May 7 marked the 70th anniversary of the “little explosion” at Trinity Site in south central New Mexico. It was a small blast by atomic bomb standards but the detonation of 108 tons of trinitrotoluene (TNT) paved the way for the real deal on July 16, 1945 when the first atomic bomb was exploded. The Fatman bomb, fueled by its 14-pound plutonium core, had a yield 200 times larger than the May 7 event.

About 800 yards south of ground zero at Trinity Site, construction engineers built a heavy-duty 20-foot wooden platform. It had to be sturdy because they then stacked the TNT on top of it. On May 7, 1945, well before dawn, the neatly stacked boxes of TNT were detonated.

This little-known event was the dress rehearsal for the first atomic bomb test. It also provided the terminology we have used for the past 70 years in trying to communicate how much energy is released in a nuclear explosion.

The 100-ton event was Dr. Ken Bainbridge’s idea. He was the test director at Trinity Site and he thought it made sense to perform a dry run to make sure they had it right before committing to the actual test. Oppenheimer apparently disagreed but eventually relented.

First of all, scientists planned to explode the atomic bomb at Trinity Site atop a 100-foot tower to simulate the aerial burst that was planned for its combat use over Japan. Also, elevating the detonation point, gave them an excellent view of the explosion during the first few thousandths of a second. Scaling that down for the 100-ton explosion, the platform was built 20 feet off the ground.

During the 100-ton shot, the project operated the critical timing and data collection systems. These systems turned on measuring and photography equipment at the correct times and triggered the explosion itself. Since the Fatman test would be a one-and-done test, it wouldn’t do to have cameras and radiation detectors come on a second too late or so early the film ran out before the explosion even began.

To simulate a post-explosion radioactive crater, scientists made a slurry of radioactive material from the reactor at Hanford, Washington and ran it into plastic tubes buried...
White Sands ‘Pioneers’ Listed In Old Newspaper

The 70th anniversary of the establishment of White Sands on July 9, 1945 is rapidly approaching. Fifty years ago, when the missile range was celebrating its 20th anniversary, the Wind and Sand newspaper, in the July 9 issue, marked the event with an article about the “oldest” employees. By oldest, they meant those who had been at the range the longest at that point.

For example they pointed out that Charles Brink actually started working at White Sands before it was formally fired up. He was a surveyor who laid out many of the roads and facilities during the range’s initial buildup. He even surveyed areas around Trinity Site for the Manhattan Project.

The article focused on personnel who started work in the 40s and were still working in 1965. In that group of “pioneers” were 10 women. Five of these women were highlighted. Margaret Collins, chief telephone operator was employed in 1946 and was the first and, at that time, only switchboard operator. Rita Mundy in Communications and Mary Alice Newman in Civilian Personnel both started in 1947. Hilda Porter began work in 1948 and was secretary to the commanding general. Ruth Mabe also started in 1948 and served as aircraft dispatcher for Condron Field and then moved to the Information Office. For decades Ruth’s name was on many of the fact sheets and informational pieces published by the now Public Affairs Office.

Interestingly three active-duty Army men qualified for the “pioneer listing.” All three were first stationed at the range prior to the end of 1949. The first was Sergeant First Class Nicholas Schmidt who was at McAfee Army Hospital. He was stationed at White Sands from 1947 to 1965 except for a two-year deployment overseas during 1954-56. Remarkable. The other two were Lieutenant Colonel Harry Craig, director of Personnel and Training in 1965 but was WSMR’s Information and Education Officer in 1949, and Chief Warrant Officer George Reagan in Systems Test Division but who started as an enlisted man in 1949.

Here are some of the other 1965 “pioneer” range personnel listed in the article by their town of residence and the year they started:


The whole newspaper is at: http://www.wsmrhistoric.com

Contributions In Honor Of Someone

The following individuals have made contributions to the White Sands Missile Range Museum:

Pam Vick
Austin Vick
Frances Williams

Statement of Purpose and Membership

The “Hands Across History” newsletter is published by the White Sands Missile Range Historical Foundation and the White Sands Pioneer Group (WSPG). Both nonprofit organizations aim to preserve the accomplishments of White Sands Missile Range.

The newsletter is intended to keep members of both groups informed about current events and share information of common interest. The editor is Jim Eckles. He can be contacted by email at nebraska1950@comcast.net or at either address below.

