



Hands Across History



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

Volume VII, Letter II

June 2011

An Insider's Look Into The Testing Of The World's First Air-To-Air Missile System

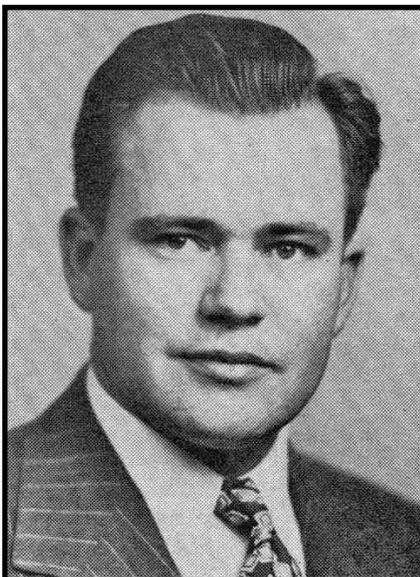
By Allan Gruber

I am a member of the Pioneer Group, so have been reading all of the reports you guys have been publishing for many years. I have enjoyed reading them all but I've never seen anything concerning contractor development – for example, the missile and fire-control development at Holloman Air Development Center (HADC).

I headed the Hughes Aircraft Company's (HAC's) team there. I was on TDY for years during the R&D phase of the FALCON missiles, both the radar and the IR (infrared) types. I thought you might enjoy reading about some of our experiences there. I'm 94 years young now and am typing this myself as these random, non-chronological thoughts come to mind. So please bear with me and forgive for the errors in typing, spelling, and what not!

(Editor's Note: I have made no major changes and only added things here and there to clarify a few references.)

When we first arrived, the most important thing was to find housing for us. There wasn't anything readily available. Alamogordo then was a small village but there were building



Allan Gruber as he appeared in the 1956 edition of "Who's Who in California."

contractors busy at work. My wife found one, Charlie Tompkins, who it seemed was a distant relative of hers – her maiden name was Dianna Tompkins.

He let us rent a 4-room house he had just finished and immediately started building a home for us to Diana's specifications. Talk about luck! We shared the 4-room house with the John Emkee's. John was a good friend and

a member of my HAC team. At the time there were people living in garages, sheds of any description, tents, even one family living in a chicken coop!!

I first heard of Holloman when I started at Hughes working on the instrumentation for the HUGHES high-speed track at Holloman. When Hughes completed their work with the track, HADC took it over. Of course, they dropped the Hughes name and made it into the much longer track that it is today.

The Falcon system consisted of two missile types, radar and IR, to be launched from the upcoming F-100 series aircraft. These aircraft would carry 6 missile pods per aircraft (6 Falcon missiles).

see [Jimmy Doolittle Visited](#), page 4



A technician balances a Falcon missile on its tail providing excellent scale for the 78-inch weapon.

Don Herbert Remembers “Tire Rolling” Off Of The Oscuras

Mr. Eckles:

I read Jim Andress’ article about NOP in the last issue with great interest. It brought back many old memories.

In 1952 I went to work for Land-Air Inc. (A Subsidiary of California Eastern Aviation) at Holloman AFB. I joined the Up-Range Radio Group of the Timing and Communications Section. We provided the timing and communications for the Contractor sites and Air Force instrumentation sites on the range. Up-Range Radio operated over an area from Sacramento Peak in the southeast to Mount Loma in the northwest with three two-man crews. At that time Holloman was a Research and Development Command base and operated independently of White Sands on most activities.

We also operated a radio relay station out of a semi-trailer at Atom Peak, just south of NOP, providing timing and communications for the 70 and 90 mile impact areas using surplus WWII ANTRC-1 radio sets. Each crew manned the site for a week at a time on a rotational basis spending every third week at Atom. We slept on folding cots in the trailer during the week because the travel time and road conditions made it impractical to make the trip in and out every day.

One side effect of the ANTRC-1 equipment was that it operated in the commercial FM band, and on more than one occasion, when the skip was in, range missions were held while the instrumentation sites enjoyed classical music on either their timing or communication receivers.

On one of my first trips up to Atom, I was introduced to the fine art of ‘Tire Rolling’ as mentioned by Mr. Andress. On the way up we found a heavy equipment tire that took two of us to wrestle into the truck. That bugger tore down trees and everything else on it’s way to the flats.

At this time White Sands, I believe it was Army Signal Corps, had a site equally as archaic as ours, about a mile and a half north of us at NOP, that was manned as mission support required. This was before the days of the new permanent buildings at NOP and Atom. I remember that we had a phone line to the NOP site, but it was of little value as the deer kept eating the field wire and you had to walk the line out and repair it every time you wanted to make a call. Since you were over there anyway fixing the line you could just tell them

face to face whatever you had to say.

