



Hands Across History



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

Volume XIII, Letter III

August 2017

Improvements & Change At WSMR Museum

By Darren Court, WSMR Museum Director

It's been a very busy year at your museum, and promises to become even busier. We are currently working a package that has gone up to the Secretary of the Army's office for approval to build a new museum, funded by your donations to the White Sands Missile Range Historical Foundation.

The new facility will be 4,000 square feet and contain entirely new exhibits on everything from the history and fundamentals of rocketry, to the V-2, Trinity Site, the Cold War, Navy and NASA. The process, of course, takes time and we have been working on

this for roughly two years but feel we are in the "home stretch" at this point, so that's very good news.

In the museum, we have had great visitor response to the "Frontier Army in New Mexico" exhibit. As you may know, we lost the gift shop almost two years ago. This roughly coincided with the approval of a new museum storyline, part of which deals with the Army in New Mexico going back to 1806. The exhibit follows that timeline, beginning with Zebulon Pike, through the war with Mexico, the Civil War, and the Apache Wars.

see WSMR And The Vietnam War, page 2



New landscaping along the driveway into the Museum parking lot. To the left is a new sidewalk that takes visitors to the gate. Along the sidewalk are new trees that will act as a windbreak. Photo by Jim Eckles

WSMR And The Vietnam War — CONTINUED FROM PAGE 1

Visitors are always surprised, as they expect to see only rockets and missiles, but as the only Congressionally-funded Army museum in the state our focus and storyline has expanded in the last two years.

In the main gallery we have recently completed a new exhibit detailing the role of WSMR in testing weapons during the Vietnam War. We have also rewritten and moved the Ranching, Proving Ground, Drones, and “Rings of Steel and Fallout Shelters” exhibits, and are currently developing a small History of Rockets and Rocket Fundamentals exhibit as a “test” for the

new gallery. It will give us some insight into how we want to set up the new exhibit hall when the new building is completed.

Outside has seen a number of changes as well. The open area between Missile Park and Headquarters Avenue has undergone a face lift and is now beautifully landscaped. We have pushed this project for a number of years to have landscape rock put down and trees planted as a windbreak. As you can imagine, when the spring winds blow they sandblast the artifacts on exhibit outside. We are hoping the new landscaping helps mitigate some of that.

As for the artifacts, the US Army Center of Military History was generous this year and funded the refurbishing and repainting of both the Nike Ajax and Nike Hercules; the Mace, SAGMI, Loon, Aerobee 170, and Cardinal Drone also received much needed work and a fresh coat of paint.

Additional funding just received in August will allow us to also to do another half dozen large artifacts so things are looking much better. We also received funding to build large concrete cradle mounts for the Mace, so it will now be displayed horizontally once work on it is completed.

In addition, funding was received to build concrete pads see **New Brochures, page 3**



A Dragon Missile on display as part of the new Vietnam War history exhibit - what White Sands Missile Range did to support the war. Photo by Jim Eckles

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 edi-

tor 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 171
White Sands, N.M. 88002

White Sands Historical Foundation
P.O. Box 171
White Sands, N.M. 88002

New Brochures — CONTINUED FROM PAGE 2

for our tactical Redstone which has been in storage the last couple of years. This Redstone has never been “opened,” with the separate components still in their trailers covered in the original factory wrappings and materials from 1964, so we are excited to get that piece (pieces?) out on exhibit.

Outreach and education has become of tremendous importance in what we do at the WSMR Museum, and we continue to offer monthly tours and staff rides to Hembrillo Canyon. We also now offer a monthly tour to LC-33 and are developing brochures and pamphlets for these. We have developed and are now providing to the public brochures on the V-2, Missile Park, the Nike Program, and the New Mexico National Guard/Bataan. Many more are in the works.

We also continue our outreach to the community with tours for STEM (science, technology, engineering and math) and other local school groups, military veterans organizations, universities and others.

Other changes are in store and we will continue to let you know what is occurring at YOUR museum as things happen. Thank you for your continued support.



The spruced up SAGMI - the name is an acronym for Surface Attack Guided Missile.



An unnamed mannequin mans the VEGA Target Control console in a new display being developed at the Museum. Do you have a first name for this mannequin? Darren plans to provide a name tag for the mannequin and could use some suggestions. Send your idea to the newsletter editor. Burt????



The Loon in Missile Park is freshly repainted and looks great. All photos on this page by Jim Eckles.

Solving The Mystery Of What A SOTIM Was

By Bill Godby, WSMR Archaeologist

As anyone who works for the military knows, encounters with acronyms are a way of life. At a test range like WSMR, creation of acronyms runs rampant.