Membership to either organization is open to anyone who shares their goals. However, details of membership (dues, etc.) differ between the two groups. For more information, please contact the appropriate organization and we will send it via the Post Office or email.

White Sands Pioneer Group
P.O. Box 318
White Sands, N.M. 88002

White Sands Historical Foundation
P.O. Box 171
White Sands, N.M. 88002
in the stack of TNT. Afterward, the scientists measured the
dispersion of this material in and around the small crater. The
crater was only five feet deep and 30 feet across.

After the test, they drove one of the lead-lined tanks
into the crater. They were rehearsing the collection of soil
samples after the main event when radiation levels would be
intense at ground zero and the tank was needed to protect the
technicians.

Finally, the event was a way to calibrate many of the
instruments used in measuring blast effects by using an exact
quantity of explosives. It is no coincidence that since the
Trinity test 70 years ago that the yield of nuclear weapons
has been communicated in tons of TNT. The baseline was set
on May 7.

One problem with communicating the yields in tons of
TNT is that most people have nothing in their everyday lives
to compare it to. Just a few tons of anything is hard to visu-
alize and it is pretty much impossible to scale up 4th of July
fireworks to kilotons of TNT.

Changing the units to pounds at least puts part of the
equation into the realm of everyday experience – everyone
knows a pound is four quarter-pound hamburgers. Now the
problem is that the numbers are way too large to grasp. For
instance, using pounds, the TNT shipped to Trinity weighed
in at 200,000 pounds. That must have taken a few freight
cars.

We don’t know how many train cars it took, but we know
the TNT came in wooden boxes from the Volunteer Army
Ammunition Plant at Chattanooga, Tennessee. Some photos
of the stack of TNT boxes reveal the plant’s name stenciled
on each box. The plant was built at the beginning of World
War II to make TNT. The plant also operated during the Ko-
orean and Vietnam Wars. It is now closed down and has been
transformed into an industrial park and nature park.

The boxes were shipped to Trinity Site by rail and were
unloaded from the boxcars at Pope siding. It is the same
siding used in early June 1945 to unload Jumbo, the huge
214-ton steel container.

There are several Los Alamos photos of Trinity Site
personnel stacking the boxes of TNT and a nice one of them
posing when the work is done. Zooming in on those photos,
it is possible to get a fairly accurate count of the number of
layers and how many boxes were in each layer – a total of
more than 3,200 boxes.

Because of those early comparisons to tons of TNT, it is
now what everyone comes to expect. In fact, most briefers
will simply say the Trinity Site Fatman explosion was equal
to “20KT of TNT.” The eyes of most Trinity Site visitors
glaze over when this number is unwrapped and put on dis-
play for their benefit. Sure, they nod, but more than likely it
just means “big” for most folks.

Of course, the number is shorthand for 20 kilotons of
TNT which, in turn, is shorthand for 20,000 tons of TNT.
Again, this is where the numbers get just too large to clearly
comprehend because that is equal to 40,000,000 pounds of
TNT.

By the way, people living in the area apparently did not
hear the 100-ton test on May 7, or they just didn’t report it.

After the Trinity test, all attention shifted to the island of
Tinian in the Pacific. There the Enola Gay, a B-29 piloted
by Colonel Paul Tibbets, was loaded with the untested Little
Boy bomb. It was dropped on Hiroshima on August 6. Three
days later, a Fatman bomb, pretty much identical to the one
tested at Trinity Site, was dropped on Nagasaki from Bocks-
car, flown by Major Charles Sweeney. Japan surrendered six
days later.

TRIVIA NOTE: When most people hear the name of the
second plane they assume the person is saying “boxcar.” It
makes sense given that these big bombers carried a huge load
of bombs. Actually, the B-29 used at Nagasaki was named
after its pilot Fred Bock and sometimes the name appears as
Bock’s Car. Major Sweeney was scheduled to fly the Nagasa-
ki mission but his bomber, The Great Artiste, was not ready
to handle the Fatman. He and Bock traded planes for the
mission and the bomb was delivered by Bockscar. The Great
Artiste served as an observation platform for the mission.

