon in the history of armament.

HISTORY OF PROJECT A

BY
N. F. RAMSEY

Chapter I
INTRODUCTION

The history of Project A is essentially the history of the combat use of the ATOMIC BOMB and of the preparation and planning to make this use possible. Project A was responsible for the unification and direction of all activities concerned with the use of a nuclear explosion as a bomb to be delivered to the enemy as opposed to the experimental static firing of such a nuclear explosion on a test site. This responsibility included responsibility for design and procurement of components which were required to convert a nuclear explosion into a combat bomb, coordination with Air Forces activities including the modification of suitable aircraft, supervision of field tests on bombs without active material, planning and establishment of the necessary advance base where the final bombs would be assembled, assembly of active bombs and loading into aircraft, supervision of all tests and actions pertaining to the bomb while aboard the aircraft but prior to release, etc.. Many of these responsibilities were shared with other groups and divisions at Project Y, but the basic responsibility for unifying all these activities was

[1]See Chapter 11, Manhattan Project for more information on Dr. Ramsey.

that of Project A.

Project A as such was not established until March of 1945. However, the activities later the responsibility of Project A were started long before this time in a different organizational form but with many of the same men in responsible positions. During this earlier period most of what were later defined as Project A problems were known as delivery problems, i.e. problems concerned with the successful delivery of an atomic bomb against the enemy. For this reason a history of Project A should begin with a history of the delivery program at Project Y prior to the establishment of Project A.

Chapter II
HISTORY OF DELIVERY PROGRAM PRIOR TO THE ESTABLISHMENT OF PROJECT A

Prior to the establishment of Project A the delivery program was primarily the responsibility of Captain W. S. Parsons, USN, who headed the Ordnance Division at Project Y and N. F. Ramsey in charge of the Delivery Group. These responsibilities were, however, completely shared with Commander Francis Birch who headed the Gun Group, K. T. Bainbridge who up until the establishment of Project A was responsible for the design of the implosion model, R. B. Brode in charge of the Fusing Group, and George Galloway who headed the Engineering Group.

The first major activities of any kind concerned with the delivery program began in June of 1943 when Ramsey at Parsons' request surveyed the Air Forces aircraft to determine appropriate sizes, shapes and weights of bombs which could be carried in aircraft. At that time only the gun method of assembly was under consideration and it was thought that a 3000 ft/sec gun would be required to make possible the gun assembly of Pu^{239} so the gun would be 17 feet long. It was apparent as a result of this survey that the only United States aircraft in which such a bomb could be conveniently internally carried was the B-29 and even that plane would require considerable modification so that the bomb could extend into both the front and rear bomb bays by being close under the main wing spar. Except for the British Lancaster, all other aircraft would require such a bomb to be carried externally unless the aircraft were very drastically rebuilt.

On 13 August 1943 the first drop tests of a prototype of an atomic bomb were made at the Dahlgren Naval Proving Ground, Virginia to determine stability in flight. These tests were on a 14/23 scale model of the bomb shape which was then thought might be suitable for a gun assembly. The model consisted essentially of a long length of 14'' pipe welded into the middle of a split standard 500 pound bomb. It was officially known at Dahlgren as the "Sewer Pipe Bomb". For security reasons, Ramsey, who was in charge of these tests, presented himself as a representative of the National Bureau of Standards, Section T and much of the construction work on the model was conducted at the Applied Physics Laboratory at Silver Springs, Maryland. The first test on an atomic bomb model at Dahlgren was an ominous and spectacular failure. The bomb in a flat spin the like of which had rarely been seen before. However, in subsequent tests an increase in fin area and a forward movement of the c.g. provided stability.

In the months following August further tests of the 14/23 scale models of current and ever-changing gun models were made at Dahlgren. Changes resulting from these tests were in turn incorporated into the design. Also during this time preliminary models of a proximity fuse which were constructed at the University of Michigan at Brode's request became available. These were extensively tested at Dahlgren beginning on 3 December 1943.

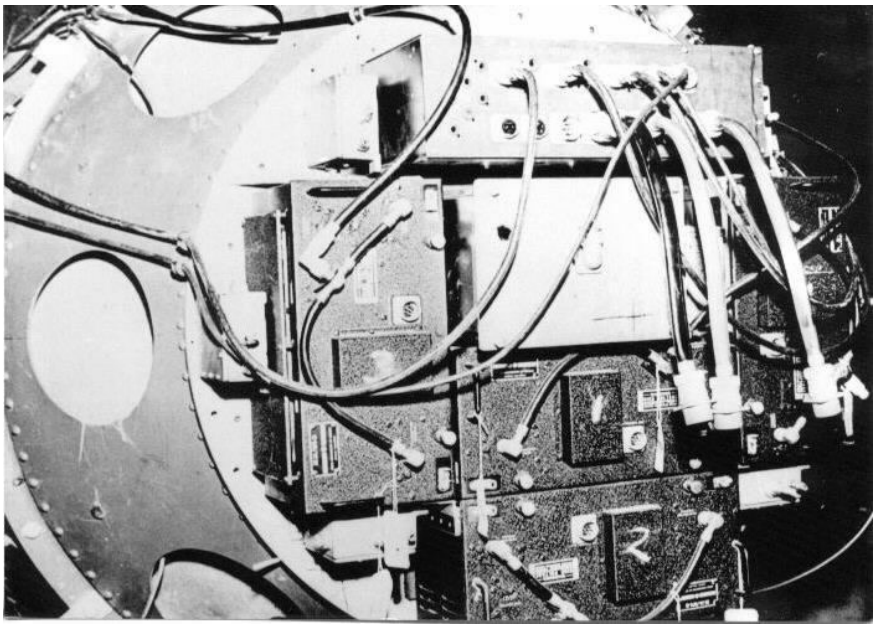
In September of 1943 the fast implosion model was proposed by von Neumann as an alternative to the slow implosion formerly advocated by Seth Neddermeyer. As it became clear that this model was a promising one, preliminary planning for converting it into a bomb were begun. A preliminary estimate of 59 inches diameter and of a nine thousand pound weight was made by von Neumann and Ramsey and on this basis the Bureau of Standards bomb group was asked to design suitable fairing and stabilizing fins for such a bomb.

In the fall of 1943 it became apparent that plans for full scale tests should be started. In view of the critical shortage of B-29s it was at first proposed that a British Lancaster be used for the test work even though a B-29 would almost certainly be used as the combat ship. The Air Forces, however, wisely recommended that a B-29 be used for the test work as well both to avoid non-standard maintenance and to accumulate experience in B-29 operations with such a bomb. In order that the aircraft modifications could begin two external shapes and weights were selected by Parsons and Ramsey as representative of the current plans at Site Y. One of these was 204 inches long with a maximum diameter of 23 inches and was a model for the current gun assembly. The other was 111 inches long and 59 inches in diameter corresponding to a fast implosion assembly. For security reasons these were called by the Air Forces representatives the "Thin Man" and "Fat Man" respectively - the Air Forces officers tried to make their phone conversations sound as if they were modifying a plane to carry Roosevelt (the Thin Man) and Churchill (the Fat Man). Models of these dimensions were ordered from Detroit. Modification of the first B-29 officially began 29 November 1943. Colonel R. C. Wilson was Army Air Forces Project Officer for all aspects of the program, Colonel D. L. Putt at Wright Field was in charge of the division under whose supervision the modification was done, and Captain R. L. Roark was Project Officer in charge of the modification.