My job as an archaeologist at WSMR includes investigating our rich Cold War era past and the physical remains from the many incredible things accomplished during that time. These “investigations” result in reports that provide the nuts and bolts of what was achieved and how important it was or wasn’t historically.

The physical remains don’t tell the whole story. Fortunately WSMR has the Museum archives, the old issues of Wind and Sands, and of course the best resource is the old timers who have spent their lives here. This is how folks like myself can make sense of these remnants of history at WSMR. Living amongst all of this are the acronyms that no one fully remembers.

For this story we find SMSA (Signal Missile Support Agency), WSSA (White Sands Signal Agency), ERDA (Electronic Research and Development Agency) and the topic of this discussion, SOTIM (revealed soon).

All of the above acronyms are old business, no longer used, except SOTIM. There remain six SOTIM sites still listed on our range map. We have been out to them and we often use them as reference points for various activities, however, no one in our office could tell you what a SOTIM was --- until recently.

Hopefully a few of you reading this will be saying “I’ve always wondered what SOTIM stood for?” So here goes. SOTIM is the acronym for the Sonic Observation of Trajectory and Impact of Missiles. It’s a great acronym to be sure, perhaps in second place only to GEODDS, the Ground-based Electro-Optical Deep Space Surveillance system up at Stallion.

SOTIM is described in a 1962 WSMR Capability Summary as follows:

“The pressure disturbances generated by a missile as it passes through the atmosphere at velocities in excess of sound are detected by ground based stations and translated into data which are used to determine trajectory and impact of the missile. The system is passive, has a high order of reliability, and is able to provide impact information on supersonic objects. The system is of particular value on small research rockets which ascend to great altitudes, and which, because of size, are unable to carry beacons and reflectors to aid in tracking.”

SOTIM was utilized for Athena, Aerobee, AR-

CAS, LOKI, Nike, as well as other high altitude and upper atmospheric rockets. The system is complementary to radar data collection.

On the ground, a SOTIM station was quite simple. It consisted of four holes in the ground to accommodate four microphones spaced about 1,000 feet apart. Each microphone was suspended from a circular steel grate that was placed over the hole. Later refinements occurred with raised mounds and a cement lining for the device --- probably due to moisture and critters.

Data collection from the devices most likely occurred from a trailer. The concept and design appears



A soldier holds a SOTIM microphone in 1964. Photo by Frank Ontiveros.

to be the outgrowth of research being carried out by Schellenger Research Laboratories with funding and direction coming from the SMSA. Schellenger Labs was very involved in developing acoustic sensing equipment and was founded at Texas Western College in 1953 (later becoming UTEP). Their research included a significant military component to include rocketry, environmental acoustical testing and telemetry systems. It was the acoustical testing that led to the development of the SOTIM.

Understanding who was responsible for the SOTIM program was a bit of a challenge. An old timer will probably have a better handle on this. Here’s where the acronyms come to life. Under the big umbrella of SMSA lived WSSA and under that was the Missile Geophysics Division (later to become the Meteorological Division) who operated the system, collecting and analyzing the data. ERDA appears to have been largely involved in tweaking the system, fixing the parts, adding new parts, largely hardware modifications. In 1955 there were eight SOTIM stations. Due to their success and accuracy, another nine were constructed by 1962, totaling 17 SOTIM sites covering the entire range.

In the early stages of operation data had to be collected from the individual SOTIM site, involving a

see PFC Howard’s Award, page 5

PFC Howard's Award

CONTINUED FROM PAGE 4

great deal of effort and of course labor costs. However in 1956, when only eight stations were operational, Pfc. William Howard developed a method to remotely control all stations, eliminating the need for going to each site. Subsequently, small metal buildings were added to the SOTIM sites to house data collection equipment (Figure 2). The June 7, 1957 issue of *The Wind and Sand* states that "Howard's remote control system provides manpower savings of 500 hours a week in busy periods and releases six vehicles needed in the old system." Howard's efforts resulted in savings of \$40,000 (\$350,000 in 2017) and was awarded first prize of \$150 (\$1300 in 2017) in the Military Incentive Awards.

The initial remote SOTIM control facility was operated at the ALA-1 (now Launch Complex 33). It was later moved to the Small Missile Range, as the SOTIM program was operated under the Missile Geophysics Division as many missions involving atmospheric testing and conditions occurred there. As illustrated in Figure 3 the SOTIM control room was a very elaborate operation.



