Hands Across History

A joint newsletter for the White Sands Historical Foundation and the White Sands Pioneer Group.

Volume IV, Letter III August 2008

Benfer Chosen For Hall Of Fame

Richard Benfer has been chosen for induction into the White Sands Missile Range Hall of Fame in 2008. Benfer, an engineer and manager with Bell Telephone Laboratories, is noted for overseeing the lab's development and testing of the Nike family of missiles.

In 1946 Benfer and a few engineers from Bell Labs and Douglas Aircraft, a sub-contractor, fired the first Nike missile at White Sands. It was labeled a "dummy" round and was simply a machined wooden pole with a motor attached. Benfer's chief engineer, Bill Mraz, joked that the missile was probably a Bell telephone pole whittled down for the test.

The first Nike system, the Ajax, was developed by the Army to defend the United States against a bomber attack from the Soviet Union, especially against those planes carrying nuclear warheads. It was the first time anyone had ever attempted to build such a complex system so every development and test by Benfer and his team was ground breaking.

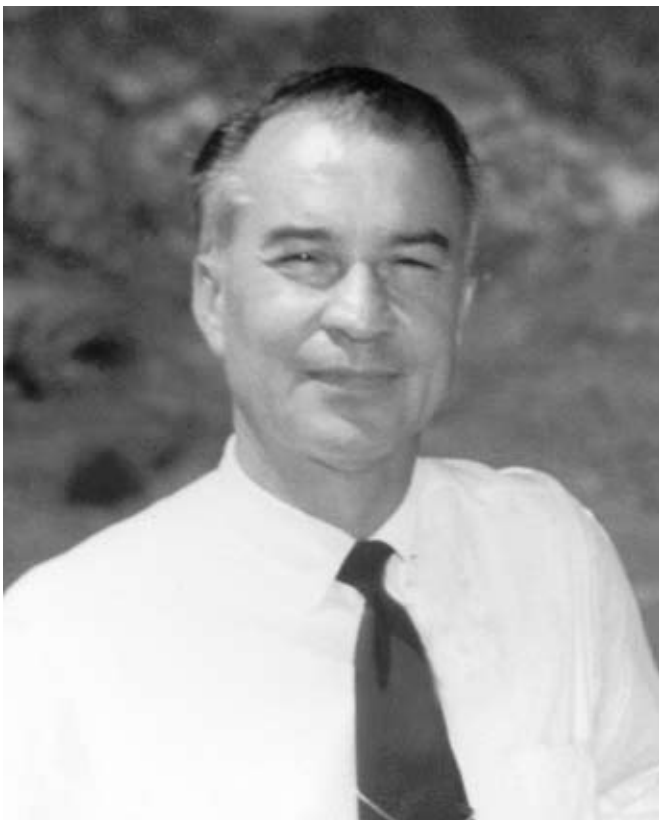
And the system was complex. There was an acquisition radar that found the target airplane and another to track it. A third radar was used to track the Ajax missile once it was launched. A computer system calculated where the target was going, where the missile was, and sent signals to the missile to direct it to the target. Also, the missile was directed to explode once it was close enough so the shrapnel would destroy the plane. This was in addition to the missile itself with its solid-propellant booster motor, liquid-propellant sustainer motor, warhead and associated electronics.

Most of these technologies were immature and required a great deal of trial and error testing. At first, Benfer lived in New Jersey and traveled back and forth to White Sands for the testing. In 1953, Bell established a permanent laboratory at White Sands and Benfer permanently moved to New Mexico as its director.

Eventually the system matured with all the pieces working together as designed. On Nov. 27, 1951 a Nike missile brought down a radio controlled B-17 bomber flying at 33,000 feet above White Sands. It was a spectacular demonstration of what a guided missile could accomplish – one shot, one kill.

As most program managers know, there are always unforeseen circumstances that must be dealt with before almost any system is complete. For Nike Ajax system deployment, one last minute detail was the real estate issue.