Tests with the modified aircraft and full scale dummy bombs were begun at Muroc, California on 3 March 1944. These tests were participated in by Brode's fusing group, Bainbridge's instrumentation group, and the delivery group. Coordination of the activities of the different groups in these and subsequent field tests was a responsibility of Ramsey's delivery group. The purpose of the test was to check the suitability of the fusing equipment, the stability and ballistic characteristics of the bombs, the facilities we then had available for field work, and the suitability of the aircraft to carry and drop the bombs. After four weeks of delay due to torrential rain on the Mojave Desert and due to aircraft troubles, a series of tests were completed. The negative results of most of these tests thoroughly justified the holding of preliminary tests at such an early date. The fuses proved to be unreliable and on the basis of these results an investigation into the possibility of adapting an APS-13 fighter tail warning radar to this use was begun. Although the Thin Man proved to be very stable in its flight, the Fat Man with a tail which the Bureau of Standards bomb group thought would be extremely stable proved to wobble badly with its axis departing 20^{o} from the line of flight. Although the B-29 release mechanism worked satisfactorily for the Fat Man it failed completely for the Thin Man. Three of the units

were bad hang ups with the delay being up to 10 seconds and the final drop was 20 minutes premature while the plane was still climbing to altitude. The bomb in this case fell onto the bomb bay door which had to be opened to jettison the bomb and which was badly damaged. With this accident the first Muroc tests were brought to an abrupt and spectacular end.

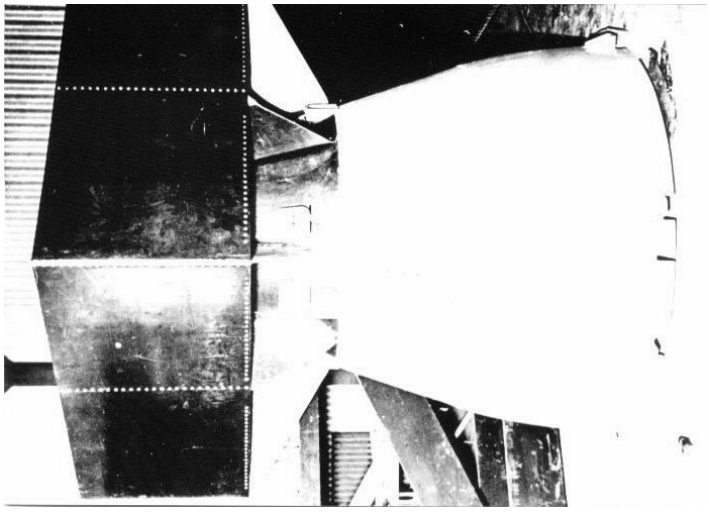
Between the end of the first tests and June 1944, all groups worked to correct the faults shown to exist in the first tests. Also during this period it became apparent that Pu^{239} (Plutonium) could not be used in a gun due to neutron of Pu^{240} almost certainly causing a pre-detonation. Since the length of the gun model was due exclusively to the contemplated use with Pu^{239} it became clear that the gun velocity could for U^{235} be reduced to 1,000 ft/sec and the length of the bomb correspondingly reduced so that it could be fitted into a single bomb bay of the B-29, thus simplifying the aircraft installation job. Detailed designing of this model was begun during this period under the supervision of McMillan and Birch. Due to the contrast in dimensions with the Thin Man this model finally acquired the appropriate name of Little Boy. Also this period of detailed design of the 1222 form of Fat Man assembly was begun. In this model the high explosive was held together with an inner dural shell consisting of 12 pentagon sections surrounded by an armor steel shell consisting of 20 triangles.



This photo shows the four bomber aircraft tail warning radars that were converted for use as the four radar fuses for the fat man bomb (and also for the Little Boy). For the Fat Man, the devices shown in this photo were mounted on the explosive sphere opposite to the X-Unit. The conversion changed these radars from use as radars to warn bombing aircraft of fighter attack from astern, into radar altimeters which would measure the height of the bomb above the ground after release, and as it fell. When the pre-selected height above the ground was measured, the fuse would provide the signal to detonate the bomb, resulting in an above ground explosion.

Tests at Muroc were resumed in June of 1944. These tests confirmed the previous results that the first form of fuse being developed at Michigan was not satisfactory. The first two APC-13's became available to the project during the test and two haywire drop tests (genuine bailing wire was actually used) were made with a field adaptation of this equipment to fusing. The first of those provided the first completely satisfactory fusing test accomplished and although the second failed it was probable that the failure was in some of the hastily prepared auxiliary equipment. The Fat Man with their tails modified from the original circular shroud to a square shroud 59 inches on a side still had an undamped wobble. As a desperate last resort

Ramsey suggested a drop be made with internal 45° baffle plates welded into the inside of the shroud as a field modification. To everyone's surprise this modification was successful with bomb being completely stable in its flight and with the ballistic coefficient being improved rather than decreased as anticipated. No release failures were experienced in the tests.

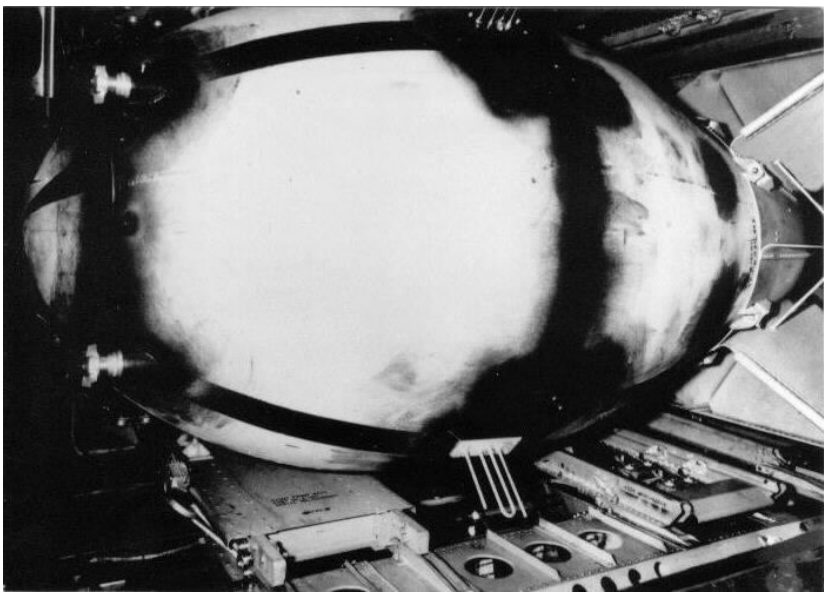


This photo shows the box tail of the bomb attached to the rear section of the bomb outer case. In the upper extreme right can be seen again one of the bath tub fittings joining the two sections of the outer bomb case.

From the end of these tests until October 1944 when similar field tests were resumed, a strenuous program of design and procurement was under way at Site Y to obtain units which could be used as components of an actual atomic bomb as opposed to units which were merely ballistic models. Three basically different models were worked on at this time. One was the Little Boy model of the U^{235} gun assembly, one was the 1222 Fat Man model of implosion assembly, and the third was a model which grew into the finally adopted 1561 Fat Man implosion assembly. The latter arose from a redesign for the purpose of simplifying the assembly problem (the assembly of the 1222 required the insertion of more than 1500 bolts) and of improving the flight characteristics by using an ellipsoidal shape for the outer armor. It consisted essentially of an inner spherical shell consisting of two polar caps and a segmented control zone which could be bolted together and surrounded by an armor ellipsoid to which a stabilizing tail including the necessary drag plates were attached. The auxiliary fusing and electrical detonating equipment was mounted in the space between the inner sphere and outer ellipsoid.

This picture shows the unmounted box tail of the bomb, looking at the part that would be attached to the rear section of the outer bomb case. Not easy to distinguish, but this also shows the baffles that were placed in the box tail for a "parachute" effect, which smoothed out completely the ballistic anomalies and made stable and reproducible bomb ballistics flight possible.

