



# Hands Across History



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

Volume III, Letter I

March 2007

## NASA's Next Space Vehicle Will Be Tested At White Sands - Learn More on April 25

On April 25 you are invited to learn about NASA's replacement space vehicle for the shuttle and how one of its systems will be tested at White Sands Missile Range starting next year. In addition, you'll see how the upcoming tests look remarkably like tests done by NASA at White Sands in the 1960s. History does repeat itself.

The two men speaking, Fil Aragon and Clyde Treat, were and are involved in these programs and will provide a bird's eye view of them.

The White Sands Pioneer Group and the White Sands Historical Foundation are cosponsoring the presentation at the White Sands Frontier Club as part of a luncheon. The luncheon is open to the public and is intended to provide interesting and useful information about the past and future of White Sands.

NASA has selected its next crew launch vehicle system and dubbed it "Ares 1." The crew will ride atop this rocket, much like in the days of Apollo, in a capsule named "Orion." In other words, NASA is returning to the simple days of putting a manned vehicle atop a big, expendable rocket and propelling the crew or payload (depending on the mission) into space. The Orion capsule can be configured to deliver crews to the space station and bring them back to earth using a parachute system or provide the setup to send crews to the moon or Mars.

Like the old Apollo system, Orion will have a launch and ascent abort system. It looks very much like the Apollo escape system. In preliminary drawings NASA shows the Orion with a tower on top of it equipped with rocket motors and a parachute package. In the event of an emergency, the rockets could be used to pull the capsule away from the Ares booster and then safely parachute the crew back to earth.

NASA and White Sands are preparing right now to test this abort system at the missile range beginning later next year. The tests may originate from LC-32 and will be very visible to the public as they launch over US Highway 70.

At the luncheon Fil Aragon, missile range project engineer for the program, will brief the current program's details and what it means to the missile range. Where are they going to park all the visitor cars during the tests?

Old-timers may remember the Little Joe program in the 1960s. This program tested the Apollo abort system using

a jury-rigged booster dubbed Little Joe with launches out of LC-36. Rockets pulled the capsule away from the Little Joe and a parachute system brought it safely to ground.

Clyde Treat, who retired as director of the WSMR Plans Office, worked the Little Joe program in his younger days. He will brief on Little Joe history.

Reservations for the luncheon can be made by calling one of the following:

Pam Vick 522-4179  
Pamela Hoscheit 382-2157  
WSMR Protocol 678-3044  
Jon Gibson 382-8292

At press time a menu had not been selected but it is expected to cost \$10. Reservations must be made by April 18.

Although the luncheon and briefings are sponsored by the Pioneer Group and the Historical Foundation, it is open to anyone wishing to attend.



An artist concept of an Ares launch with the Orion crew capsule and the abort system in the tower on top.

# Museum Hires Chuck Carrig as Registrar

By Terrie Cornell, Director  
White Sands Missile Range Museum

Our new registrar is the most important news from the Museum. Chuck Carrig started working here the day after Christmas, coming to us from Fort Bliss where he worked with historical, archeological/architectural properties on range lands, among them the Dona Ana Base Camp historical landfill at Fort Bliss.

Chuck also worked at the Washington State Capitol Museum in Olympia, and at the Roosevelt-Vanderbilt National Park. His degrees are in historical archeology with emphasis on vernacular architecture. Somewhere in there Chuck accumulated ten years of Army experience.

Welcome aboard, Chuck!

With end-of-year funds from our parent organization, the Army's Center of Military History, we had the Air Force Hound Dog and Athena removed from Missile Park, stripped, repaired and repainted in their test patterns and colors. We are using old test photos for reference in deciding how to paint them. They look real spiffy now.

How many people visit the Museum? Visitation statistics are astounding. In 2005 we had 50,000 visitors, surpassed in 2006 by 66,770 visitors. I am constantly amazed at the number of visitors in the museum and park all day long, in spite of increased security at the gate.

Donations of artifacts by people like you who have worked out here also increased nicely this year. Last January, we took in our largest donation ever: 6,000 photos from the widow of a WSMR photographer. Fortunately, a current WSMR employee saw them in her garage sale and he stopped her from taking them to the dump.

We also received a uniform from a man who was in the First Guided Missile Group here in 1947. The sleeve of his shirt doesn't have a patch on it - it has a stenciled G and M and One, because unit patches hadn't been produced yet.