Initially, each site was supposed to occupy 119 acres.



Richard W. Benfer

In urban areas like Brooklyn, NY and Chicago, IL this was simply impossible. Designers came up with the idea of storing missiles and warheads underground, in magazines, and taking them to the surface using an elevator system for actual launches. This reduced the safety area and, thus, the land required for each site was reduced to just 40 acres – a number much more acceptable to community leaders.

To test this new design, an underground magazine and elevator system had to constructed and tested at White Sands in 1953. This addition to the testing schedule must have been trying for Benfer and his team.

However, successful testing allowed the Army to start deploying the Nike defensive system in 1954 with the first site located at Ft. Meade, MD. Eventually several hundred sites were established.

see Hall of Fame, page 2

Hall Of Fame —— CONTINUED FROM PAGE 1

Almost immediately Benfer's people were working on the next generation in the Nike family – the Hercules. This missile was almost a thousand miles per hour faster than Ajax, could fly out to 75 miles and could carry either a conventional or nuclear warhead. The idea with Hercules was to destroy a whole formation of bombers with one missile.

Thanks again to Benfer's leadership, Hercules testing was very successful and it replaced the Ajax in 1958.

As the threat to the United States shifted from bombers to ICBMs (intercontinental ballistic missiles) with nuclear warheads, Bell Labs was asked to look into shooting down missiles with missiles. This led to the third generation Nike missile – the Zeus.

The first version was a big two-stage missile, standing almost 45 feet in length, which could carry a nuclear warhead. Benfer led testing again as firings of this "A" model took place in 1959 and 1960 at White Sands.

A 200-mile limit on Nike Zeus was soon lifted and a "B" model was developed. This version was three stages and stood almost 50 feet. It had a range of 250 miles and a ceiling of over 150 miles. Full up testing could not be done at White Sands so the program was moved to Kawajalein in the Pacific. Benfer left White Sands for three years to manage the testing out over open water.

When Benfer returned to White Sands he led the effort on the Nike-X, which eventually became the Spartan missile and part of the Safeguard Anti-Ballistic Missile System.

Benfer retired in 1969 and lived in Las Cruces until his death in 2002 at age 95. While living in Las Cruces he was a strong supporter of NMSU and left an endowment for scholarships at the school.

Richard W. Benfer was born on April 21, 1907 in Wolf Lake, Indiana. He attended Tilden Technical High School in Chicago and earned a degree in electrical engineering from the University of Illinois in 1929.

His initial job upon graduating from college was with a subsidiary of Western Electric that installed sound systems in movie theaters.

(EDITOR'S NOTE: At press time no date had been set for the induction ceremony but will probably take place before the next "Hands Across History" newsletter. If you are interested in attending, please call the White Sands Public Affairs Office at 575-678-1134 and ask them for the latest details on the ceremony)

General Electric And Hermes (V-2, Bumper, Hermes A1)

EDITOR'S NOTE: The following is quoted from a draft GE document about the company's involvement in early rocket and missile research. The speaker is Art Robinson, a GE employee, who was second in command on Project Hermes for GE.

^As a prelude to developing operational missiles, the potential of Hermes was never completely realized. But as a pioneering effort in the face of national indifference, shortages of funds and personnel, and facilities problems --- it was an incredibly productive project. With the abundance and richness of the technological 'firsts' that were achieved, the program served as an unparalleled training ground for the missile and space experts of the Company.

^In the early days of Hermes, there was no concept of a program manager as we know today. The responsibilities of a project engineer were similiar to those of a program manager but his authority was severly lmited. The program manager concept then developed in response to the need for a new method of managing such complex tasks.

^Without Hermes, we could not have succeeded in building the variety of General Electric enterprises that now spread across a broad spectrum of aerospace activities. And without Hermes, the success of the nation in meeting the ominous threats of international aggression would have been jeopardized.