In August of 1943 Colonel R. C. Wilson and Colonel Demler visited Site Y and



This shows the assembled bomb with the box tail to the right. Note at the bottom (center) the "Yagi" antenna. Also at the very top (right center) note another "Yagi" antenna. There were four antennas, one for each radar fuse. Four were used for reliability through redundancy and any two functioning would be adequate to initiate the fuse action. Also note mounted on the front section of the outer bomb case, and to the left in the photo, two contact fuses. There were four of these M219 fuses mounted on the front case to explode the bomb on contact with the ground, should the radar fuses fail to function.

recommended that the Air Forces begin immediately to train a combat unit for the delivery of the Atomic Bomb. Therefore, it was agreed that Site Y should definitely freeze the external shapes of the three models and the other requirements that affected the aircraft by 1 September 1944 so that modification of a production lot of fifteen B-29s could be started. These aircraft were modified at the Martin Nebraska Plant at Omaha and the first aircraft became available in October. Sheldon Dike and Milo Bolstad were the Project Y representatives during these and subsequent modifications. The special modifications for carrying and releasing the bomb were designed to incorporate the British F and G release mechanism as was currently used for the British 12,000 pound bomb. This mechanism required only as ingle lug on the bomb. At this time Wendover Army Air Base was designated as the center at which training of the new Atomic Bomb Group would be undertaken and at which future field tests would be held. The Second Air Force under General Ent and later under General Williams was designated as the parent organization to this group. Colonel Paul Tibbets was designated commanding officer of the combat group (509 Composite Group) and Captain Charles Begg was in command of the 1st Ordnance Squadron, Special. Colonel Clifford J. Heflin was commanding officer at Wendover, Major C. S. Shields was in charge of the Flight Test Section, and Captain Henry Roerkohl was in charge of the Ordnance Test Unit.

The first tests began at Wendover in October 1944. This began a period of tests which continued intermittently, then monthly, and finally almost continuously up to August of 1945. Initially the only groups concerned were the Fusing Group, under Brode and Doll and the Delivery Group lead by Ramsey. However as time went on the other groups which participated in the Wendover tests were the Gun Group headed by Birch, the High Explosives Assembly Group headed initially by Bainbridge and later by Bradbury and Warner, the Electrical Detonator Group headed by Fussell, and the Ballistic Group under Shapiro. At the end of November Commander F. L. Ashworth joined the Project and relieved Ramsey of the responsibility of directly supervising the field operations since by then important parts of the Delivery Program of necessity had to be under way concurrently at Wendover and Site Y. In these tests units

approaching more and more closely to the final model were tested for ballistics information, for electrical fusing information, for flight tests of electrical detonators, for test of the aircraft release mechanism, for vibration information, for assembly experience, for temperature tests, etc.. In addition a number of additional test drops were made at the Naval Ordnance Test Station, Inyokern under the supervision of Charles and Thomas Lauritsen, William Fowler, and Commander Hayward, the Experimental Officer between 20 February of 1945 and August 1945.

From October until the formal establishment of Project A the main activities in the Delivery Program were a continuation of development, design, production, and test of a bomb approaching more and more closely to the final model. During this period the 1222 model was definitely dropped in favor of the 1561 model of Fat Man. Due to the poor flying qualities of the first batch of B-29s and to certain weaknesses in the special project modifications a new batch of 15 aircraft were obtained in March and April of 1945. These aircraft had fuel injector engines, electric pitch controlled propellers, very rugged provisions for carrying the bomb and removal of all armament except the tail turret. These aircraft proved to be extremely satisfactory. By arrangement with General Norstad, Messrs. F. R. Collbohm and Warriez T. Dickenson participated in engineering tests of these modified aircraft. Colonel R. C. Doubleday was Army Air Forces Project Officer at the time of this last modification. In addition to Wendover tests during this period numerous physics and engineering tests on complete units were made at Y-Site initially under the direction of the Delivery Group and of Bernard Waldman and later, after the formation of Project A, under Bradbury and Warner. Considerable initial planning for the establishment of an overseas operating base was done during this period.

Chapter III
HISTORY OF PROJECT A AT SITE Y

Project A was formally established in March of 1945. It incorporated many groups also assigned to other divisions of the Laboratory and was for the purpose of unifying the activities of those groups as concerned the preparation and delivery of a combat bomb [2]. Captain W. S. Parsons was Officer in Charge of Project A, N. F. Ramsey was his deputy for scientific and technical matters, Commander F. L. Ashworth was operations officer and military alternate for Captain Parsons, Commander Norris Bradbury and Roger Warner were in charge of Fat Man Assembly, Commander Francis Birch was in charge of Little Boy Assembly, R. B. Brode was in charge of fusing, L. Fussell was in charge of the electrical detonator system, Phillip Morrison and Marshall Holloway were in charge of the pit (active material and tamper), Luis Alvares and Bernard Waldman were in charge of airborne observations of the combat explosions, George

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[2] It is interesting to note that many of the people listed as Army enlisted personnel with the "T" technical rating were actually civilian technicians and engineers attached to the Los Alamos Laboratory. It was believed that it would be desirable far as many as practicable of those assigned to the forward area be designated as military personnel. It was fascinating to see these people disappear from the Laboratory for a few days and return in Army uniforms.

W.G. Penny, included in this list was Dr. William Penny, a noted British scientist representing the British government while working in the Laboratory. After the war, he was knighted by the Queen and became Sir William Penny.

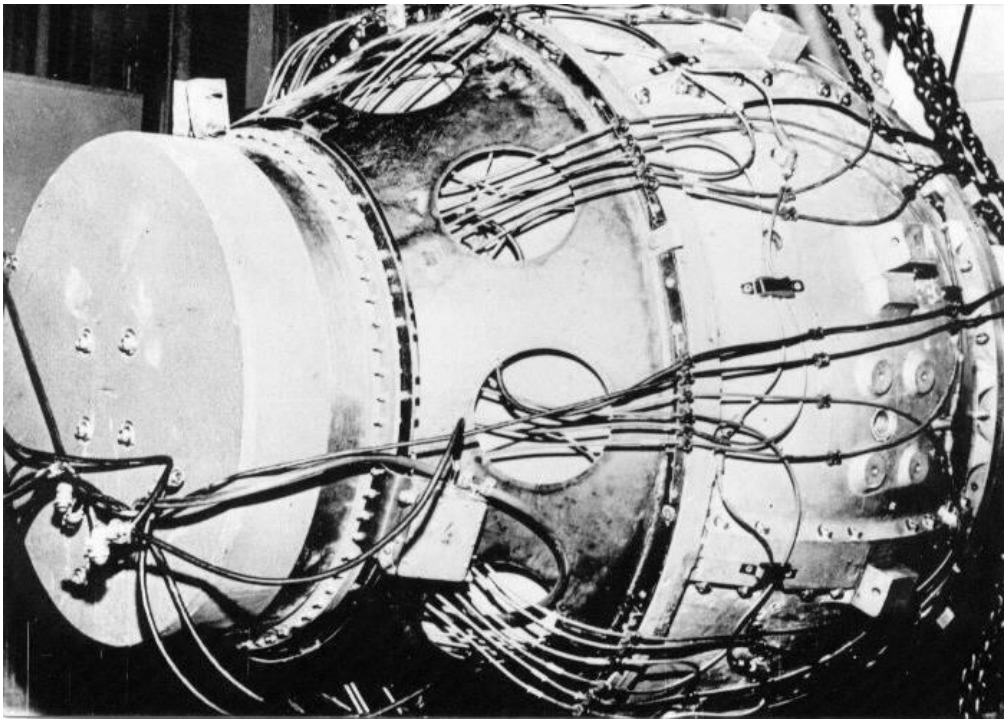
Galloway was in charge of engineering, Lt, Col. R. W. Lockridge was in charge of supply, Maurice Shapiro was in charge of ballistics and Sheldon Dike was in charge of aircraft problems. In addition the following persons were consultants to Project A: William Penney on damage problems, H. A. Bethe on general theory, and L. Hempelmann on radiological problems. In July as other personnel moved to Tinian, Sam Simmons and Lt. Comdr. T. J. Walker assumed the responsibility for the Wendover tests. The Technical policy committee responsible for initiating technical actions for Project A as recommendations to Capt. Parsons was the Weapons Committee consisting of N. F. Ramsey (Chairman), Comdr. Norris Bradbury (Chairman after Ramsey's departure), Roger Warner, Comdr. F. Birch, R. B. Brode, L. Fussell and Phillip Morrison.

This is a photo of the assembled Fat Man bomb explosive sphere. None of the ancillary parts such as the X-Unit shown in the photos on the next page have been assembled to the sphere.