I remember the bobcat. He was a ferocious dude.

Unlike Mr. Andress’ vehicle situation, Land-Air furnished us with tire chains, shovels, gas cans, water cans, first-aid kits and sometimes even a second spare tire. Each vehicle was also equipped with a home-made field wire dispenser, and a ANTRC-1 antenna mount on the rear bumper for use in setting up temporary locations when required.

I would like to echo Mr. Andress statements about the cooperation in those days. When something needed to be done there were no Contractor, Military or Civil Service personnel. There were just a bunch of people that pooled their knowledge and resources and got the job done. This made for great working conditions. A far cry from the bureaucratic infighting that existed when I retired in 1994.

I also recall that when the Red Canyon Range Camp was activated somewhere around 1953 and began firing the Ajax missiles, communications between them and the range was rather poor and apparently scheduling was non existent. Normally our first notice of one of their launches was when all of our commo nets made the announcement “T-90 seconds on a RED CANYON NIKE.” If you were in the Greasewood area that meant Duck and Cover. Most of the time we got no notice at all, it just happened. The area around the cinetheodolite site at Greasewood was littered with Nike parts

Excuse my rambling, but I wanted to thank both you and Jim Andress for bringing back a lot of old memories of times both good and bad, but mostly good. White Sands was a wonderful place to work in the early days. I am glad that I had the opportunity to be part of it and I still feel that we were doing something of great value back when we were first building the range. As Jim said, “We wrote the book.”

My first employment on the range was with Oklahoma A&M College building the MIRAN beacon triangulation stations in 1950. I worked on the sites at Sacramento Peak and Skillet Knob. If I remember right, the Jefe Grande was a Doctor Miller from Oklahoma A&M.

Thanks again.

Don Herbert

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 318
White Sands, N.M. 88002

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

1959 Redstone Missile With A Message?



By Jim Eckles, Editor

I discovered this great photo of a Redstone Missile being prepared for launch at White Sands Missile Range in the official 1959 history of WSMR. It is dated May 12, 1959 and clearly shows soldiers doing the work around the missile. I've cropped it but the Organ Mountains are very visible to the west.

What caught my attention was the word "TROUBLES" inscribed on the missile near the top. I've blown up that section here so you can see it better.

Warriors have been attaching messages to everything from arrows to atomic bombs over the centuries and I guess this is no different. But what does it mean? Also, is there another word or additional words around the backside of the missile?

One would guess the soldiers intend to bring trouble to whatever their target is for the day or to some enemy of the United States in the future. Or, maybe they just had many problems getting to the point of actually launching the missile. As a joke, they may have been paying tribute to one of their own and the word "Harry's" is just out of sight.

If anyone out there has any ideas, please let me know.

Also, you may have noticed the frost on the missile partially obscuring the "U.S. Army" wording on the side. That means the liquid oxygen has been pumped on board which, in turn, means they are getting close to launch.

The Redstone, being a von Braun design, was very similar to the old V-2. Its fuel was alcohol and the oxidizer was liquid oxygen. The pumps to spray high volumes of the propellants into the motor were driven by steam generated in an onboard chemical reaction. Also, guidance was achieved with movable vanes that protruded into the rocket motor's exhaust plume. All reminiscent of the V-2. On the other hand it incorporated all the improvements von Braun's team had dreamed up since the 1940s.

Redstone was our first medium range ballistic missile and could carry either a conventional or a nuclear warhead. In 1958 it was turned over to troops in Germany to protect Western Europe.

Redstone is probably most famous for its use as a space vehicle. It was modified into a three-stage rocket to launch America's first satellite, Explorer I, into orbit on Jan. 31, 1958. Then, on May 5, 1961, another modified Redstone carried NASA astronaut Alan Shepard and his Mercury capsule into space for a quickie 15 minute ride.

Finally, here is a piece of trivia for you. Before Shepard's flight, HAM (Holloman Aero Med), the chimpanzee trained at Holloman Air Force Base, rode a similar Redstone stack on Jan. 31, 1961 on a suborbital flight. He was the first chimp in space.

HAM died in 1983. His skeleton resides in a national museum while his other remains are in Alamogordo.

Jimmy Doolittle Visited ——— CONTINUED FROM PAGE 1

The system was intended to be a defensive weapon system, designed to protect our shores, etc., from any type of attack.