^Those of us who were with Hermes will never forget it. There was a spirit of adventure and cooperation hard to match, I think, in the history of industrial ventures.

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.

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San Andres Tram Provided Access To Observation Site Atop the Peak

Editor's Note: On the back page of the March 2008 "Hands Across History" newsletter I ran a photo of Clyde Tombaugh atop San Andres Peak visiting an optics site he had built there. I mentioned that personnel rode a tram to get to the top of the 8,236-foot summit. Here is a story about the tram I wrote for the "Missile Ranger" back in 1986.

By Jim Eckles

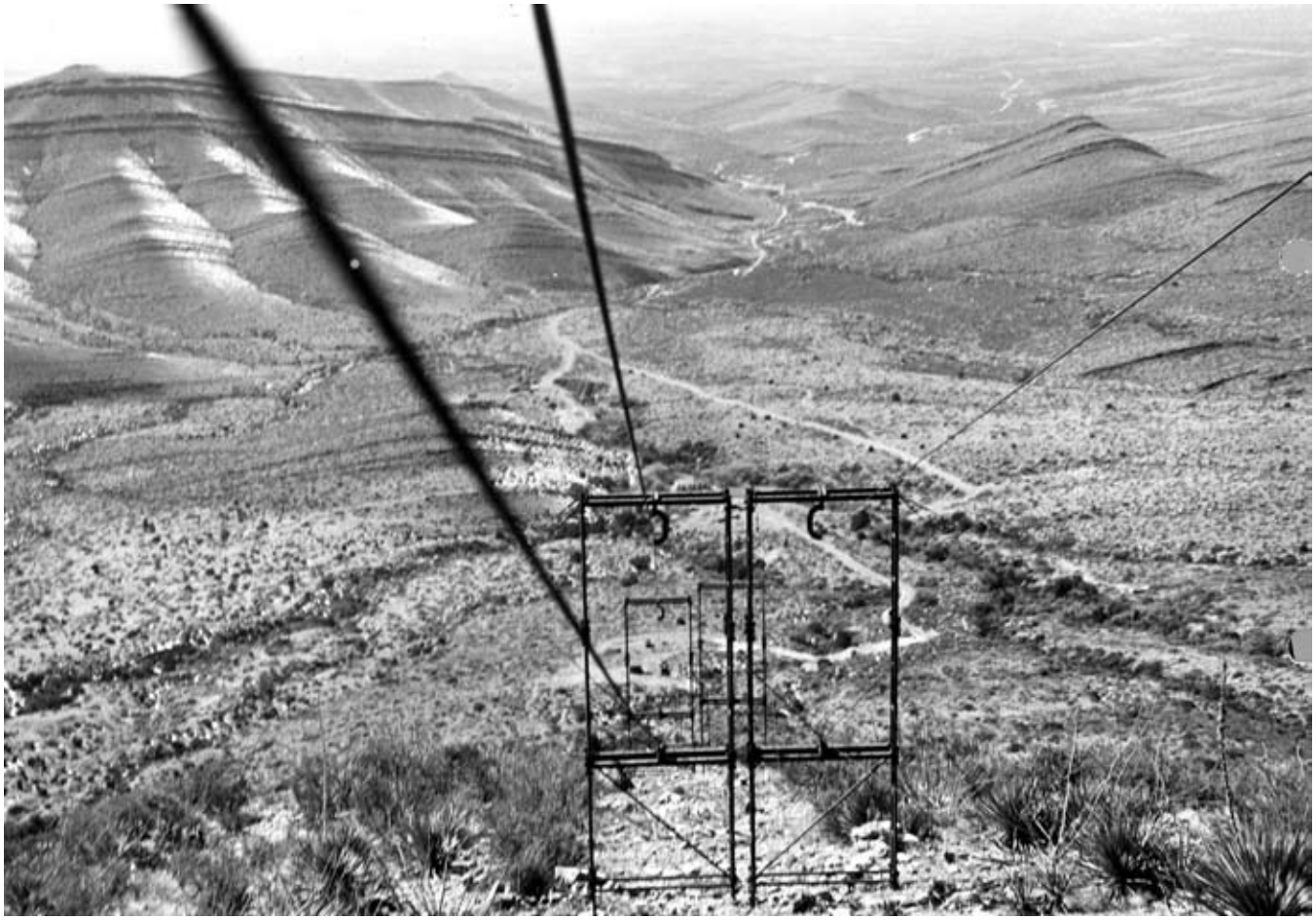
The problem with most mountain-top viewpoints is getting there. The of San Andres Peak offers one of the grandest views on White Sands Missile Range but is miles from and thousands of feet above the nearest road. However, for a few years, starting in 1947, a aerial tram carried range employees to the top with relative ease.