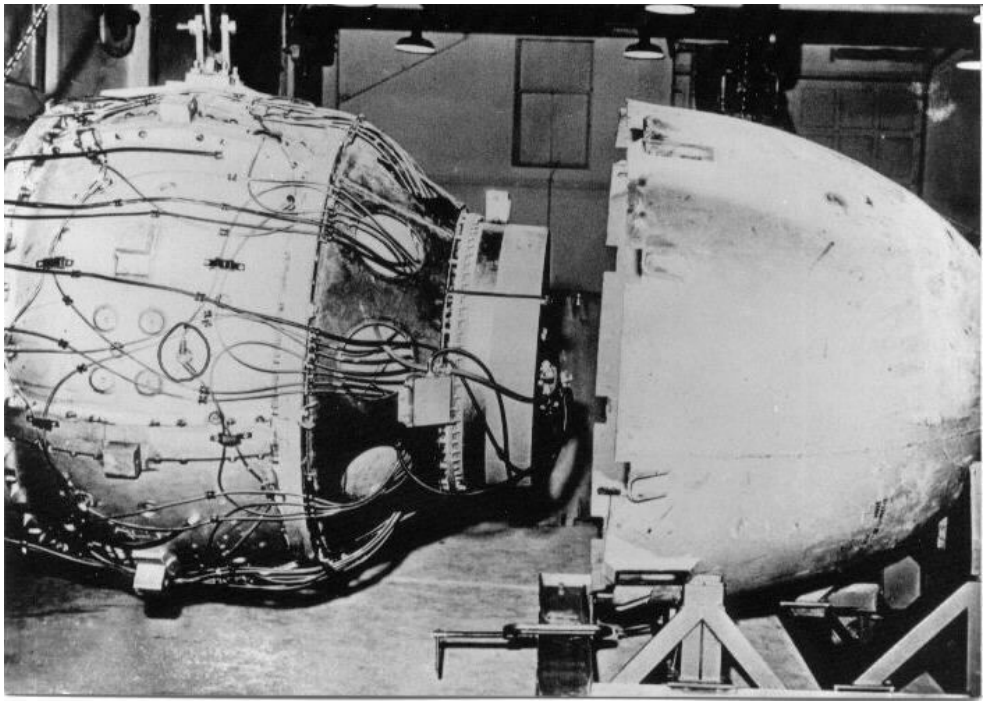
Project A at Site Y and Wendover was concerned chiefly with three matters: (1) the completion of design, procurement and preliminary assembly of units which would be complete in every way for use with active material, (2) continuation of the Wendover test program to confirm in so far as possible without using active material the adequacy in flight of the components and assembled units, and (3) preparation for overseas operations against the enemy.

In view of the shortness of the available time, the major designs were necessarily continued with as few alterations as possible. The chief design activities during this period were the numerous and urgent ones of supplying the many details necessary for successful operation and rectifying faults which became apparent in tests. Such matters as the exact design of the tamper sphere, incorporation of features to make a trap door assembly possible (to insert the sphere of plutonium known as the "pit", after the high explosive blocks had been assembled. This permitted assembly of the high explosive in the US and the "pit" inserted overseas), inclusion of a Hypodermic tube between the HE blocks for monitoring purposes, strengthening the Little Boy tail, etc. characterize this period.

This was also the period of maximum activity in tests at Wendover. The unfortunate failure of the Raytheon Company to meet its delivery schedule on X-Units (electrical detonators)



This is a photo of a Fat Man bomb under assembly. At the left is shown the assembled explosive sphere with the X-Unit attached. Note the co-axial cables from the X-unit leading to the detonators. Also note the circled "handlebar" detonator. To the right is the front section of the outer case of the bomb ready to the moved to the left to cover the front half of the explosive sphere.



This is a picture of a Fat Man type atom bomb under assembly. Seen to the left, the massive cylindrical component, is the X-Unit, the bank of four condensers that would be charged to about 5000 volts. It provided the electrical energy to all 32 "handlebar" (from their shape with two leads going into the detonator) detonators. To the right is the assembled explosive sphere with the conical mounting structure for the X-Unit.

added markedly to the difficulty of the test program. This failure reduced the number of tests that were possible on the X-Units, prevented efficient testing since many tests had to be repeated twice - once at an early date with all components except an X-Unit and once at a critically late date with the X-Unit, and greatly complicated the scheduling of tests since there was no time in which to acquire a backlog of X-Units. The tightness of schedule resulting from this is best illustrated by the fact that it was not until the end of July that sufficient X-Units had been tested to confirm their safety with HE, the first HE filled fat man with an X-Unit was tested at Wendover 4 August, the first HE filled Fat Man with an X-Unit was tested at Tinian 8 August, and the first complete Fat Man with active material was dropped on Nagasaki 9 August. Despite these difficulties, however, a total of 155 test units were dropped at Wendover or the Salton Sea ballistic test range between October and the middle of August 1945. Much information was learned in these tests and incorporated into the design of the units.

Planning for overseas operations was one of the chief activities of Project A during this period. Initial planning and procurement of some kits of tools, etc. began in December with these activities continuing at an accelerated rate up through July. In February of 1945 Comdr. Ashworth was sent to Tinian to make a preliminary survey of the location and to select a site for our activities. By March the construction needs of the Tinian Base were frozen as the following: Four (4) air conditioned 20' x 48' steel arch rib of the type normally used in the Navy for bomb sight repair (two for the fusing team, one for the electrical detonator team, and one for the joint use by the pit team and observation team), three (3) air conditioned 20' x 70' assembly buildings for which the materials were accumulated at Inyokern, five (5) 40' x 100' steel arch rib warehouse buildings, one (1) building of the same basic type as an ordnance administrative building, one (1) building of the same type as a modification shop, three (3) 10' x 10' x 5' magazines, seven (7) 20' x 50' x 10' magazines and two (2) special loading pits equipped with hydraulic lifts for loading bombs into the aircraft. A third such pit was constructed at Iwo Jima for possible emergency use. Materials for equipping the buildings and for handling heavy equipment in assembly, tools, scientific instruments, and general supplies were all included in special kits prepared by the different groups. A kit for a central stock room was also started but the materials for the latter were not shipped by August at which time further shipments to Tinian were stopped by the end of the war. Construction of the Tinian base began under the supervision of Colonel E. E. Kirkpatrick [3] in April.

Beginning in May so called batches of kit materials and components for test and combat units were sent by water borne transportation to Tinian. A total of five batch shipments were made. In addition a number of air shipments in five C-54 aircraft attached to the 509th Group were made for critically needed items. The availability of these C-54s for emergency shipments contributed greatly to the ability of Project A to beat its schedules in combat use of the Atomic Bomb.

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[3] Colonel Kirkpatrick, Army Corps of Engineers, was especially selected by General Groves to supervise the construction of our facilities at Tinian. Admiral Nimitz, the top Navy commander in the Pacific, ordered a Navy Seabee Battalion to report to Colonel Kirkpatrick to provide him the manpower for the construction work.

