



# Hands Across History



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

Volume XI, Letter IV

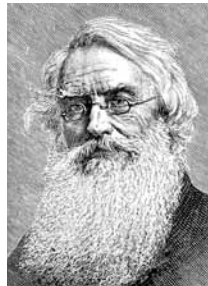
November 2015

## WSMR's Museum Makes Some Changes

There is much news these days coming from the White Sands Missile Range Museum. Some of it involves changes at the museum itself and some of it entails a major proposal by the White Sands Missile Range Historical Foundation. One way or another, the museum is getting a bit of a face lift.

### NEW ASSISTANT

George House was hired in August as the museum specialist. House is one of the most qualified museum people in New Mexico as he retired as curator from the New Mexico Museum of Space History in Alamogordo in October 2014. He was at the Space Museum for 29 years and is very familiar with the Holoman and WSMR stories. In addition to his experience, George brings an innate enthusiasm to the job and will be a valuable asset to WSMR.



**No photo of George available. Visit the Museum to say hello.**

motor vehicle office is expected to reopen once new staff members are trained by New Mexico.

One direct effect on the Historical Foundation is the loss of the only real outlet for V-2 rocket souvenirs. For years, excess pieces of the missile range's restored V-2 have been made available to the Foundation for fund raising purposes. Every year the Foundation brought in about \$1,000 for use in supporting the museum. This year was already a record setter for sales even though the gift shop closed in October as the total was close to \$2,000. See the photos in the newsletter of some of the remaining pieces still available.

Missile range officials see the closure as a positive change because it frees up space in the museum building. All the cases and display cabinets used by the gift shop have been removed. That space is now available for more displays telling the WSMR historical story.

One ripple effect is manning the museum on Satur-

**see Vietnam Exhibit, page 3**

### GIFT SHOP DEMISE

The WSMR Museum gift shop has been closed. In today's world where government entities need to pay for themselves, the gift shop couldn't keep up. Sales of souvenirs and jewelry could not offset the salaries of the few people needed to run the place.

There are many repercussions from the closure. One of the most noticeable is that the New Mexico Department of Motor Vehicles office, formerly housed in the shop and run by its personnel, has been moved deeper into the post to the Community Center. Retirees and visitors will probably have some difficulty using the facility now. The



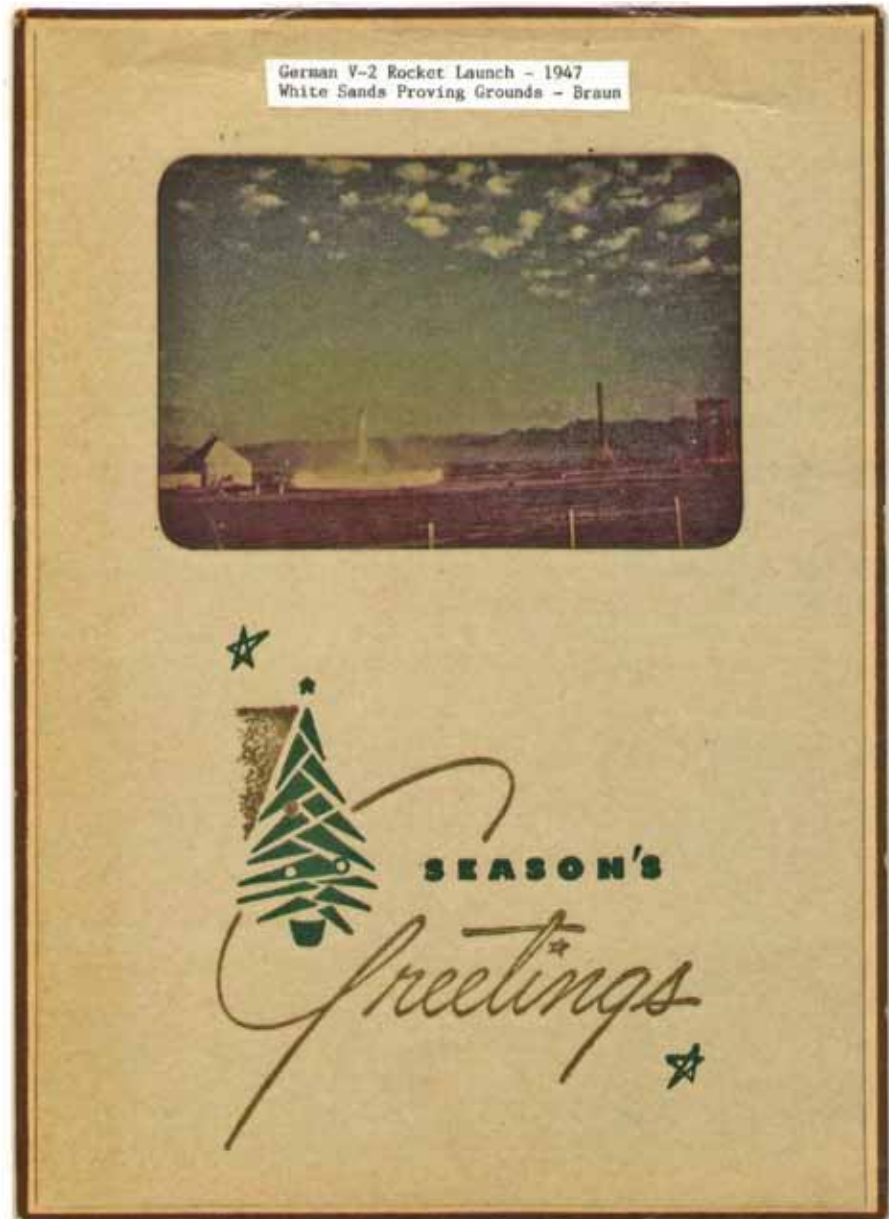
**Looking from the WSMR Hall of Fame at the Museum into what used to be the Museum's giftshop space. The large area is now available to tell the Army story.**