Like these two people, please keep your museum in mind when you clean out your attic. Don't toss your WSMR mementoes - bring or ship them to your museum. Don't

assume we already have something, because we probably don't. Give us the right of first refusal so we can save and protect the history of White Sands

## WSMR Commander Donates

Major General (R) Niles J. Fulwyler donated his White Sands papers and photographs to the Museum archives on Feb. 15. Included was his copy of the Joint Logistics Conference scrapbook from 1984. The scrapbook is filled with photos from the conference that featured the top officers in Logistics from each of the services. During his visit Fulwyler also reminisced about restoring the McDonald ranch house and Congressman Bill Richardson's visit to WSMR.



Retired Major General Niles Fulwyler, left, shares a laugh with Museum Director Terrie Cornell when he donated many of his papers and photographs to the museum archhives on Feb. 15. Photo by Miriam Rodriguez.

## 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](mailto: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

# How to Save Big Bucks with a Simple Idea

By Vern Haverstick

After reading the August issue of Hands Across History, I remembered something from the days of HAWK. I was at White Sands from 1955 until 1983, having started as the missile lab chief on HAWK and later chief engineer.

I worked on SAM-D and Patriot from 1968 until I retired. I wrote the engineering development test plan for Patriot and acted as Raytheon liaison to the Range during the period when we were developing the Range support plan.

The bit of history I remembered follows and was in the late 50s or early 60s.

When I was part of the Raytheon HAWK missile test team in charge of the missile lab an idea I came up with saved hundreds of thousands of dollars.

We were planning to test the HAWK's ability to intercept an aircraft carrying electronic-countermeasures (ECM) equipment while flying at very low altitude (fifty feet above the terrain).

It was planned to use a Q2 drone or a helicopter carrying ECM as the target, at a range of about ten kilometers. The Q2 was ruled out as being too difficult to control at the altitude and proposed location of the intercept, and it was expected to be very costly to install the drone equipment in a helicopter and extremely difficult to control it at that altitude; it would most likely take many range attempts to perform the test with the expected loss of at least one helicopter.

When I learned of the high costs and frustrating difficulty involved, I searched my mind for some alternate way to do the test without the helicopter or any other aircraft.

The idea came to me of installing the antenna for the ECM at the top of a fifty foot telephone pole, with the black

box equipment on the ground at the base of the pole. The target didn't have to be moving, and the missile wouldn't know that the ECM wasn't in an aircraft; all it would see was the antenna on the pole. Optics could be placed near the pole to record the intercept.

We had the WSMR install a pole where a crew could reach it to service the ECM equipment prior to the test, and we performed several tests with our radar to establish that the antenna had a suitable output for the missile to see.

It worked the way we hoped it would, and the missile flight test came off as planned. We were able to do all our subsequent missile tests against low altitude ECM targets without the use of aircraft or helicopter drones. I believe other missile systems used the same kind of installation when they performed similar tests after that.



A HAWK missile test at White Sands.

## Hall of Fame Nominations are Due by the End of March

White Sands Missile Range is now accepting nominations from all sources until the end of March for its hall of fame. The hall of fame was established in 1980 to honor former missile range personnel who made lasting contributions of an outstanding nature. Past honorees include such individuals as Werner von Braun and Dr. Clyde Tombaugh.

For information on nominating an individual contact Terry Garcia at the missile range's Incentive Awards Office at (505) 678-3221 or email her at [terry.garcia@us.army.mil](mailto:terry.garcia@us.army.mil) and request the White Sands Hall of Fame Pamphlet. In addition to the nominating forms, the pamphlet outlines the guidelines and procedures for the hall of fame. The pamphlet also is available at the White Sands website on the Public Affairs pages at this URL: <http://www.wsmr.army.mil/pao/FactSheets/hfame.htm>

To get into the hall of fame a nominee must have been responsible for significant and lasting deeds or achievements in support of the missile range mission. The contributions may be in various areas such as research, cost savings, technological advances, safety, public relations, equal opportu-

nity or heroic deeds.

Last year, Joe Gold (Las Cruces), Mel Lux (Alamogordo) and Moises Pedroza (El Paso) were inducted. There are now 42 individuals in the White Sands Hall of Fame.

All former military, civilian and contractor personnel who once served at White Sands are eligible for nomination. No one currently working at the range is eligible.



## Way Back When

# Zeus Radars Could See for Miles and Miles

By Doyle Piland  
From the WSMR Museum Archives

This is the second in a three part series of articles about Launch Complex 38 (LC-38) formerly called Army Launch Area Five (ALA-5), detailing the way it was Way Back When.....