Here, the Los Alamos photographer is looking
down on the men stacking the wooden boxes of
TNT. Note that the shape of the stack is not a
simple square or rectangle but is a close approx-
imation to a circle. Also, the men ran steel cables
through the stack which were anchored to verti-
cal boards on the sides of the stack. By tighten-
ing these, they squeezed the boxes toward the
center and kept them neat and as close together
as possible. Los Alamos photo.
Telemetry Acquisition Systems History

By Phil Sharp

I enjoy reading the Hands Across History and remember many of the stories from personal experience. One subject that I have not seen is the transformation from VHF telemetry to UHF telemetry at WSMR. Since I was personally involved in the process, I am submitting the following information that I remember from my own experience. I would like to point out that since it was over 50 years since some things took place, I may not be exact on dates.

In the early 1960s the frequencies for telemetry were changed from the 200 MHZ band to the 1500 MHZ and the 2300 MHZ bands. These new frequencies required a change from the hand operated Helix antennas to an automatic tracking parabolic antenna. The new frequencies also meant that all new telemetry antennas had to be designed and procured for the Range.

In 1966 I was asked to transfer from the DOVAP engineering section to the telemetry engineering section to act as project engineer for the procurement of two automatic tracking Telemetry Acquisition Systems (TAS) for the Range. The primary contractor was Scientific Atlanta in Atlanta, Georgia. Those systems were delivered and installed, one at Alamo Peak in the mountains above Alamogordo (TAS-1) and the other at Atom Peak on the north end of the missile range just above Trinity Site (TAS-2) on the Oscura Mountains. The installation and acceptance testing of these systems was not complete until the early 1970s, probably about 1973.

During this period, it was determined that the Range would also require a system of Transportable Telemetry Acquisition Systems (TTAS). This process was started in the late 1960s. I headed a group to develop the specifications and obtain a contract for the delivery of seven TTASs. In 1968 or 1969 a contract was let to Symetrics Engineering in Satellite Beach, Florida for the units design and manufacture.

As the project engineer I spent many weeks in Satellite Beach trying to ensure that WSMR specifications were met. Finally, in 1974 or thereabouts, because of many problems, Symetrics sent an engineer to WSMR to do whatever was necessary to make the systems meet specifications. After several months our joint effort resulted in the acceptance of the seven TTASs. This was due to the hard work and persistence of Mr. Don Vanhyning.

In the early 1980s it was determined that an automatic tracking antenna was required on the south end of the Range in order to properly support the launch areas. Once again,

see Improving The TTAS, page 5

One of the seven Transportable Telemetry Acquisition System units out on the missile range. Courtesy photo.
Improving The TTAS

I headed a group to develop the specifications and obtain a contract for the procurement of the South Range Tracker (SRT). This tracking system was mounted on a 50-foot tower at the J-56 recording station.

In 1988 a task was undertaken to design in-house, a computer controlled servo system to replace the discreet component servo system in the TTAS. TTAS-7 was used as the test vehicle for this task. Two engineers assisted me in the design and construction of the circuitry, the installation of the circuitry into TTAS-7, and the evaluation of the performance with the new servo system. It was determined that the performance was significantly increased enough to justify having it installed in the other six TTASs. In the summer of 1992 the procurement package for the modification of the six remaining TTASs was completed and was ready to be submitted for bids.

At that time I decided to retire leaving the procurement in the hands of the other two engineers. Later I learned that the procurement had been canceled because of the withdrawal of funding.

I also learned that the TAS at Atom Peak had been moved to Salinas Peak to better serve the main range. During the procurement of the SRT, Mr. Moises Pedroza was the National Range representative on these procurements. I do know that Mr. Pedroza has passed away but I do not remember the names of my two assistant engineers nor their present status. At the time we procured the TASs I worked for the National Range Operations, but for all the remaining procurements I was employed by the Instrumentation Directorate.

Organizers Announce Sixth Kids Reunion For September

It is time for another “WSMR Kids Reunion.” The reunion is scheduled for September 3 – 6 with it headquartered in Las Cruces. This will be the sixth Kids Reunion – the first one was in 1991.

The reunions were started by Bill Adler who is still the mover and shaker behind the get-togethers. They are intended for folks who were once living at White Sands Missile Range as kids. For instance, Bill lived on White Sands from 1956 to 1963 and graduated from Las Cruces High School in 1964. However, they are certainly not limited to just the kids. Past reunions have drawn parents and others as well.