# Season's Greetings From White Sands Proving Grounds

It seems appropriate during this holiday season to run this Christmas card created by Julius Braun. In a note that came along with the card from a few years back, Julius said he originally used this card in 1947. The photo is a V-2 being launched at the old Army launch Area, now Launch Complex 33.

His note said he "resurrected it to commemorate over sixty years active participation in rocketry and space activities. What changes I have seen, from 'Would it get off the pad' to 'How many planets would it fly by.'"

He went on to say, "From New Mexico's White Sands to China Lake in California's high deserts to Alaska's interior to Florida's Cape Canaveral to China's satellite and control sites to Germany's Peenemunde and Nordhausen to France's Rocket Coast to Alabama Redstone Arsenal to Rocketdyne's Santa Susana and many more fascinating places, it has been a wonderful and productive career."



## 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.

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# Vietnam Exhibit — CONTINUED FROM PAGE 1

days. In the past, gift shop personnel opened and closed the museum when it was open on Saturday. Now, the plan is for museum and other organizational personnel to trade-off working on Saturdays.

## VIETNAM EXHIBIT

A few years ago Congress authorized the Department of Defense to commemorate the 50th anniversary of the Vietnam War. Some people still argue it wasn't a war and more argue about how long it really was. The government has set the commemorative dates as 2012 through 2025.

Military installations have been asked to plan and execute programs to help shine the spotlight on what was America's longest war. The WSMR Museum has stepped up to the call and put together a display relating directly to the missile range and Vietnam.

The display was officially opened during ceremonies on Nov. 10. The exhibit features the story, photographs and some artifacts of WSMR employee Frances Williams during her eight months in Vietnam as an Army logistician. It is called "Vietnam Through a Different Lens."

Williams volunteered to go to Vietnam to help unravel logistical problems. While there she also volunteered at the evacuation hospital, writing letters for injured personnel who couldn't do the job themselves.



Some of the artifacts on display in the Museum's 50th anniversary of the Vietnam War commemoration.

In addition, she was there during the start of the Tet Offensive when there were no safe places. She told a crowd at the exhibit's open ceremony that she sat on top of the Rex Hotel and watched the Vietcong try to take the American Embassy.

The exhibit gets its name from all the photos Williams took while in Vietnam. Many of the pictures feature the people she worked with as well as the ordinary citizens of Vietnam who didn't care who ruled their country. The photos reflect her fearlessness as she waded in close to capture the people around her.

## NEW BUILDING

For most of 2015, the board of directors for the WSMR Historical Foundation has been grappling with the idea that the group is never going to realize its goal of needing to raise at least another half million dollars for the new museum building. When the foundation was formed, money arrived in big chunks from supportive contractors, local businesses and a few individuals. That kind of money has dried up. Making \$2,000 in annual V-2 souvenir sales and other small-potatoes events simply won't make a dent in the goal.