(Editor's Note: The "radar" Falcon was not actually equipped with a full radar unit but guided itself to the target by homing in on the radar energy being reflected from the target sent by the radar unit on the launching aircraft. One drawback was that the pilot had to stick around until the target was hit. The infrared missile had a self-contained heat seeker that sought out the hot exhaust from the engine of the target - be it piston or jet propelled. This missile, once launched, was on its own and the pilot could take evasive action if needed.)

Since there were no F-100 aircraft yet, we had bailed an F-89 to help with testing not only the missiles, but also the aircraft fire-control system. For ground launches from it, we taxied it from the HADC airfield to our launch area close to our blockhouse over several miles of very narrow, rough and some unpaved roads. Fun!

The F-89 was kept close to our main ground launcher that was a tube-like device we could rotate to 90 degrees. This launcher sat on top of a ramp that a previous contractor had used.

We had many visitors at our blockhouse/launch area throughout our stay but the two most noteworthy, to me at least, were Jimmy Doolittle and Dr. Dean Woolridge. Doolittle dropped in unannounced with his entourage, introduced himself, shook my hand, then wandered off to look over our test facility by himself. His aide, an Air Force captain, took over and peppered me with questions. After a few minutes they took off. At least I got to shake the hand of a general that I greatly admired!

Woolridge was with HAC and an interesting character. He was a brilliant scientist who left Hughes shortly afterwards with Dr. Si (Simon) Ramo to start their own company. Ramo, somehow, got Thompson Products to finance them so shortly they were known as TRW, the "T" for Thompson Products, the "R" for Dr. Ramo and the "W" for Woolridge.

I got to know both Ramo and Woolridge quite well because I later left HAC to go work for them, planning the ICBM Minuteman R&D flight test program. But I'm wandering.

Getting back to Woolridge, all of his work was flight related, but he would not fly. He came in on a train and called me to come pick him up at the Alamogordo Train Depot.

Many of our launches were ground launched. We did not have an airborne platform yet and HADC had an excellent, well-instrumented range that we could use. Of course, it also had the Land-Air people who could, and did, record all this data, even tying it to our ignition pulse. It was a great help in assessing all the data.

I remember one launch – well, not ours – I believe it was Martin's. Anyway, it was fired from near the blockhouse closest to ours. It was a large missile and instead of gently turning and going down range as intended, it went straight up, turned and came straight down under power. We all should have been in the blockhouses, and could have run to them, but we all just stood gawking at it till it crashed a few hundred yards from us in a gully between our two blockhouses. Fortunately no one was hurt but we were all quite shook up.

see Falcon Near Misses, page 5



This color image of a Falcon is from the WSMR Museum Archive. Caption information indicates this is a "GAR-2B" version of the missile. That means it is an AIM-4 Falcon equipped with an infrared seeker. This was the last operational version of the Falcon.

Falcon Near Misses ——— CONTINUED FROM PAGE 4

One of our ground-launched missiles missed its target, spun around and locked on the radar coming from the launcher itself. It destroyed part of our launch facility.

Another, launched from the F-89 after we had it back in the air, turned and locked on the plane's airborne radar! It just missed the plane, scaring the heck out of our pilot. We decided then and there to cut off our radar a couple of seconds after the missile had enough time to accomplish its mission. Later, this was incorporated into the systems procedures.

One of our projects was to fire 400 (yes, four hundred) missiles at a large ground-target to check the accuracy of the missile itself, sans guidance. After a hundred or so of these were successfully fired we were bored. So, to speed up there launchings, we stayed out at the launcher site without coming back to shelter and fired another hundred or so much more quickly.

Of course, you can imagine what happened. One missile hit the ground in front of the launcher, bounced up, and hit the ground right in back of us! We finished the rest of the shots watching from the blockhouse.

We had a "clean" room where we checked out our guided missiles. The purpose, of course, was to keep all the missile parts "squeaky" clean. At our ground launch site we had a cooling system to keep the missile reasonably cool prior to launch. Once, this system failed, springing a leak and flooding our missile with water. What to do? We opened up the missile right out there in the heat and sand during the usual 120 degree summer day. It did not take long, in that heat, to dry out the missile. It was no longer squeaky clean, but we buttoned it up, launched it and got a clean hit on the target drone.

Bob Varnes, my administrative assistant and a very able missile mechanic, was usually the last man to touch the missile prior to launch. Once, during a ground launch, Bob called a hold. He said he'd forgotten to tie in the ground-launch firing mechanism.

We were firing from the tube launcher that had been elevated to 45 degrees. He went to the launcher to correct this, did it, but didn't return to the blockhouse. After a few minutes, I decided that I had better check on Bob.