SOTIM Control Station at Small Missile Range, March 27, 1964. Photo by Frank Ontiveros

In doing further research on Schellenger Labs and the refinement of the SOTIM system I learned that winds played a significant role in the data collection and that data collected from each of the microphones had to be modified to accommodate the effects of wind drift on sound. Additionally, multiple electronic modifications were made to the data collection device module over a period of about five years.



The Snake Site SOTIM equipment shack is still standing. Photo by Phil Esser.

During my research I was reminded that, as with most of the technologies developed at WSMR, the SOTIM was a moving target, being constantly improved and tweaked to become state of the art. I have not been able to ascertain when the SOTIM system was no longer needed. Clearly it was fully operational in

1964, as the photos have documented. Its life cycle starting in the mid-1950s and lasting at least until 1965 or later is outstanding in respect to other technologies that were rapidly superseded in this time frame.

As is the case with all our research on the rich Cold War history at WSMR, many things are discovered along the way. I have discovered that the organizational history of WSMR is complex. The continual evolution of agencies and the creation of more acronyms

make it difficult to document historically. As regards the SOTIM itself, we now have enough information to adequately document and interpret what is left of these facilities and to provide a reasonable historic context to accompany our reports.

Fortunately at one site a microphone and the circular grate was recovered and has been provided to the Museum, along with background information on its use. The SOTIM and its story will not be forgotten.

If you have more information about the SOTIM system, you can reach by email at:

william.c.godby.civ@mail.mil



This is the SOTIM microphone found intact at the Snake site. Photo by Bill Godby.

Pioneer Gil Moore Back On The Range

By Jim Eckles

Missile range pioneer Gil Moore was back at White Sands in June to reminisce about the old days for an independent multimedia project on the history of rocketry and space science. According to Sheri Quinn, the project's director, they will be examining that history "through the lens of Dr. Moore's experience."

Moore was an engineering student at what is now New Mexico State University when the V-2 flights began at White Sands. He has said he was fascinated by the contrails left by the V-2s. The idea of big powerful rockets was a kick and the idea that the atmosphere was doing a variety of things at different altitudes was intriguing.

In April 1947, he went to work for the school's Physical Science Laboratory (PSL) and providentially he got to work the V-2 program. He reduced V-2 telemetry data, photographed the V-2 vapor trails to measure upper-level winds, and got to install instruments and cameras in the rockets.

After graduating with a degree in chemical engineering, Moore signed on at PSL full-time and continued his work with V-2s. Although the V-2 program ended soon thereafter, Moore continued to work with research rockets such as the Viking and Aerobee and was eventually supervising teams launching his own Pogo and Speedball rockets.

While at PSL he continued his education with an emphasis in physics and astronomy. In 1962, he left Las Cruces for Utah and a job with Thiokol.

Gil was coming to Las Cruces in June to participate in the Space Port America Cup where some 1,100 students gathered to fire rockets at the New Mexico Space Port. He invited Sheri along so they could talk about his early days at White Sands while at White Sands. They filmed at Missile Park, in front of the old Missile Assembly Building (V-2s), Launch Complex 33 and the Navy's old blockhouse.

Afterward, Gil said it was a great day. Besides seeing all the old haunts, he and the crew were invited to lunch with Brig. Gen. Eric Sanchez, WSMR CG.

Sheri said, "I was instantly impressed by Gil's infectious laugh and charisma, and especially his ability to simply explain complicated science and technology in way that a general audience could easily grasp."

Before the visit, Gil sent WSMR Public Affairs a short email with a few of the stories he thought he might tell the camera crew. Here are those stories.

Well, I had a story to tell about filming one of my POGO launches from the pad adjacent to the Navy Blockhouse. It exploded at ignition, bounced off the Aerobee tower and became the only rocket ever to actually strike a blockhouse.

It then lodged itself into a space between the firing control room and the Aerobee pressurization room and blew acrid smoke through a big intake fan into the firing room, so that the people inside the blockhouse were trying to get outside through the heavy access

door, while those of us on the outside were trying get into the blockhouse. Quite a traffic jam.

Meanwhile, as smoke rose from the blockhouse, Don Moore of C Station kept calling over the radio, "Come in, Navy Blockhouse, come in Navy Blockhouse," but by then, we were all outside. Finally, the firing officer crawled back into the blockhouse, grabbed the mike that was hanging beneath the pall of smoke and let Don know we were safe. By then, ambulances were making two-wheeled turns off the road into the blockhouse compound. Fortunately, their services were not required.