Instead of soldiering on and not getting ahead, it has been proposed that the foundation take the half-million dollars raised in the past two decades and construct whatever structure the money will provide. It sounds easy. The foundation would stay in business, so to speak, at a more reasonable and sustainable level to support the museum in its day-to-day operations. If the facility needs new display cases, a contract to move artifacts, or a new paint job for a vehicle, the foundation could step in and contribute the funds.

It turns out that giving the government \$500,000 for a museum building is no easy task. Discussions are ongoing between WSMR and the foundation's board of directors trying to iron out the many requirements and find the best way to make it happen.

Hopefully in a 2016 newsletter we'll have news.

## STORY LINE

Lastly, the Museum has a new story line. In response to input from the Center for Military History, Darren Court, the Museum's Director, has put together a detailed outline for displays and exhibits.

The challenge for Court and his new assistant is to provide the heavy emphasis on the soldier that the Center wants to see and still tell the story of White Sands - a facility relying on science and engineering with a heavy dependence on civilians.

*On December 6, 1941, President Roosevelt approved the effort for America to develop the atomic bomb. After an estimated two billion dollars spent on research and several large industrial facilities, the first bomb was tested at Trinity Site.*



# Sidney Cole Was Project Engineer For Redstone Testing On 500K Static Stand

By Jim Eckles, Editor

Recently I received a package from Sidney Cole with articles, photos and background information on the testing of the Redstone missile propulsion system on the 500K Static Test Stand south of the main post. This is the facility that so intrigues people today as they drive up War Road to the WSMR south gate. It looks like some sort of castle or huge mining facility stuck up against Granite Peak.

According to a special report called the "500,000 Pound Rocket Static Test Facility" dated February 1957 and

signed by Lt. Col. James Hamill, the facility was designed in 1947, with the help of the German Paperclip scientists, and then constructed from 1948 to 1950. It was built as a wonder test capability of the future, capable of testing the biggest rocket engines America's scientists and engineers could imagine. In reality it lasted a decade or so.

The Redstone missile was America's first large ballistic missile. It stood almost 70 feet tall and was 70 inches in diameter. With 75,000 pounds of thrust it could carry a conventional or nuclear warhead to a distance of 175 miles. In fact it was capable of carrying the W-39 nuke which was rated at 2.5 megatons - more than a hundred times more potent than the Hiroshima bomb.

The missile range supported many full blown test firings of Redstone missiles. There were 10 firings from LC-36 from 1958 to 1960 and 14 firings from Ft. Wingate from 1961 to 1963.

If you go to Encyclopedia Astronautica on line, you can see a short summary of each flight. Interestingly, most of the ones from Wingate hit within a few hundred yards of the designated target on WSMR. The failures were the ones hitting a mile or more from the target.

Sidney's material covered three activities. The first was the addition of the Redstone motor test mount to the 500K superstructure in 1958. The mount was originally at Redstone Arsenal in Huntsville, Alabama where more than 670 tests were conducted.

Redstone needed the basic test stand for testing of new motors so the Redstone test mount was cut down, wheels were welded on and then the whole thing was pulled to WSMR. The stand was a large steel framework with fuel and oxidizer tanks in the middle.

The move was much acclaimed because, as Sidney said, "The elapsed time from the last Alabama firing and first White Sands firing was 42 days." The work was done by government and Rocketdyne company engineers.

The equipment was used to continue Redstone motor testing for "program plant acceptance" and "product improve-



**INTO POSITION AT WSMR** — Tank and cage assembly for Redstone missile motor testing is unloaded from its trailer carrier and shifted into position at the 500,000 pound static test facility here. Hauling the huge assembly up the side of the Organ mountains to the test stand proved to be an engineering feat in itself.



**THE BIG LIFT** — A 45-ton crane heists the Redstone propellant tank cage into a vertical position at the 500 K. Workmen welded the Redstone modification onto the stand to enable the Redstone missile motors to be tested at the stand. The cage and fuel tanks weigh an estimated 30 tons.



**READY TO ROAR** — With the Redstone motor anchored into place beneath cylindrical fuel tanks, the final modification of the 500 K test stand is complete and ready for firing. The huge tanks, which contain fuel and oxidizer propellants, to run captive Redstone motor, are specially designed for research and development purposes.