Chapter IV
HISTORY OF PROJECT A AT TINIAN

The Project A organization at Tinian consisted of the following: Officer-in-Charge, Captain W. S. Parsons; Scientific and Technical Deputy to Officer-in-Charge, N. F. Ramsey; Operations Officer and Military Alternate to Officer-in-Charge, Comdr. F. L. Ashworth; Fat Man Assembly Team headed by Roger Warner; Little Boy Assembly Team headed by Comdr. Francis Birch; Fusing Team headed by E. B. Doll; Electrical Detonator Team headed by Lt. Comdr. E. Stevenson; Pit Team headed by Phillip Morrison and C. P. Baker; Observation Team headed by Luis Alverez and Bernard Waldman; Aircraft Ordnance Team headed by Sheldon Dike; and Special Consultants consisting of Robert Serber, W. G. Penney and Captain J. F. Nolan. The team leaders formed a Project Technical Committee under the chairmanship of Ramsey to coordinate technical matters and to recommend technical actions to Captain Parsons. The following persons were team members: Harold Agnew, Ensign D. L. Anderson, T/5 B. Bederson, Milo Bolstad, T/Sgt. Raymond Brin, T/Sgt. V. Caleca. T/Sgt. E. Carlson, T/4 A. Collins, T/Sgt. R. Dawson, T/Sgt. F. Fortune, T/3 W. Goodman, T/3 D. Harms, Lt. J. D. Hopper, T/Sgt. J. Kupferberg, L. Johnston, L. Langer, T/Sgt. W. Larkin, H. Linschitz, A. Machen, Ens. D. Mastick, T/3 R. Matthews, Lt (jg) V. Miller, T/3 L. Motechko, T/Sgt. W. Murphy, T/Sgt E. Nookar, T. Olmstead, Ens. B. O'Keefe, T. Perlamn, Ens. W. Prohs, Ens. G. Renolds, H. Russ, R. Schreiber, T/Sgt. G. Thornton, Ens. Tucker, and T/4 F. Zimmerli. Although not strictly a part of Project A, the following were closely associated with the work of Project A: Rear Admiral W. R. Purnell, representative of the Washington Atomic Bomb Military Policy Committee; Brig. Gen. T. F. Farrell, representative of Major Gen. L. R. Groves; Colonel E. E. Kirkpatrick, alternate to Gen. Farrell and officer-in-charge of construction; Colonel P. F. Tibbets, commanding officer of the 509th Composite Group; Lt. Col. Peer de Silva, commanding officer of the 1st Technical Service Detachment, which served as administrative, security and housing organization for Project A; and Major Charles Begg, commanding officer of the First Ordnance Squadron, Special.

Although preliminary construction at Tinian began in April of 1945, intense technical activities, however, did not begin until July. The first half of July was occupied in establishing and installing all of the technical facilities needed for assembly and test work at Tinian. After completion of these technical preparations, a little boy unit was assembled and on 23 July the Tinian base became fully operational for little boy tests with the dropping of unit L1. In this test the dummy little boy was fired in the air by the radar fuse. In this as in subsequent Tinian tests excellent results were obtained. The second little boy unit, Unit L2, was dropped 24 July, and a third, Unit L5, on 25 July. The only remaining little boy included as part of the test for a check of facilities at Iwo Jima for emergency reloading of the bomb into another aircraft. Since the Iwo facilities were not ready until 29 July this test was postponed until then. On 29 July a completely successful test of the Iwo facilities was completed. The plane landed with this unit, L6, at Tinian so that it could be used in the final rehearsal maneuvers. On 31 July the plane with L6 took off accompanied by the two observation planes. The planes flew to Iwo where a rendezvous was made and then returned to Tinian where the bomb was dropped and observed to function properly. After the release of the bomb all three aircraft rehearsed the turning maneuvers to clear the area as soon as possible which would be used in combat. With the

completion of this test all tests preliminary to combat delivery of a little boy with active material were completed.

The first fat man test, unit F13, was made on 1 August. This unit used cast plaster blocks, electronic fusing, eight electric detonators, Raytheon detonating X unit and informers and smoke puffs on the operation of the detonators. The test showed that all essential components of the bomb functioned satisfactorily. A second inert fat man, F18, similar to F13 was prepared and loaded into a B-29 for a drop on 3 August. However, due to the lack of information at Tinian of the results of the Kingman tests on the adequacy of the venting in the sealed fat man, this unit was unloaded and the barometric switches modified so that this information would be obtained on unit F18. In this modified form it was dropped on 5 August. All components functioned satisfactorily and the venting was adequate for the internal pressure to close a barometric switch set for 17,000 feet pressure altitude 17 seconds before impact. Closing of the barometric switches started the fusing radars to radiate. The only remaining preliminary fat man test was unit F33, a replica of the active unit except for the lack of active material and the use of lower quality high explosive lens castings. The components for this unit arrived at Tinian at 1230 on 2 August and preliminary assembly began the same day. Although this unit was fully prepared by 5 August, it was not dropped until 8 August due to absence of key crews and aircraft on the hot little boy mission. The mission was then conducted as a final rehearsal for the delivery of the first live fat man. Both the rehearsal operation and the detonation of the unit were completely satisfactory.

On 26 July the U^{235} projectile for the little boy was delivered by the cruiser Indianapolis. The U^{235} target insert arrived in three separate parts in three otherwise empty Air Transport Command C-54s during the evening of 28 to 29 July. All three had arrived by 0200 29 July. Since the earliest date previously discussed for combat delivery for the fat man was 5 August (at one time the official date was 15 August), Parsons and Ramsey cabled General Groves for permission to drop the first active unit perhaps as early as 1 August, with 2 August being more probable since the weather was forecast to be bad on 1 August.

Although the active unit, No. L11 was completely ready in plenty of time for a 2 August delivery, the weather at the target objective was not. The first, second, third, and fourth of August were spent in impatient waiting for good weather. Finally on the morning of 5 August we received word that the weather should be good on 6 August. At 1400 on 5 August General LeMay officially confirmed that the mission would take place on 6 August.

The little boy was loaded onto its transporting trailer at 1400 5 August and with an accompanying battery of official photographers under G-2 (security) supervision was taken to the loading pit. The B-29 was backed over the pit at 1500 and the unit was loaded shortly thereafter. The aircraft was then taxied to its hard stand where final testing of the unit was completed. By 1800 all was ready. Between then and takeoff the aircraft was under continuous watch both from a military guard and from representatives of the key technical groups.

Final briefing was at 0000 (midnight) of 6 August. Following this and an early breakfast the crews assembled at their aircraft. There amid brilliant floodlights their pictures were taken and retaken by still and motion picture photographers as if for a Hollywood premier. For this mission Col P. W. Tibbets was pilot of the B-29, named the Enola Gay which carried the bomb, Major Thomas Ferrebee was bombardier, Captain W. S. Parsons was bomb commander, and Lt.

Morris Jepson was electronics test officer for the bomb. L. Alvarez, Bernard Waldman, Harold Agnew and Larry Johnston rode in the accompanying observation aircraft.

The progress of the mission is best described in the log which Capt. Parsons kept during the flight:

6 August 1945
0245 Take off
0300 Started final loading of gun
0315 Finished loading
0605 Headed for Empire from Iwo
0730 Red plugs in (these plugs armed the bomb so it would detonate if released)
0741 Started climb
Weather report received that weather over primary and tertiary targets was good but not over secondary target.
0838 Leveled off at 32,700 feet
0847 All Archies (electronic fuses) tested to be O.K.
0904 Course west
0909 Target (Hiroshima) in sight
0915½ Dropped bomb (Originally scheduled time was 0915)
Flash followed by two slaps on plane. Huge cloud
1000 Still in sight of cloud which must be over 40,000 feet high
1003 Fighter reported
1041 Lost sight of cloud 363 miles from Hiroshima with aircraft being 26,000 feet high

The crews of the strike and observation aircraft reported that 5 minutes after release a low 3 mile diameter dark grey cloud hung over the center of Hiroshima, out of the center of this a white column of smoke rose to a height of 35,000 feet with the top of the cloud being considerably enlarged.

Four hours after, the strike photo-reconnaissance planes found that most of the city of Hiroshima was still obscured by the cloud created by the explosion although fires could be seen around the edges. However, the following day excellent pictures were obtained which showed the tremendous magnitude of the power of a single atomic bomb, which completely destroyed 60 percent of the city of Hiroshima.

The first fat man with active material, unit F31, was originally scheduled for dropping on 11 August local time (at one time the schedule called for 20 August). However, by 7 August it became apparent that the schedule could be advanced to 10 August. When Parsons and Ramsey proposed this change to Tibbets he expressed regret that the schedule could not be advanced two days instead of only one since good weather was forecast for 9 August and the five succeeding days were expected to be bad. It was finally agreed that Project A would try to be ready for 9 August provided it was understood by all concerned that the advancement of the date by two full days introduced a large measure of uncertainty into the probability of our meeting such a drastically revised schedule. However, all went well with the assembly and by 2200 of 8 August the unit was loaded and fully checked.