San Andres Peak is 8,236 feet high and is in the middle of the San Andres Mountains to the west of Lake Lucero. From the top the view is easily 50 to 100 miles in almost every direction. It includes an unobstructed view of many of the range's launch complexes and most of the range itself. In the late, 1940s that meant of view of V-2 firings from just after liftoff to impact without the interference of ground haze.

Initially, range officials used the top of San Andres Peak as an observation point for plotting impacts. Combining information from several sites on the range it was possible to pinpoint the location of an impact through triangulation.

To get equipment and personnel to the top of the mountain, planners decided to put in tram instead of a road. According to Charlie Brink, who was chief of the range's survey unit, the tram was contracted out. He surveyed the mountain for the project but a Colorado firm installed in in 1947. It is 7,200 feet long and ascends 2,200 vertical feet from its terminal on the west side of San Andres Peak to a point just below the top.

see San Andres Tram, page 4



This Feb. 1948 photo is looking down, west, through several pairs of towers on the tram. The road comes from the Jornada(toward the top of the photo) to the old Ropes Spring CCC camp. The base of the tram is just a few yards east of the recreation camp with its swimming pool and picnic tables.

San Andres Tram

CONTINUED FROM PAGE 3

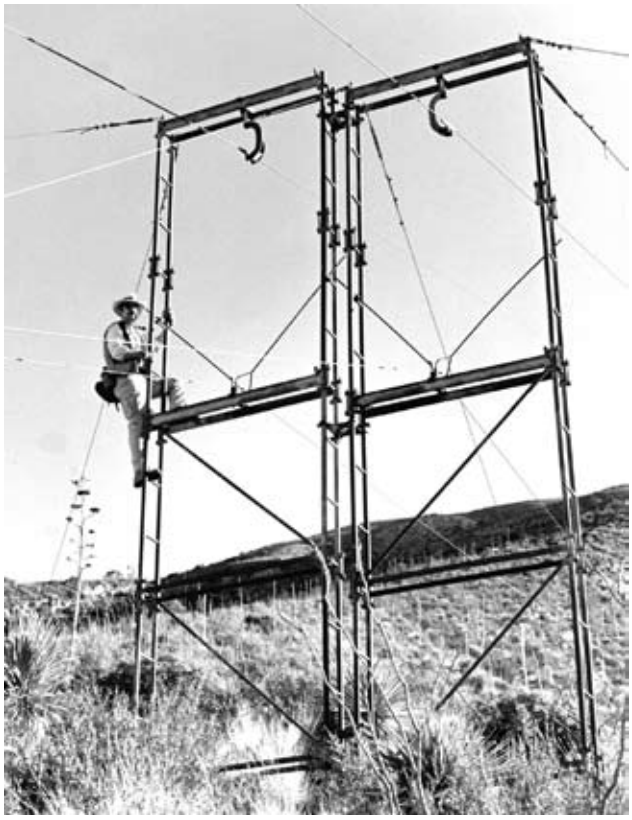
The tram is anchored at the bottom and top to small but solid steel frames which are pinned to solid rock. There are 11 pairs of towers in between to hold up the cables.