**REDSTONE THUNDERS** — With only 42 days elapsing from the date of final firing at Huntsville, Ala., to the first static test firing of the Redstone motor at WSMR, the overland switch of equipment was performed by government and Rocketdyne company engineers.

(All U.S. Army photos)

El Paso Times coverage of the Redstone mount being installed at WSMR.

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# Record Motor Burn — CONTINUED FROM PAGE 4

ment testing.” In other words, after Redstone propulsion units were built by the manufacturer in California, they were shipped to WSMR for testing. If they passed, they were forwarded on for incorporation into the finished missile. Also, if changes were made to the fuel and engine system, those changes were tested at White Sands.

The second item Sidney’s material covered was one of those system changes. He says, “The oxidizer pump on the Redstone engine had a problem with the pump turbine blades. A fix was designed and installed by Rocketdyne.

An extended firing period was needed to validate the fix. An additional 1.5 million gallon tank for liquid oxygen was installed. Then, seven full duration burns were made in one eight-hour shift.”

The total burn time was 944 seconds which was a record. One article published by North American Aviation said, “During the day-long testing of the motor, fuel in the amounts of 125 tons of liquid oxygen, 76 tons of alcohol and three tons of hydrogen peroxide were used.”

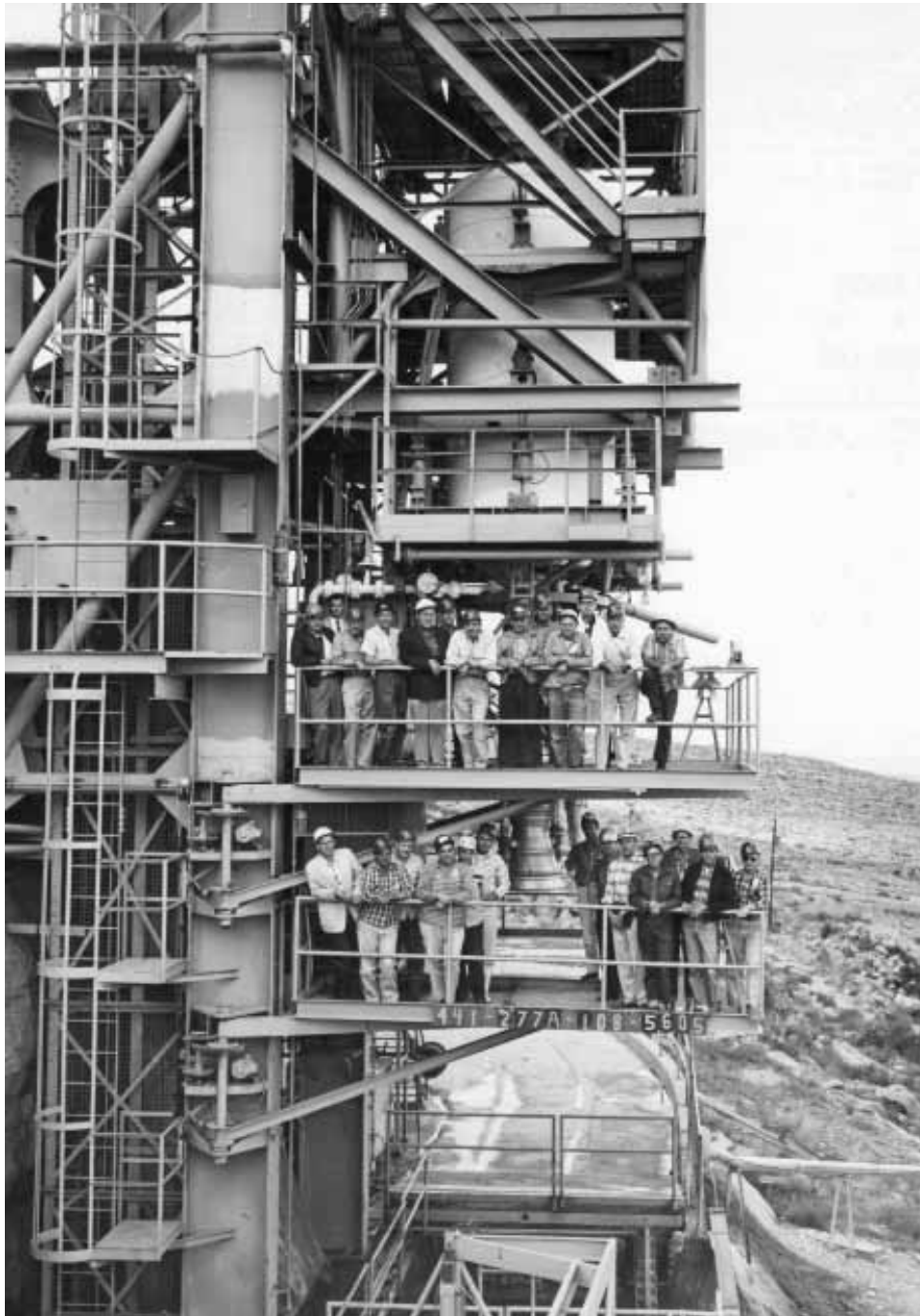
The same article points out “that the project engineer for the test was an Army private first class. He is Pfc. Sidney Cole, a mechanical engineer who was graduated from the Missouri School of Mines in 1954.” It turns out that Sidney entered the Army under the Enlisted Scientific and Professional Personnel Program.