Well, he'd crawled into the elevated tube and tied in the firing mechanism all right, but couldn't get back out. He was stuck. Clinging with his heels to the rim of the elevated tube, he was head-first into the tube with his nose practically touching the missile's pointed antenna. We successfully removed him and launched the missile.

The last thing we did with the F-89 while we were ground launching with it was to check the pods installation. We fired a salvo of six missiles mounted in the pod launchers. All of the trained observers, including me, were certain that all the missiles had NOT fired.

So John Emkee and I cautiously went out to the F-89 and carefully peaked into every pod. All pods were empty. So much for that.

John Emkee was my most experienced missile mechanic and a very good friend. Our families had shared the 4-room house that I previously mentioned. The second year we were at HADC, John went deer hunting and got his deer. He apparently was carrying it on his back to his car, when he was shot and killed. We never did find out who shot him.

Incidentally we never had anyone hurt on any of our missions.

The last item I'd like to tell you about dealt with SECURITY. One of the really great scientists who dreamed up the Falcon concept may still be alive, so I'll refer to him at Dr. RJ. He happened to observe the crash of a "classified" aircraft that had impacted just outside of the HADC perimeter. He climbed under the fence (that itself was a security violation) and was merrily taking pictures of the plane when the MPs arrived.

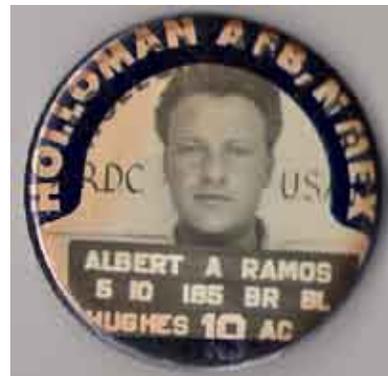
Of course, they arrested him and took him to the Security office to where I was called. I did my darndest to get him released but the good doctor still insisted that he get his camera and film (?) back. I managed to get the camera back but, of course, not the film. He was still bemoaning this loss all the way back to my office. He never realized how lucky he was!

The production aircraft were tested in California, mostly at Edwards, and the Falcon production was at the HAC plant near Tucson. There was a program at HADC to marry these, but I know little about this because by then I was with TRW working on the Minuteman.

Thanks for your time.

Editor's Note: *In forwarding materials for this article to me, Karen Gruber, Allan's daughter, also sent the photo below of a Holloman security badge from circa 1950. About the badges, she said, "All the engineers had to wear these badges to get on base. Dad said the circle around them was bright red. If they forgot a badge, they would just hold up a pack of the old Lucky Strikes cigarettes (red circle logo), and the sentry would let them through. (Of course, the sentries knew them.)"*

This shouldn't come as a surprise to anyone who worked at White Sands as many oldtimers tell of flashing cigarette packages, various identification cards and other appropriately sized items to get through the gates.



Editor's Note: This ad from Texaco illustrates how businesses used the terminology and imagery from the new, cutting-edge rocket and missile technology to associate themselves with something ultramodern and smart. I had to shrink this full-page ad, probably from Life Magazine, to fit the newsletter format. I used this from my collection of rocket ads because we have a Redstone piece on page 3. I don't know the exact date but you'll note at the bottom of the ad it says "in all 48 states."

Redstone... new U. S. Army surface-to-surface guided ballistic missile that thinks for itself. Follows supersonic lanes to remote objectives, packs an atomic wallop—if needed. Designed to put distant targets within U. S. artillery range, it can be moved rapidly to far-off firing points, readied for action in just hours. Redstone, the largest missile ever to fly, makes a significant contribution to the U. S. defense program. *Havoline Special 10W-30*, the motor oil that thinks for itself, makes a significant contribution to engine protection and efficiency.

THINKS FOR ITSELF!

Advanced CUSTOM-MADE HAVOLINE MOTOR OIL SPECIAL 10W-30

Revolutionary new oil...
unique *Havoline Special 10W-30* protects engines in any weather, any season. It's the all-temperature oil that thinks for itself... saves you thinking about seasonal grades. For cold-engine starts, it's light—delivers flash lubrication! For protection under engine heat, it has body—guards against wear and deposits! Enjoy smooth, powerful engine response. Change today—and change regularly—to *Havoline Special 10W-30*. See your Texaco Dealer, the best friend your car has ever had!

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V-2 Impacts Spawned An Urban Legend Of Sorts

By Jim Eckles

In my digging around in old documents and news stories I saw many references to V-2 rockets exploding on impact and creating large craters. There were often comments about the residual propellant being responsible.