The towers are put together like the scaffolding used in building construction. Each tower was apparently carried up the mountain in pieces and then bolted together on site – much the way a child would put together a Tinker Toy tower. The bottoms or feet on the towers are not anchored to the ground. Instead guy wires hold each tower erect the same way they hold a radio station antenna in place.

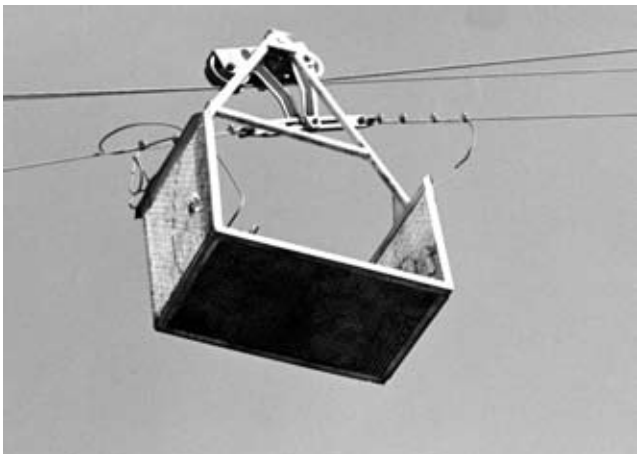
(AUTHOR'S NOTE: the towers are no longer standing. Since I visited the site there was an incident where a helicopter clipped one of the cables during a bighorn sheep survey. The helicopter was OK but officials decided to knock down the towers to prevent a more serious accident. A team went up and cut the cables on each tower and allowed them to fall in place. They are still where they fell)

Two cables were stretched through each tower. The top cable was stationary and acted as a rail for the cable cars to hang from.

The term "cable car" is a bit of a misnomer as they weren't much more than metal baskets. They were very small with room for only one person to ride in comfortably. Those who actually rode it said two people could go together but they would have to sit side by side with their legs dangling out the side.



Harry McCaffrey provides scale on a pair of tram towers. The many guy wires required to hold up the towers are visible. The photo was taken in 1986. (Eckles photo)



One of the personnel baskets was still hanging from the cable in 1986. One man could sit folded up in the basket or two could ride with their legs dangling out the side

The second cable attached to the cable cars and pulled the cars up or down the mountain. The moving cable was a continuous loop with the two cars tied into it – one on either side of the loop and at opposite ends. One side of the loop went through the north towers and had a cable car while the other side of the loop was suspended in the south towers.

This meant that if the photographers approached the tram base and got into the south basket for the ride up, the north basket was already at the top of the mountain. As they ascended, the north basket came down the peak and ended up at the base as they hit the top. Operators then threw the cable into reverse to get the men back down on the south basket. At the same time they could send other personnel or equipment up in the north basket as the south side one came down. This simple system insured there was always a basket at the top or bottom.

The cable was back and forth by a small gasoline engine at the bottom. Whenever the tram was used two soldiers stayed at the bottom and operated it. They communicated with the operators at the top over a telephone line strung below the tram. The engine was equipped with a transmission so it could run at various speeds. Typically a ride took 15 to 20 minutes one-way.

The mountaintop quickly grew into a real instrumentation site, equipped with an Askania cinetheodolite to film missile tests. A cement block building was built on the east edge of the peak. Beside it a small shelter was constructed for the instrument. Electricity was provided by a portable generator and heat came from an oil heater. A radio provided launch information and timing data for the crews.

All the building materials and equipment were carried up the mountain on the tram. The constructions crews rode it back and forth. They even carried pipe and a portable welder to build a railing along the east edge so no one would fall off the cliff on that side.

see Spectacular Views, page 5

Spectacular Views —— CONTINUED FROM PAGE 4

Lester Christiansen was in charge of the cine site on San Andres Peak and says he probably rode the tram more than anyone. It took two men to operate the old Askania and Christiansen said he never had to look far for a fellow operator. Many people were interested in the adventure of riding above a step mountain side covered with pinion, scrub oak, sotol, cholla, ocotillo, century plants and mountain mahogany to get to one of the best viewpoints in southern New Mexico.