I had another story to tell about Viking #10 that blew its nozzle and all its liquid oxygen into the pit beneath the launch platform at ignition and sent hatch covers whizzing past Stewart Bean and me as we stood on top of

the blockhouse, filming the event. The launch officer, Joseph C. Pitts, (Lt. Senior Grade, USN), then had to borrow an M-1 from the security guard and blow a hole in the Viking's alcohol tank to vent it, thus becoming the only man in the Proving Ground's history to "shoot a rocket."

see **Saving A Burning Viking Rocket**, page 7



Gil Moore being interviewed inside the blockhouse at LC-33. Article photos by Adriana Salas De Santiago, WSMR Public Affairs.

Saving A Burning Viking Rocket — CONTINUED FROM PAGE 6

He and Paul Smith of the Glenn L. Martin Company then grabbed a three-inch fire hose and stuffed it up into the engine compartment and put out the fire because alcohol was draining down from the feed line on the inside of the rocket. These gentlemen saved the rocket and its ionospheric density payload. Martin rebuilt it at their plant at Middle River, near Baltimore, MD, and it was later launched as Viking #10A.

I also have some stories to tell about filming the launches from the Army blockhouse of V-2s. Numbers 54 and 55, both resulted in large pieces of steel impacting the ground in the vicinity of Army, Navy and us Physical Science Laboratory photographers.

Another story involves the inadvertent launch of Viking #8 during its static test at the Army blockhouse, while Al Sorya, Charle Combs, Max Flauding and I stood on top of the blockhouse and filmed the rocket as it rose majestically past us on a southeasterly course. It easily established an altitude record for static tests at two miles, before running out of fuel and impacting a couple of miles northeast of C Station. Al Sorya kept yelling "I've got the cover of Life magazine here," but his K-25 4" x 5" format aerial camera ran out of film one frame after the rocket broke free and lifted off the pad.

I have another story about an Army Board 4 Field Forces Corporal missile launch from Elephant Station at the extreme eastern edge of the proving ground, in which the missile went south instead of north, right over the top of my team's telemetry van. It sent up a huge cloud of red fuming nitric acid and aniline when it

impacted a few hundred yards south of us. Fortunately, the wind was out of the north that day, or Melcor Marquez, Buddy McDowell, my boss Cal Ricketts and I would have had our careers shortened for us.

The same is true of the time that Joe Gold, Paul Engle and I were getting ready to photograph a V-2 vapor trail in an upper air wind project for the U.S. Army Signal Corp. We were at the Signal Corps Evans Lab West (SCELW) site, just off the southern boundary of the White Sands Proving Ground, on the McGregor Range of Fort Bliss, where, unbeknown to us, the Board 4 soldiers were firing Skysweeper anti-aircraft rounds at Radio Controlled drone targets (RCATs).

All of a sudden, we heard a shower of steel particles raining down into the sand around us, so we dove into wooden shipping crates filled with excelsior in which we had carried our 8" x 10" format glass plate cameras, batteries, timers, radios, tripods, etc. to the site in jeeps. After the rain stopped, we got on the radio and called Ft. Bliss to complain and we're advised we had not followed appropriate inter-range scheduling protocol.

By the way, at this site we burned mesquite roots to keep us warm during the cold winter nights when we did star calibration exposures at midnight and 3:00 a.m. If the mesquite roots were damp, we got them started by lighting them with slivers of Nike booster propellant we found lying around. The nitroglycerine-nitrocellulose double-base propellant made by Hercules Powder Company was wonderful stuff for the purpose.



During Moore's visit he found time to visit with current WSMR interns and pose in front of the Museum's V-2 rocket for a group photo. Gil is in the center with the eye patch.

White Sands Missile Range Historial Foundation
Hands Across History
P.O. Box 171
White Sands, NM 88002

NONPROFIT ORG.
U.S. POSTAGE PAID
EL PASO TX
PERMIT NO. 429

The Back Page



Wind and Sand Newspaper
February 15, 1957

'MISS WHITE SANDS' CONTESTANTS — Perched atop and under the new chocolate Lark missile are a dozen of the contestants who will vie for the title of "Miss White Sands of 1957" as part of the annual Combined Charity Campaign which officially opens today. Seated atop the missile from left and the divisions they represent are: Miss Shirley Jo Prosser, WSSCA; Miss Carol Barnett, WSSCA;

Miss Billie Jo Frey, Transportation; Mrs. Sue Meeks, EML; Miss Pat Esson, WSSCA; Miss Paula Hines, WSSCA; Miss Beatrice Ginther, WSSCA; Mrs. Loretta Heidt, WSSCA. Beneath the missile are from left Miss Jacqueline Hall, CPO; Miss Mary Ann McWhorter, EML; Miss Eva Louise Copeland, General Staff, and Miss Penny Jones, FDL.