The idea for the reunions is get people together again. By the nature of a military installation like White Sands, families come, stay for a short time, and move on. The kids lose track of each other as they jump from one location to another. A traditional high school reunion only captures a small percentage of the dependents on a post at any given time. But Adler’s idea of bringing everyone together at one time, offers a much broader chance to revisit the good old days.

The chairperson for this reunion is Angela Rasmuson Dizazzo who lived on White Sands in the 1987-88 timeframe. She says the reunion will again offer a picnic, a dinner/dance, and a day on the missile range visiting old haunts.

More information, along with registration forms, maps, hotel information and T-shirt ordering forms, is all available online at: http://www.wsmrkids.com

Also, you can email Bill Adler at: Bill@wsmrkids.com

On the website photos from past reunions are posted.
Driving War Road Year After Year After Year

By Bruce Kennedy

In the summer 1958, I had just graduated from Texas Western College with an engineering degree in mining and geology. I landed a job at the Magma copper mine in Superior, Arizona, so my mining career was under way.

Surprise - instead of working in the engineering department, I was assigned as a mucker at the 3675 level (below ground level, that is). The temperature at that level was about 110 degrees F. I was eventually moved up to drilling, blasting, and timbering, still at 3675. Working conditions were miserable, so bad in fact that another newbie mining engineer quit after just a few days on the job.

Flash back to April. I had filled out an application for federal employment at White Sands Missile Range. In early September I received a letter from the personnel office at White Sands offering me a job as a photogrammetric engineer GS-5. I immediately quit the Magma and headed back home to El Paso.

I went to work for the Attitude and Events Section in Measurements Division. That group operated the long focal length telescopes that tracked and photographed missiles in flight. In those days there was a lot of missile testing, and early morning firings called for early workdays. Lots of overtime. Fortunately, the Range ran an overtime bus starting in Ysleta heading to downtown El Paso, then out Pershing and Dyer to the checkpoint at Diana and Dyer in northeast El Paso. We lived in Ascarate in El Paso’s lower, and I would sometimes catch the bus at 3:30 am for a 5:30 workday. The ride from Ascarate to the range took one hour and forty five minutes. From the checkpoint the bus traveled the War Road to WSMR, about 40 more miles.

On regular workdays several buses picked up passengers at various locations in El Paso then converged on the checkpoint where many more buses were loading for the trip to the range. Many passengers slept, others read the morning newspaper, some chatted or merely quietly rode to work. In the afternoon I rode the lower valley bus back to El Paso. There was usually a spirited poker game in the back of the bus.

Those old military buses didn’t have air conditioners, so the summertime trips were quite hot. There were no freeways back then, so the lower valley bus took a circuitous route to Alameda Avenue and on to Ysleta. Many years later the old buses were replaced with modern air conditioned buses, but eventually bus service was discontinued. Carpools took over as the getting-to-work mode.

Starting at the checkpoint the road crossed the Texas-New Mexico border about 4 miles to the north. New Mexico maintained approximately six miles of highway until it crossed a cattle guard onto the Fort Bliss Dona Ana Range. Another few miles took you to the Dona Ana Range Camp where the road took a 90 degree turn. The scenery along that stretch was magnificent with views of the southern Organ Mountains. The mountains showed their beauty as you rounded a sweeping curve and headed north. All along this portion of the road one could view military activities such as artillery fire, tank convoys, and rarely, parachute drops over Coe Dry Lake. Artifacts of the old ranching era were visible along the side of the road, including corrals and water wells. After 20 more miles you arrived at the military police gate. If you had an official windshield sticker the MP waved you through. Without a sticker, you had to stop and get a visitor’s pass.

Normally, the 40 mile trip was uneventful. Sometimes the military police set up a radar trap and caught a lot of speeders. The speed limit was 55 mph, but the normal speed of traffic was 60 or 65. There were other hazards, sometimes with fatal consequences.