The strike plane and two observing planes too off at 0347 local time on 9 August. Major C. W. Sweeney was pilot of the strike ship, Capt. K. K. Beahan was bombardier, Comdr. F. L. Ashworth was bomb commander, and Lt. Philip Barnes was electronics test officer. This mission was as eventful as the Hiroshima mission was operationally routine.

Due to bad weather between Tinian and Iwo Jima a preliminary rendezvous was not planned for the three aircraft at Iwo Jima and instead the briefed route to the empire was from Tinian direct to Yakoshima on Kyushu. The briefed cruising altitude was 17,000 feet. Commander Ashworth's log for the trip is as follows:

0347 Take off
0400 Changed green plugs to red prior to pressurizing
0500 Charged detonator condensers to test leakage. Satisfactory
0915 Arrived rendezvous point at Yakashima and circled awaiting accompanying aircraft
0920 One B-29 sighted and joined formation
0950 Departed from Yakashima proceeding to primary target Kokura having failed to rendezvous with second B-29. The weather reports received by radio indicated good weather at Kokura (3/10 low clouds, no intermediate or high clouds, and forecast of improving conditions). The weather reports for Nagasaki were good but increasing cloudiness was forecast. For this reason the primary target was selected.
1044 Arrived initial point and started bombing run on target. Target was obscured by heavy ground haze and smoke. Two additional runs were made hoping that the target might be picked up after closer observation. However at no time was the aiming point seen. It was then decided to proceed to Nagasaki after approximately 45 minutes had been spent in the target area.
1150 Arrived in Nagasaki target area. Approach to target was entirely by radar. At 1158 the bomb was dropped after a twenty second visual bombing run. The bomb functioned normally in all respects.
1205 Departed for Okinawa after having circled smoke column. Lack of available gasoline caused by an in-operative bomb bay tank booster pump forced decision to land at Okinawa before returning to Tinian.
1351 Landed at Yontan Field, Okinawa
1706 Departed Okinawa for Tinian
2245 Landed at Tinian

Due to bad weather, good photo reconnaissance pictures were not obtained until almost a week after the Nagasaki mission. These showed that the bomb detonated somewhat north of the Mitsubishi Steel and Arms Works. All other factories and buildings on the Urakami River from the Wakajima Gawa River through the Mitsubishi Urakami Ordnance Plant were destroyed. The distance from the northernmost factory that was destroyed to the southern boundary of complete destruction was about three miles and damage might have occurred north of the Urakami Ordnance Plant if any buildings had been there. Although only 44 percent of the city was

destroyed by the official record, this was due to the unfavorable shape of the city and not to the location of the bomb detonation.

On the day following the Nagasaki mission, the Japanese initiated surrender negotiations. Consequently further activity in preparing active units was suspended. However, the entire project was maintained in a state of complete readiness for further assemblies in the event of a failure in the peace negotiations. For the first week following the Nagasaki mission the test program at Tinian was continued and three dummy fat man units, Nos. F101, F102, and F103 were prepared. They were not dropped, however, since the Japanese had stated their willingness to accept the American terms prior to the date scheduled for the drop. Originally it was planned to return all Project A technical personnel to the United States on 20 August except for those assigned to the Farrell Mission for investigating the results of the atomic bombing of Japan. However, on 18 August a message was received from General Groves stating that in view of the then current delays in the surrender procedures all key Project A personnel should remain at Tinian until the success of the occupation of Japan was assured. The scientific and technical personnel finally received authorization for return to the United States on 5 September and departed from Tinian on 7 September 1945. With the departure the activities of Project A were effectively terminated although Col. Kirkpatrick and Comdr. Ashworth remained behind at Tinian for final disposition of Project A property.

Chapter V
CONCLUSION

As in all urgently expedited development projects for which there are no precedents, many mistakes were made in Project A. With the benefit of the experience accumulated by Project A it would subsequently be possible to re-plan its activities to accomplish its objective both with greater economy and with improved designs. However, despite the novelty of the weapon and the lack of precedent for most of its problems, Project A did successfully accomplish all of its major objectives and did so on or ahead of time.

The object of Project A was to assure the successful combat use of an atomic bomb at the earliest possible date after a field test of an atomic explosion and after the availability of the necessary nuclear material. This objective was very effectively accomplished. The first combat bomb was ready for use against the enemy within seventeen days after the first experimental nuclear explosion at Alamogordo and almost all of the intervening time was spent in accumulating additional active material for making an additional bomb. The first atomic bomb was prepared for combat use against the enemy on 2 August within four days of the time of the delivery of all of the active material needed for that bomb. Actual combat use was delayed until 6 August only by bad weather over Japan. The second atomic bomb was used in combat only three days after the first despite its being a completely different model and one much more difficult to assemble. The success of the combat use of the atomic bomb is best summarized by the fact that Japan began surrender negotiations four days after the use of the first atomic bomb.

APPENDIX E

THE WATCH THAT NEVER ENDS
Navy Day Speech
Santa Fe, New Mexico
October 1982

It is just after midnight in the Indian Ocean. On the bridge of the aircraft carrier *Nimitz* there has just taken place that orderly confusion as the bridge watch changes. The mid-watch going off, the morning watch coming on. A young Lieutenant, U.S. Navy, probably not over twenty eight years of age has assumed the responsibilities of the duty of the Officer of the Deck of this great nuclear powered aircraft carrier. He learned from the Officer of the Deck who he relieved that the battle group is steaming as before, speed eighteen knots, course 270 degrees true, weather clear, wind 7 knots from the south west, temperature 95 degrees, sky partly cloudy and sunrise at 5:46 AM. Ships present: USS *America*, USS *Ticonderoga*, and destroyers *Spruance, Turner, Parsons,* and *Knox*. The Captain has ordered flight quarters at 6:00 AM to start the day's flight operations. In short, just another routine day for naval forces deployed in the Indian Ocean. But let us examine a little closer that "just routine" day.

We have a friend in the embarked air wing who is a Lieutenant Junior Grade. He just turned twenty-two last week. This is his second deployment to the Indian Ocean. His wife and their little boy are living in San Diego and it has been six months since the battle group left San Diego for this Indian Ocean deployment. If all goes well her husband will be home in two more months, and maybe, he might be ordered to shore duty on his return. In short, just a routine period in the life of a navy family.

Our Lieutenant friend finally turned in last night at about mid-night. He is the Engineering Officer of his squadron and it is his responsibility to see that all scheduled aircraft of his squadron will be ready for launch in the morning flight operations. It seemed as if he had only fallen asleep when flight quarters was sounded over the ship's general announcing system. He has a few minutes to get breakfast before he goes to his ready room to brief for his flight mission of the day.

Our young Lieutenant has a Plane Captain assigned to his squadron aircraft. He is a Second-Class Aviation Machinist Mate, older than his pilot, and with a family of a wife and two little girls, also living in San Diego. This is his third Indian Ocean deployment. Even though he had worked until after mid-night preparing his plane for the morning flight operations, his reveille was at 05:00 o'clock. He has to be on the flight deck at six

to prepare for the 8:00 o'clock launch.

All seems to be confusion on the flight deck, but it is an orderly confusion. Each man knows his job and all function as a smooth running team. *Nimitz* is picking up speed and the wind over the deck reaches twenty-seven knots in preparation for the launch.

Down below in the main engine control room, the crew on duty is responding to the Officer of the Deck's call for "all engines ahead full, make turns for twenty-two knots". A First Class Petty Officer in the reactor control room raises the power in the reactor — more steam is generated to turn the turbines as the throttle man opens the main throttles, and the great engines respond to the order. In the engine room the temperature has reached nearly 120 degrees in spite of the air conditioning. "Man, wouldn't a cold beer taste good right now — how long has it been since we had one?" "Seventy-six days ago when we were in Singapore — it will be another 14 days before we hit the beach in Mombasa for another one".

Pilots have manned their planes, the great carrier has turned into the wind and our friend has just finished helping our pilot into his parachute harness, hooked up the oxygen tube to his mask and connected his helmet to the radio earphone wires. A thumbs up from the pilot and he is ready to taxi to the catapult for launch. Full rpm on his jet engine, a snappy salute to the launching officer and the catapult fires. In 110 feet his aircraft reaches a speed of 125 knots and he is airborne for a routine training and readiness flight — on a routine day aboard an aircraft carrier, during routine deployment in the Indian Ocean.