Christiansen said he saw a mountain lion once on a ride. John Phillips, the chief of the Askania unit for White Sands at the time and Christiansen's boss, also rode the tram frequently. He said he once surprised a desert bighorn sheep on top. It was Phillips and leaped down the ledges on the east face of the mountain. Phillips and Brink both talked about the rattlesnakes they saw at the top.

But the most notable inhabitant on the mountaintop was the lady bug. Phillips said it was common to have them crawl up your pant legs. ***(AUTHOR"S NOTE: Years later when I climbed the peak, even in January, there were hundreds of orange and black insects on the rocky top)***

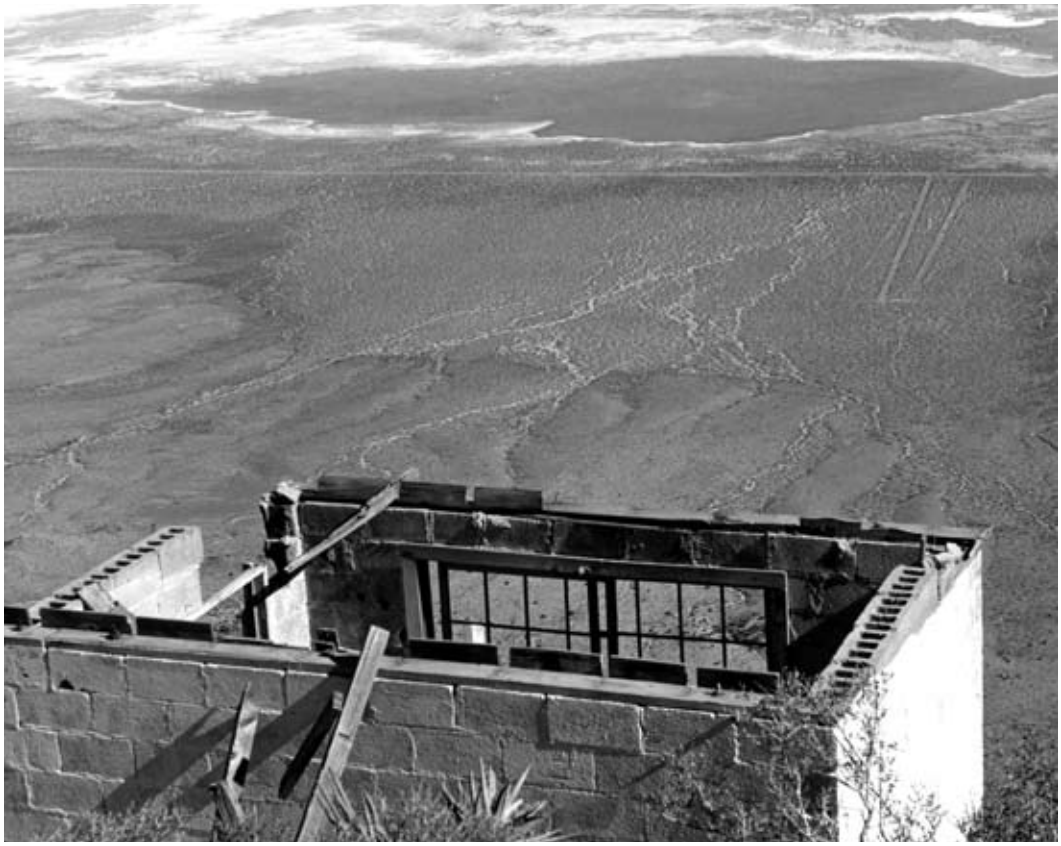
In early 1950, National Geographic Magazine photographer J. Baylor Roberts made the tram ride. He was looking for a photo of an instrumentation site being used in support of a V-2 firing involving the National Geographic. The magazine had cameras in the payload of the V-2 to take still photos of the earth as the rocket slowed to apogee.