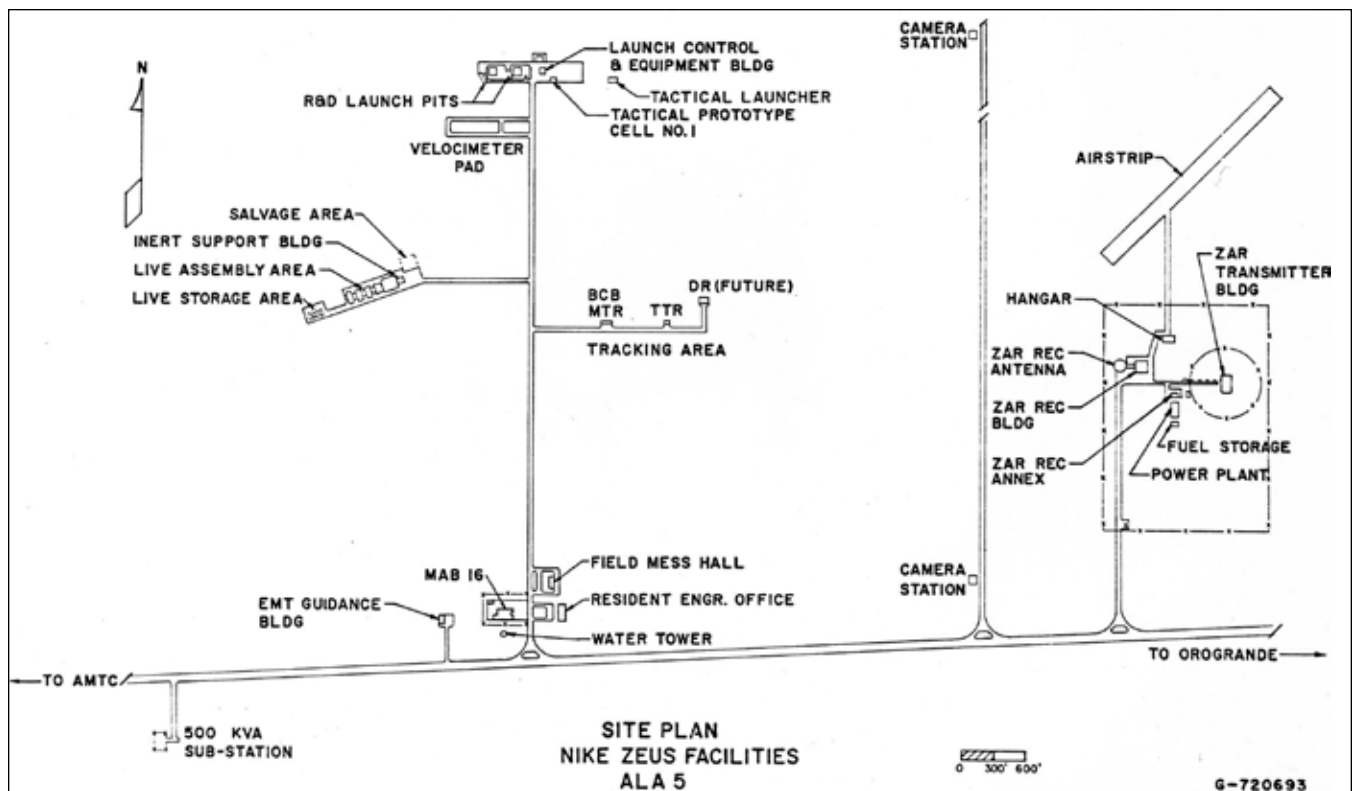
In the first article, discussion focused on the Nike Zeus Missile and launch area. This article will cover the Nike Zeus radars.

While browsing through archived material for information on the Zeus radars, a site plan for ALA-5 was discovered. It would have been helpful if the plan could have been included in the first article, but will still be very useful in helping to understand the layout of the Nike Zeus complex. The site plan is shown below. From the first article, you will note the water tower, MAB-16, the explosive assembly area on the left, the launch pits/cells, and the Launch Control Building. A couple items of note, which don't pertain to the radars are the building labeled Field Mess Hall and the

the BCB, which is the Battery Control Building collocated with the Missile Tracking Radar (MTR), the Target Tracking Radar (TTR), the Discrimination Radar (DR), the Zeus Acquisition Radar (ZAR) Receiver Antenna & Building, and the ZAR Transmitter Building.

At the top of page 5 is a photo of the BCB with the Missile Tracking Radar antenna on the tower at the left end of the building. The radar transmitter and receiver were in the building below and to the right of the antenna. As indicated above, the building also housed the control center with a digital computer, a control room with consoles, and a viewing area behind the control room. To the left of the BCB you can see the white TTR antenna dome and a small portion of the ZAR receiver antenna at the lower left of the TTR dome. A note of interest is that an office building was built between the BCB and the TTR at a later date.