The third thing covered by Sidney was another one of those system changes that needed testing - and it was a biggie as the push was on to increase Redstone performance so it could carry a satellite into orbit. Redstone, like its father the V-2, used alcohol and liquid oxygen for propellants. While common and fairly easy to work with, the combination was not nearly as energetic as other possibilities.

In 1956, Mary Sherman Morgan, a chemical engineer at Rocketdyne, developed Hydyne to use with liquid oxygen on board a Redstone. The new fuel boosted thrust by 12%. It was also quite toxic and required special precautions and handling techniques.

Morgan had a sense of humor because she proposed the new fuel be called “Bagel.” In the business, people are always abbreviating chemicals and compounds. With a name like bagel, people would eventually refer to the Redstone propellants as “bagel and LOX.” LOX is the standard jargon for liquid oxygen.

According to Sidney, a concoction of UDMH and nitrogen tetroxide was tested in a Redstone engine at the 500K stand.



The crew responsible for the 944-second Redstone motor burn on October 24, 1958 pose on the mount holding the rocket engine and fuel tanks. Courtesy photo

See Redstone Successes, page 6

# Redstone Successes — CONTINUED FROM PAGE 5

The test proved successful. However, after the test, to get rid of the excess nitrogen tetroxide, the chemical was simply dumped below the test stand with the emergency water system running to wash it down and dilute it. He said,

“you could smell it all over the base.”

Modified Redstone rockets went on to propel Explorer I into orbit and astronauts Alan Shepard and Gus Grissom into space in 1961 on short suborbital flights.



**A Redstone motor under test at the 500K Static Test Stand. As you drive along War Road and look at 500K, it appears there is a tunnel below the stand. That is an area that has been hollowed out by the super hot exhaust gases from the tests hitting the granite and then the spray of water from above to cool everything. Yards of rock have spalled off the face over the years creating an alcove under the facility. Courtesy photo**

## A Little Creativity In Supporting Victorio Peak Project

By Emmett Savage, WSMR 1956 to 1993

I was assigned to the missile range's USAISC "Commo" as the radio communications systems engineer. In January 1990, there was a request from the Ova Noss family seeking access to the legendary lost gold treasure at Victorio Peak in the San Andres Mtns.

Initially, there appeared to be ample financial resources to support the investigative project, but as costs escalated, corners were cut and solutions modified. One factor that did not change was in the security arena. It was mandatory that the assigned MP's have radio communications out of the Hembrillo Basin where the treasure was believed to be located. (to read more about this project, see the Jan. 26, 1990, Volume 43, number 4 of the Missile Ranger – available on line at [www.wsmrhistoric.com](http://www.wsmrhistoric.com))

We examined the Victorio Peak area and determined that a local radio repeater (on the MP net) was necessary to cover the entire area from the west side entry road into the site. A radio communication test from the Peak proper to the

Salinas Peak radio communication site proved to be possible. However, there was no electrical power within Hembrillo Basin nor anything that resembled a structure for radio equipment placement.

Cost was still an issue, so, we got creative – we built a radio repeater. Using two portable radios, we built a repeater interface, used solar power, cornered a TV push-up mast for a tower, chose two suitable antennas, and found guying for the tower. The guying had to be mountain goat proof, so we used field wire up to the 15-ft level, then nylon rope to the top. It worked like a factory job.