On the other side of the world, in the Arctic Ocean, north of Iceland, it is now 6:00 o'clock in the afternoon. Aboard the nuclear powered Poseidon missile submarine, USS *Andrew Jackson*, the crew is at supper. She has been on patrol for two months and has another month to do before returning to her home port in Charleston, South Carolina. She has been operating <u>submerged continuously</u> during all this time. Her only connection to the outside world is from periodic radio broadcast intercepts. A large portion of these broadcasts is devoted to "family grams". Petty Officer Brown's baby was born last week and baby and mother are doing fine. Ensign Hernandez' wife reports that her automobile has broken down, but friends in the Gold Crew have fixed it and now it runs fine. Lieutenant Anderson's family gram told him that his wife's divorce was now final and she has returned with their children to the home of her parents.

The day has been devoted to training drills to maintain the missile crew in the maximum state of readiness, in case <u>the</u> message, that all hands hope will never come, might come. The reactor operators and the engine room crews have been drilling at casualty

procedures, for, of all navy ships, nuclear submarines must achieve the highest state of readiness to cope with accidents and casualties of any kind.

Down on the ice in the Antarctic at the McMurdo Sound Naval Station it is now 1:00 o'clock in the afternoon. It is early spring down there, but it is still very cold — nearly 60 degrees below zero. The weather, as usual, is miserable. Heavy overcast, clouds almost touching the ice surface, and there is occasional blowing snow. A Navy C-130 supply aircraft has just reported that it is estimating arrival at McMurdo Station in 22 minutes. The pilot is flying on instruments and he requests a ground controlled approach and landing to the airfield.

Air Control man Garcia already has the aircraft in radar contact and is ready to take control. "Turn right to 100 degrees magnetic, reduce speed to normal approach speed and descend to 1,000 feet. Now turn left to 095 degrees. Approaching glide path, commence decent at 500 feet per minute, on glide path now. Above glide path — bring her down. OK, on glide path one half mile from touchdown. Over the end of the runway, you should have visual contact. Take over visually and make normal landing". "Roger, man perfect! — touchdown! Thanks, glad to be safely home".

Just another routine day, in another part of the world.

And so it goes, here at home, in the Arctic, the Antarctic, the North Atlantic, the Pacific, yes, all over the world, your Navy is carrying out its routine duties — On Watch — Ready, always ready.

I have a painting that has been hanging in my home for almost 45 years, wherever that might have been as my wife and I moved about the world. It was painted in 1937 by the well known marine water color artist, Arthur Beaumont. It is a painting of a battleship of those days, the USS *Maryland*. She is steaming under heavy and leaden colored winter skies, in choppy winter sea. The title of the painting is "*The Watch That Never Ends"*. I have often thought, over these many years, how that picture shows what the United States Navy is all about — *THE WATCH THAT NEVER ENDS.*

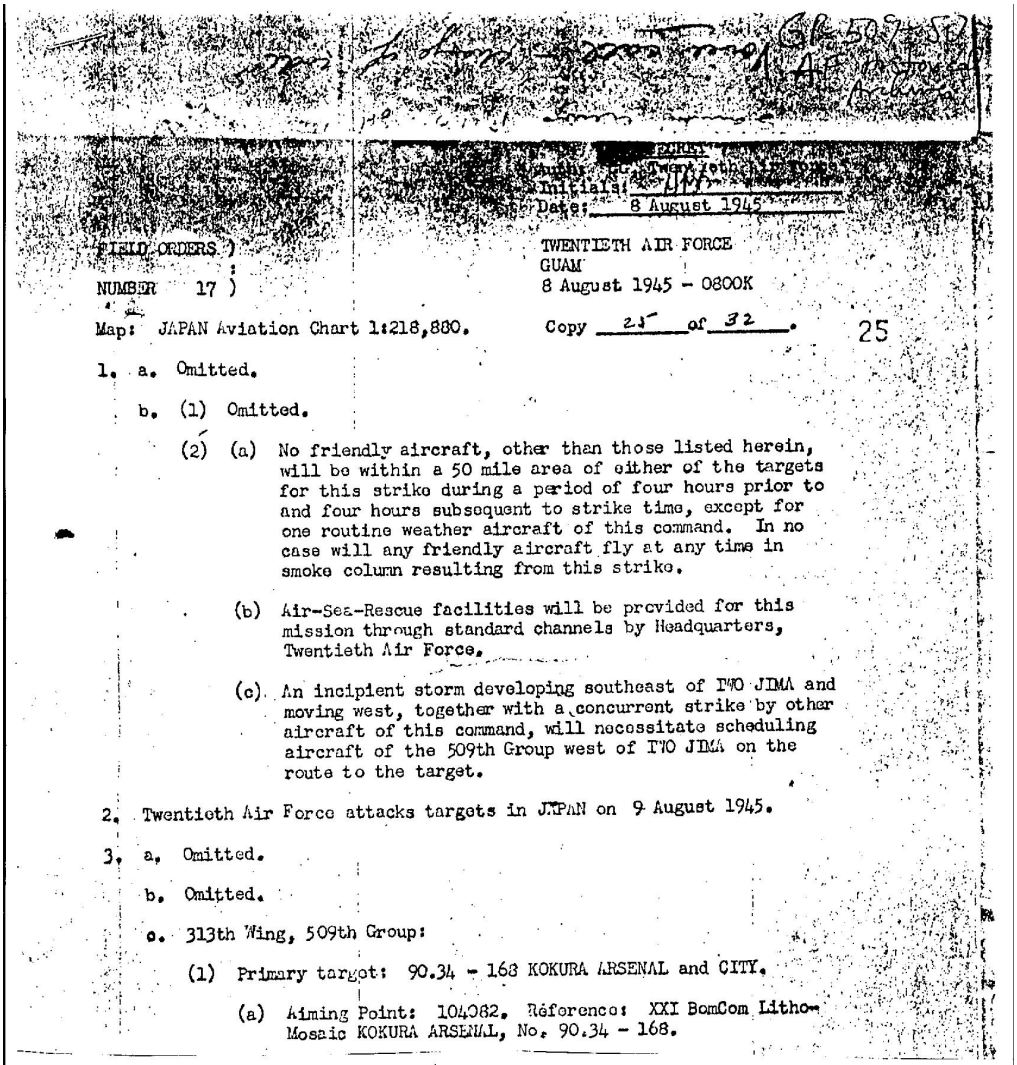
Today, with this ceremony, we are marking 207 years during which the men, women, ships, and aircraft of your Navy have been on watch, ever vigilant, ready, always ready, in peace and in war.

There is a common saying well known to everyone — "Out of sight, is out of mind". This morning I have tried, with our little trip around the world, to refresh your minds, to try to have you live for a few moments with those out there who are sacrificing so much

as they serve. So today, on this 207th birthday of the Navy, let us not forget the men and women, and their families, who serve their country, be they Navy, Marine, Army, or Air Force. We owe them all a debt of gratitude, respect and understanding, for their shield, as they stand *THE WATCH THAT NEVER ENDS*, we live at home in peace.

APPENDIX F

Nagasaki Attack Strike Reports



SECRET

Initials: [illegible]
Date: 8 August 1945

FIELD ORDERS)
NUMBER 17)

TWENTIETH AIR FORCE
GUAM
8 August 1945 - 0800K

Map: JAPAN Aviation Chart 1:218,880. Copy 25 of 32. 25

1. a. Omitted.

b. (1) Omitted.

(2) (a) No friendly aircraft, other than those listed herein, will be within a 50 mile area of either of the targets for this strike during a period of four hours prior to and four hours subsequent to strike time, except for one routine weather aircraft of this command. In no case will any friendly aircraft fly at any time in smoke column resulting from this strike.

(b) Air-Sea-Rescue facilities will be provided for this mission through standard channels by Headquarters, Twentieth Air Force.