It turns out that was not always the case. Many V-2s crashed down with almost no fuel aboard and still made gigantic holes. The reality is that the huge impact craters were blasted by the kinetic energy released with such a large object striking the ground at, sometimes, several thousand miles per hour. When you run the calculations the energy released from one of these impacts could easily be the same as a 2,000-pound bomb. No wonder the holes were so big.

But you are skeptical. What does a guy who worked in Public Affairs know about such things?

Below are excerpts from a July 1946 publication by the Guided Missiles Committee of the Joint Chiefs of Staff. The small 41-page booklet is called "The Guided Missile."

The first article is called "First American Showing of the V-2" and was written by R.W. Porter of the General Electric Company. It recounts the successful launch of the V-2 on May 10, 1946.

He describes what they found when the recovery teams found the impact crater: "The appearance of the crater indicated a very high velocity impact with no chemical explosion or fire following. It was estimated to be at least thirty feet in diameter at the top and thirty feet deep. The earth at this point consisted of a mixture of wet sand and gypsum, dry on top, overlaying hard gypsum rock. Many large boulders had been blasted out of the rock, a few being tossed as far as fifty or sixty feet from the crater, others falling back into the crater and sliding to the bottom. Some loose masses of wet sand and gypsum were thrown great distances, perhaps as much as five hundred feet.

"No parts of the rocket were to be found in the crater, although it is possible that some were buried under the boulders at the bottom. Most of the parts were found at distances up to a thousand feet, the distribution being most dense at one to three hundred feet and to the lee side of the hole. None of the vegetation in the area, not even the pieces blasted out of the crater, were burned except in one spot at a distance from the impact where fire had obviously been started by a piece of hot metal. The parts of the missile which were picked up however show the effect of intense heat as well as violent mechanical shock. Identifiable scraps from the warhead, instrument compartment, skin, tanks, venturi, thrust ring, pumps, graphite vanes and other widely distributed parts were picked up. Most of these although, not all, were heavily coated with scale. Pieces of sheet metal were usually crumpled into balls; some of the pieces of skin had been almost completely converted into oxide cinders.

"Noticeably absent were parts of the electric control. No parts of any of the control instruments or radio gear were identified, and of the wiring only two small bits were found;

a two-inch length of coaxial cable with the outer conductor gone and a small piece of fourteen-conductor cable wrapped in a section of the skin with all the insulation burned away. Altogether a two-hour search netted only about fifty pounds of scrap parts, and it is doubtful if a more careful search would result in recovery of more than two or three times that amount, unless sizeable masses of metal are found buried in the crater itself. There is no reason to believe that any part of the rocket came off in the air and landed at a different point since bits and pieces of various parts of the rocket all the way from the nose to the tail were found in the crater and since the rocket must have been good aerodynamically to have maintained such an enormous speed at impact.

"Since none of the "wreckage-test" instruments or records were recovered from this flight, and it seems very likely that none will be recovered in a condition which will provide useful information, it can be concluded that in any future tests where this type of data recovery is desired it will be necessary to insure breakup of the rocket in the air by means of a small explosive charge to aid the recovery of the "wreckage-test" instruments and records in a usable condition."

This first successful launch had the V-2 reaching an altitude of 70.8 miles. It impacted 24.5 miles north of the Army blockhouse. We don't know if the crater was filled in or if its eroded slopes are still out there or if it is full of blow sand. It would be fun to fly over the area in a helicopter to try and find it. It should have a little historical marker.

Foundation's Golf Scramble Raises Money For Museum

The White Sands Historical Foundation held its annual golf tournament on May 20 at the WSMR golf course. Over \$1,500 was cleared for the Museum.

Four-man teams competed against each other in a scramble format. Lunch and awards followed the morning competition. The winning team was made up of: Charlie Castillo, Louie Sosa, David Fierro and Jerry Macias.

Most of the credit for the tournament has to go to Doug Messer, a Foundation board member, who organized the event and herded it along through completion. Jon Gibson, the Foundation's treasurer, was on hand to collect money and get participants registered.

Many thanks for their hard work.

Pioneer Group Members



Austin Vick
says your
dues are due

Hands Across History
P.O. Box 171
White Sands, NM 88002

The Back Page



Brigadier Gen. George G. Eddy, left, chats with Brig. Gen. William L. Bell, Jr. during Bell's visit to White Sands in June of 1954 when Eddy retired as commander of White Sands. Bell took command of White Sands on Aug. 1, 1954.