A highly directional corner-reflector type of antenna was fine tuned and installed at Salinas Peak, and an interrogating radio-base station was placed there and remote controlled via the range microwave system back to the MP control desk.

The overall project sort of dwindled away, with no mother lode being located. Don't know if the repeater is talking to anyone or if the goats ate it.



# V-2 Pieces Still Available

Although the historical foundation has lost its main outlet with the closing of the Museum gift shop, pieces are still available. Below are photos of the pieces from the Mu-

seum and now on hand. They are pieces of the V-2 skin and pieces of oxygen piping that fed the oxidizer to the motor.

In general, pieces are priced based on their size and interest. For instance, the piece of oxygen pipe with the connector still in place is unique and is priced higher than other pieces. Pieces of skin vary from very corroded to some where the steel is still intact. Also, they tend to be painted on one side, the exterior, and rust covered on the other. Some pieces are quite mangled because when the skin was removed by the Kansas Cosmosphere there was no intent of reusing it. The photos don't portray all the details of each piece. For example, (B) 2 has a large dimple purposely built in.

Each piece comes with a letter of authenticity which provides the background for WSMR's display V-2. For instance, the V-2 used to be mounted on a trailer and taken to local communities for display. Hatches in the skin gave visitors a chance to see

inside. The oxygen pipes were painted blue and the alcohol pipes were painted yellow for reference. The traveling V-2 was dubbed "Betsy."

Pieces are mounted on blocks of oak, walnut, maple and mahogany.

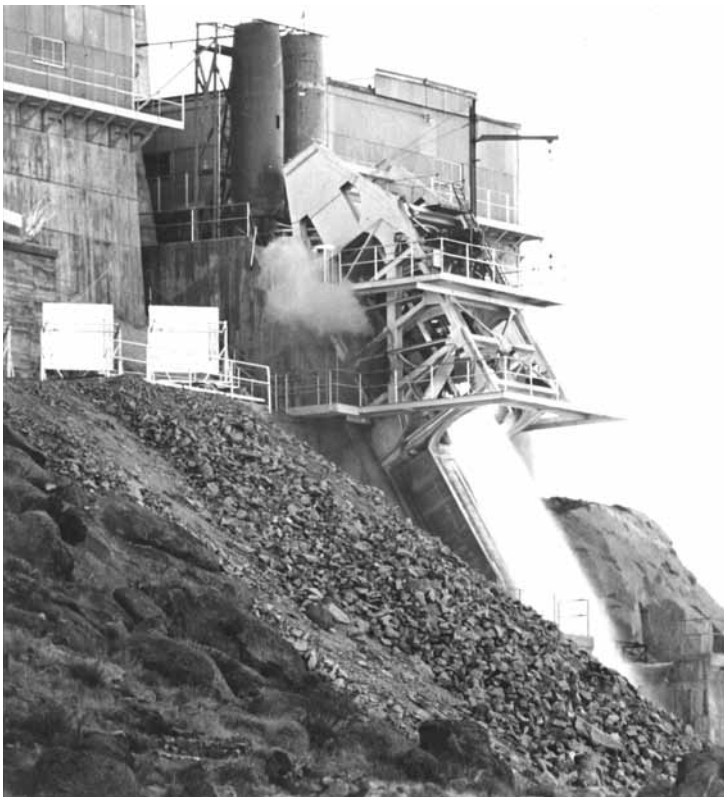
Contact the editor, if you are interested. Page 2 has editor's email address. Postage is about \$15.



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## The Back Page



We ran this photo of a Redstone engine test at the 500K Static Test Stand back in the November 2009 issue. The test was on Nov. 8, 1951 during early development of the Redstone missile. I thought I should run it again in light of Sidney Cole's story.

In this photo, the mount to hold a rocket engine in place is in its original configuration - at quite a slant. When the mount was added from Redstone Arsenal, it placed the engine under test in a 90-degree vertical position. Also, in this photo, you can see the fuel and oxidizer tanks standing vertically behind the mount. They are a dark color.

In its original design, the 500K had pump buildings up above to push propellants down to engines under test. Since the pumps are such an integral part of a propulsion system, it was usually best to have the missile's own system supply the propellants to the motor.