(c) An incipient storm developing southeast of IWO JIMA and moving west, together with a concurrent strike by other aircraft of this command, will necessitate scheduling aircraft of the 509th Group west of IWO JIMA on the route to the target.

2. Twentieth Air Force attacks targets in JAPAN on 9 August 1945.

3. a. Omitted.

b. Omitted.

c. 313th Wing, 509th Group:

(1) Primary target: 90.34 - 168 KOKURA ARSENAL and CITY.

(a) Aiming Point: 104082. Reference: XXI BomCom Litho-Mosaic KOKURA ARSENAL, No. 90.34 - 168.

(b) Checkpoint: 3243N - 13233E.

IP: 3343N - 1313830E.

(c) Breakaway (if target is bombed):

Left turn of at least 150 degrees
3343N - 1313830E.

(2) Secondary target: 90.36 NAGASAKI URBAN AREA.

(a) Aiming Point: 114061. Reference: XXI BomCom Litho-Mosaic NAGASAKI AREA, MITSUBISHI STEEL and ARMS WORKS, No. 90.36 - 546.

(b) Checkpoint: 3225N - 13141E.

IP: 3238N - 13039E.

- 1 -

[redacted]

T.O. #17

(c) Breakaway (if target is bombed):

Left turn of at least 150 degrees
3137N - 13128E.

(3) Omitted.

(4) Force required:

(a) Strike force: 3 A/C.

(b) Spare: 1 A/C, which will proceed to IWO JIMA to stand by in case of abort. This A/C will be loaded with full gas load but no bombs.

(c) Weather: 2 A/C, which will be dispatched one to each target at such a time as to be able to relay, from their assigned target, the target weather forecast for strike time, broadcasting this message between 090915K and 090945K. This will enable strike force to select either the primary or secondary target for best visual bombing. Each weather aircraft will have aboard a weather observer furnished by the 313th Wing.

(5) C.O., 509th Group, will insure that necessary personnel and special equipment are dispatched to IWO JIMA to handle transfer of bomb load to spare aircraft in case of abort.

(6) Route:

Base
30.2N - 13032E (Assembly Point & Departure Point) (YAKU-SHIMA)
Checkpoint
IP
Target
Breakaway
IWO JIMA
Base.

(7) Altitudes:

(a) Enroute to target: Below 10,000 feet until necessary to climb to bombing altitude. Below 5,000 feet prior to passing IWO JIMA.

(b) Of attack: 28,000 to 30,000 feet.

(c) On route back: At or below 18,000 feet passing IWO JIMA.

(8) Time Control: Pass Departure Point at 090945K.

(9) Bombing Airspeed: 200 mph CIAS.

(10) Bomb load and special equipment: As specified by C.O., 509th Group.

(11) Post-strike photography: C.O., 509th Group, will be responsible for briefing and dispatching two F-13 aircraft, which will be detached to the 509th Group by the 3rd Photo Recon Sq., for this strike. These aircraft will not enter target area until 4 hours after bombs away. To insure schedule is maintained regardless of whether the strike force has to make use of the spare aircraft at IWO JIMA or not, the photo aircraft will be required to check in with ground stations at both TINIAN and IWO JIMA to obtain clearance to proceed past IWO JIMA. If these photo aircraft do not receive notification of which target has been bombed, they will photograph both targets. If they photograph KOKURA, they will also get post-strike coverage of YAWATA.

[redacted] 2

F.O. #17

(12) Only visual bombing will be accomplished.

d. Omitted.

e. Omitted.

f. 3rd Photo Recon Sq.:

(1) Dispatch 2 F-13 A/C to NORTH FIELD, TINIAN, to land by 081600K, reporting to C.O., 509th Group, for post-strike photo briefing as specified in par. 3. c. (11).

g. CSC, IWO JIMA:

(1) Participate in event of abort landing at IWO JIMA, making all necessary facilities available upon request of the 509th Group Project Officer.

(2) Provide clearance to photo A/C, as provided for above in par. 3. c. (11) after assurance from 509th Group Project Officer that no abort has occurred.

4. No Tactical Mission Number is assigned to this mission. For record purposes, Special Bombing Mission Number 16 is assigned.

5. a. (1) Strike reports will be transmitted in accordance with Headquarters, Twentieth Air Force Regulation 100-20, dated 15 May 1945. 313th Wing Air-Ground Station will rebroadcast strike reports via the F method on all 313th Wing strike frequencies.

(2) Contact reports will be transmitted in accordance with Headquarters, Twentieth Air Force Regulation 100-19, dated 2 July 1945.

(3) In bombs away report from strike force, direct that one of these words be included at end of message:

(a) "High" (indicating high order detonation)

(b) "Low" (indicating low order detonation).

(4) IFF doctrine will be as follows: Turn IFF to Position #1 immediately before take off. Turn IFF off when 50 miles from coast of Japanese mainland. Turn IFF on at land's end (enemy coast) when returning from target. Turn IFF off when landing.

(5) Channel G (143.01 mcs) of the AN/ARC-13 will be used as inter-plane command channel.

(6) Retune Channel 7 of AN/ART-13 transmitter of strike aircraft to 7455 kcs. Any strike plane aborting will immediately call the Twentieth Air Force Weather Station, IWO JIMA, call sign OOV181, on 7455 kcs and transmit message saying "aborting". The 313th Wing Ground Station will monitor 7455 kcs and pass any aborting message to C.O., 509th Group.

(7) Radio operators of strike aircraft will monitor 7310 kcs and intercept in-flight weather reports from weather planes over the target. These weather reports will be addressed to 313th Wing Air-Ground Station, OOV670.

- 3 -

P.O. #17

(8) Photographic aircraft will retune AN/ART-13 Channels 1, 3 and 7, as follows: Channel 1 - 3410 kcs; Channel 3 - 10125 kcs; and Channel 7 - 7310 kcs. Photographic aircraft will be controlled by 313th Wing Air-Ground Station, OOV670. Photographic aircraft will monitor appropriate 313th Wing strike frequencies during their entire mission and intercept strike reports as rebroadcast by 313th Wing Air-Ground Station. Strike reports will determine which target will be photographed.

(9) Photographic aircraft of the 3rd Photo Recon Sqn., attached to the 509th Group, will contact the 313th Wing Air-Ground Station, OOV670, on 7310 kcs, and the Twentieth Air Force Weather Station, IWO JIMA, on frequency 7455 kcs, call OOV181, and question both stations as to whether any striking aircraft of the 509th Group have aborted. This will determine whether the photographic aircraft will proceed to target or land at IWO JIMA.

(10) Annex A, attached hereto, will be the weather code used by the weather aircraft to transmit in-flight weather observations from over the target. The letter scramble indicated on the form will be used. Transmission of weather information will take the following form: letter indicated in column under letter scramble will indicate the weather element being reported. Each letter (weather element) will be followed by a number which inidcates the actual condition. These numbers, one through zero, appear at the top of the weather code form. An example of an in-flight weather transmission might be as follows: ØØV67Ø V 21V675 - 16Ø7Ø3Z BT Y2Q1KØB1ZØXØC2R1 BT RMI ØØV67Ø V 21V675 - 1ZØ7Ø3Z BT Y2Q1KØB1ZØXØC2R1 BT AR. The above message, when decoded, would indicate the following: low clouds, 1 - 3/10 small; middle cloud amount, none; height of tops, unknown; high cloud, none; height of base, unknown; height of tops, unknown; advice, bomb secondary; visibility in clear air, clear. This message will be handled by the broadcast method and repeated as shown in the example above.

(a) Each weather aircraft will be designated a specific target to observe, the one with the lower call sign being dispatched to the primary target area.

b. Command Post: Hq., Twentieth Air Force, GUAM.

BY COMMAND OF LIEUTENANT GENERAL TWINING:

R K TAYLOR
Colonel, Air Corps
Chief of Staff

OFFICIAL:

J B MONTGOMERY
Colonel, G.S.A.
D C/S, Operations

ANNEX "A" - Air to Air Weather Code

Index to the Oral History of
Vice Admiral Frederick L. Ashworth, U.S. Navy (Retired)