The photo at the bottom of page 5, taken looking north, shows the TTR on the left and the DR inside the two fences on the right.



Airstrip. It isn't clear who operated the Mess Hall, but LC-38 is the only launch complex with both a Mess Hall and an Airport. Note the hanger and taxiway to the airstrip. One difference from the site plan is that the road labeled Tracking Area did not stop at the place labeled DR (Future). It angled slightly to the south then continued straight into the entrance to the ZAR Transmitter Building.

On the site plan, the radars are, from left to right,

Site preparation for the TTR began in July 1959. An interesting aspect of the TTR construction was that a temporary building was constructed on top of the radar building to shelter the installation of the radar antenna and the dome. Apparently one of the main functions of the crane built at the south end of the building was to facilitate emplacement/removal of the temporary building sections.

The TTR received information transferred from the



Battery Control Building with the Missile Tracking Radar on the tower at left and the Target Tracking Radar dome beyond at left. Photo from the Col. (R) Daniel Duggan Collection

## Radars — CONTINUED FROM PAGE 4

ZAR indicating the location of a target to be placed under track. The TTR then placed the target under track and made the precision location available to the computer and displays in the BCB and to the DR.

Site preparation for the Discrimination Radar was started in January 1961. The two fences around the DR served two purposes. One, purpose was what was commonly called a “Clutter Fence” or in some cases a “Beam Forming Fence.” In simple terms, they prevented echoes from terrain and items/structures on the ground, which were not wanted

on the radar display. The second purpose was safety. You will notice the dark strip leading from the outside fence to the left side of the DR building. This is asphalt type material covering a tunnel used as the personnel ingress and egress route for the building. Thus, the automobiles clustered at the far end of the parking lot away from the entrance. When the radar was operating, the two gates in the fences were closed. Note the bus heading east on the road at the lower right heading to the ZAR area.

To give you a little understanding of the DR and its function, one first must talk a little about an ICBM as it

see ZEUS RADARS, page 6



This photo shows the Target Tracking Radar (TTR) on the left and the Discrimination Radar (DR) at right.

# Zeus Radars

CONTINUED FROM PAGE 5



ZAR transmitter building with triangular antenna on top inside the clutter fence. Photo from the Col. (R) Daniel Duggan Collection

proceeds toward its intended target. There isn't just the re-entry vehicle (RV) or warhead coming in. There could also be multiple RVs as well. There are a lot of other things tagging along too. There will be expended stages, various parts that have been ejected or blown away as the stages separate and/or the RV is extracted from the main missile. There can also be decoys - objects made to resemble the actual RV to confuse the radars. This grouping of things are what is called a "cloud" and represents a problem for radars to sort out what is junk and what is the actual RV(s). Thus, the function of the Discrimination Radar was to take care of this task. The DR was sort of a cross between normal tracking radars, similar to the TTR, and features similar to that of array radars. By using multiple feedhorns and off-axis tracking techniques, it was able to watch and analyze all the objects in the cloud and based upon several factors, more accurately identify the actual RV.

Site Preparations for the Zeus Acquisition Radar (ZAR), began in October 1958. The ZAR was a unique radar. First, the transmitter and receiver were located in separate buildings with separate antennas. Second, both the transmitter and receiver antennas consisted of essentially three antennas. The transmitter transmitted in three directions at the same time. Glenn Montgomery, a retired radar technician at WSMR describes the ZAR as "The ZAR transmitted through three antennas that rotated on a common axis and were separated by 120 degrees. The ZAR receiver con-

sisted of multiple RF receivers located on three trusses that were also separated by 120 degrees and rotated on a common axis in synchronization with the transmitter." Glenn was one of a group of military and civil service radar technicians who were "contractor monitors" in the development and testing of the Zeus missile system at WSMR.

The ZAR transmitter building with the antenna on top is shown in the photo above left. The transmitter was located inside a clutter fence shown in the photo. The receiver antenna and receiver building is shown in the photo below with the transmitter and clutter fence in the background. Unlike most acquisition radars of the time, the ZAR could also determine elevation, so it could pass complete location information on a target to the TTR.

So, that is a very brief look at LC-38 and the Zeus radar systems as they were during the Zeus system tests at White Sands. The next issue will deal with life at LC-38 after Zeus in our look at the way it was Way Back When!



ZAR Receiver Dome with Receiver Building Behind and Transmitter in background. Photo from the Col. (R) Daniel Duggan Collection

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**P.O. Box 171**  
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## **The Back Page**



According to the caption on this Army photo it was taken on the first day of classes in 1953 in the newly completed White Sands school. They are singing from a book called "Together We Sing." These young ladies should all be collecting Social Security today.