Snow and icy roads created very dangerous driving conditions. If the snow started while we were at work it was up to the commanding general to decide whether or not to release the workforce. There were a few times when the decision was too late. As the El Paso residents headed south they encountered very slippery conditions. One of ASL’s scientists was riding in a carpool when an oncoming vehicle slid into the side of his vehicle and he was killed. Ice wasn’t the only hazard. In wintertime one stretch of the road put the
Death On War Highway — CONTINUED FROM PAGE 6

traffic directly toward the sun. One car tried to pass a truck at this point, but a military vehicle directly in front of the truck decided to make a left turn onto a dirt road. The vehicle hit the military vehicle causing one fatality. Another time along the same part of the road a driver was apparently blinded by the sun and ran up under a semi-trailer. I was involved in a scary situation on an icy road. I was the front passenger in a van when the driver attempted to pass a military 2 ½ ton vehicle. We made it past the truck, but as the driver started to move back into the right lane the van spun around 180 degrees, and we saw the big truck heading toward us. Fortunately, the shoulder was flat and we slid off the road thus avoiding a collision.

There were a few times when heavy rains over the Organs produced flash flooding across the road adjacent to the Coe dry lake. It didn’t happen very often, but when it did traffic was stopped. One particular heavy rainstorm filled Coe Lake for about a year. Las Cruces residents sometimes had the same weather problems. Just north of the Las Cruces gate there were several road dips, while normally dry, would swell to a river during heavy rain. One military family was washed away at one of these dips. They and the military policeman who tried to rescue them drowned. San Augustin Pass on highway 70 to Las Cruces was sometimes closed because of snow and ice.

Dust storms, sometimes natural and sometimes man-made, presented dangerous driving conditions. Springtime winds, at times greater than 50 mph, kicked up blinding dust primarily between WSMR and the Dona Ana Range Camp. Tanks and armored personnel carriers also produced great volumes. Some bright individual constructed a tank trail parallel to the road, and convoys of tanks would cause a terrible driving hazard. I know of at least one accident that was caused by the dust.

Otherwise, driving the War Road was uneventful most of the time. I estimate that I spent somewhere between 13,000 and 15,000 hours on the commute during my 30 years at White Sands Missile Range covering over 600,000 miles.

Making The El Paso Commute In 1946 Was A Dusty Affair

EDITOR’S NOTE: In keeping with Bruce’s story about driving back and forth from El Paso, here is a story about Clyde Brubaker that ran in the Wind and Sand in the July 6, 1950 issue and mentions his commute back in 1946. Brubaker is also mentioned in the article on page 2 about early employees at White Sands.

Since the summer of 1946, Mr. Clyde W. Brubaker, shop foreman, Post Maintenance Shop, has watched the development of automotive repair facilities on this Post.

Mr. Brubaker accepted the position of post maintenance shop foreman of WSPG in the summer of 1946. To say that he was a shop foreman at that time is stretching the truth slightly. In those early days of the Post, there was no shop building and mechanics had to use a concrete slab for their “floor” space. Mr. Brubaker was responsible for the maintenance of 30 military vehicles, the only ones on the Post.

The only means of transportation Mr. Brubaker had for commuting between his home in El Paso and WSPG in those hot summer days of ‘46 was a jeep. Ten cent buses were unheard of at that date. He, another civilian employee, and two enlisted men made the trip daily on the desert road through the swirling dust. The four were the only ones who made the daily adventures to the Texas city.

As WSPG has progressed, so has her post maintenance shop. In December 1947, Mr. Brubaker assumed foremanship of the new field maintenance shop, and now there are more vehicles to be maintained.

Before coming to WSPG, Mr. Brubaker was Chief Inspector at the Ordnance Shops, Fort Bliss.

Mr. Brubaker was born and raised in the state of New Mexico, and his education includes that of the New Mexico Military Institute.

His mechanical experience includes the six months General Motors Mechanic School, Flint, Mich., ten years with the Buick Motor Company Experimental Shops, also of Flint, the U.S. Navy Repair Yards at Bremmerton, Wash., and the Soil Conservation Service.

Mr. Brubaker, his wife and daughter reside in El Paso.

Frank Malina, JPL, stands next to his creation, the WAC Corporal - the first rocket fired at White Sands in the fall of 1945.
The control bunker 10,000 yards south of ground zero at Trinity Site. This is where instrumentation was activated and the first atomic bomb triggered on July 16, 1945. Also, this is where Robert Oppenheimer watched from. In July 1965, the missile range bulldozed the sand away from the bunker and burned it.