Roberts took a photo of Christiansen and Phillips manning the Askania at the site. The color photo appeared in the October 1950 issue of National Geographic Magazine in an article called "Seeing the Earth from 80 Miles Up."

The article was written by Clyde T. Holliday and talks a lot about the future use of high alititude photography of the earth. All the photos in the article were shot at White Sands.

Things did not always go smoothing on the mountain. Christiansen said in the summer the top cable would warm, expand and droop. Then, when he and his partner rode over areas close to the ground, the basket sometimes dragged on the rocks and cactus. On the other hand, winter temperatures seemed to be especially cold on top and the oil stove didn't help much.

In addition, Christiansen said there were several days then he was forced to walk down from the summit because of high winds. The tram also stalled occasionally leaving men dangling between towers until the soldiers could get it going. Phillips remembered a time when it quit when the basket he was riding in was less than 100 feet from a tower. After waiting 30 minutes, he decided it wasn't going to be fixed anytime soon so he went hand over hand on the top cable to the tower and walked down.



Taken in 1986 this photo shows the shelter building at the top of the peak with its roof blown off. At the top of the photo is Lake Lucero to the east. The straight line crossing the photo just below Lake Lucero is Range Road 7. (Eckles photo)

According to Christiansen, the scariest part of working on the peak and riding the tram was the lightning. He said the peak was a great lightning rod and sitting on top during a thunderstorm was an experience in helplessness. Once a lightning strike blew out some of their equipment.

Safety seems to be the main reason for closing the site in 1952. In addition, the inaccessibility of the place and number of manhours required in getting the data made the site unattractive.

The cinetheodolite and other equipment were removed. The building was left behind and has since lost its roof to the high winds that race across the top.

see Tram Base At CCC Camp, page 7

In My Own Words

Smith Recalls Navy Dog 'Guns'

EDITOR'S NOTE: The following was submitted by Gilbert Smith in Alamogordo.

I first arrived at White Sands Proving Ground the end of March 1948. My assignment as a Staff Sergeant was missile assembly crewman with the 1st Guided Missile Battalion, later to become a regiment and then a brigade.

The 1st Guided Missile Battalion was headquartered at Fort Bliss, however our missile battalion was attached to White Sands Proving Ground. We provided missile and instrumentation support and training in the research and development of missiles, i.e. - Aerobee, Nike Ajax, V-2, Hermes, Honest John and Corporal. The battalion consisted of four batteries, approximately 300 personnel, one headquarters, two firing batteries (C and D) and an instrumentation battery.

Instrumentation battery personnel along with civil service personnel manned the few optics stations we had on the Range. Later on these stations were contracted out to Dynalectron Land Air Division.

My eight-year tenure (March 1948 – September 1956) was mostly involved in research and development of missiles. Later I was with the Engineer-User Program for the Corporal missile system and finally was activated to a tactical deployment overseas.

The Navy, which then had well over 200 personnel and was one of our contenders in softball, had a mascot – a dog named "Guns." Guns was quite a dog. He rode in a jeep just like the sailors, to and from the Desert Ship. Old Guns liked everyone, but if you were not in Navy dungarees, you could receive a wet pants leg. For some reason or other he didn't like people in khakis. For the protection of the officers and chiefs, poor old

Guns had to be tied up during inspections.

Also during the early years at WSPG, the base had a crow for a mascot called "Jim." The GIs from the 169th Signal Company found Jim as a baby out in the desert while working on the telephone lines.

Jim had many friends and loved to visit offices where he could find shiny objects to steal. He would fly from one pole to the next, watching the troops march to and from work. Jim even mad his rounds to the housing area and trailer courts looking for a handout, to play or to have fun by dive-bombing people out for a walk. One lady called the Mps and wanted him shot.

Jim, on occasion, would drink beer with the GIs in the barracks. One night they gave him too much and poor old Jim passed out. They tried to revive him, and thinking he was dead, threw him in the dumpster. Next morning when the men were dumping the trash, Jim came crawling out.

Jim was killed by accident by a fireman who playfully hit him with a football when Jim was dive-bombing the fireman.

In 1950, the Navy chiefs received approval from their CO, Capt. Smith, to form their own Chief Petty Officer's Club.

Since there were only a few chiefs, they invited the Army master sergeants from all the White Sands units to join and assist. Those of us who were interested worked at nights and weekends with the chiefs in the construction of the first CPO club.

Later it expanded and took over the entire building. We all donated $10 to establish a starting fund and took turns tending bar and cleaning – for free. It turned out to be an excellent club for many years.

The desert road to Dona Ana Range Camp and to El Paso was built in 1950-51. The old road was a graded cow path, weaving in and out of the boondocks to the range camp where it was paved to El Paso.

A few people used the road including the 1st Guided Missile Battalion bus to El Paso. Sometimes we would suddenly find ourselves surrounded by water from a quick down pour in the mountains. Yes, we have gotten stuck in sand and water traps which took either manpower or wrecker from White Sands to get us out.

The range in 1948 was an open base. There were two old gold miners who would come on base each morning to get to their mine somewhere behind the 75K or 500K static test stands. ***(EDITOR'S NOTE: That would be Fred Schneider and his partner George Hohenberger. They had a producing gold and silver mine in Texas Canyon. Some of the machinery and the ruins of their cabin can still be found in the canyon.)***

Horses and cows freely roamed the base. At the main gate, there was a water tank and corral which probably belonged to Mr. Cox who once owned the land that the government leased for use.

To my knowledge, from 1949 to 1956, there were no casualties as the result of missile firings or testing. However, there were several close calls. Missiles sometimes would not go in the direction they were programmed for. One went over Organ Mountain Pass, some went back toward "C" Station and some were too short or too long. There was one that was stated tested (anchored down) at the Army blockhouse that went some 3,000 feet. I remember when a Corporal missile had its first fuel emergency vent system activated. Personnel took off in every direction because no one had ever experienced this event before and had no idea what was going to happen next.

Trinity Site Next Open On Oct. 4

If you have never been to Trinity Site on White Sands, where the first atomic bomb was tested, it will be open to the public on Oct. 4. Call the range Public Affairs Office at 575-678-1134 for more information.

Tram Base At CCC Camp

CONTINUED FROM PAGE 5

The towers, cables and baskets are still on the side of the mountain. An equipment shed and the bottom frame, with its counterweight and gasoline engine, are also still there.

The cinderblock building at the top of San Andres Peak is still visible during morning hours from Range Road 7. You can't see the building per se but a small white spot on the highest point of the long ridge that is San Andres Peak is visible to the naked eye on clear days.

The base of the tram sits just east of the old Civilian Conservation Corps (CCC) recreation site at Ropes Spring. The recreation area has a large building that may have once served as a bunkhouse and a 5-hole outhouse made of stone is located to the south. Trees along the drainage provided plenty of shade.

Down the hill from the bunkhouse is a picnic area with tables made of concrete and stone. Each picnic site has a fire grate and its own water spigot. A pipeline from a storage tank is up the ravine and feeds the system. Ropes Spring provided the water to fed the tank.

At the bottom of the picnic area is a nice sized, concrete lined swimming pool.

Above is a closeup of the gauges and key for the engine that pulled the moveable cable on the tram. At right, this 1948 photo shows a soldier manning the engine mounted in the bottom framework. The building, numbered 1919, housed maintenance parts and equipment for the system. All of these things were still there in 1986.

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The Back Page

The White Sands Post Exchange in the early 50s was equipped with everything a busy housewife might need.