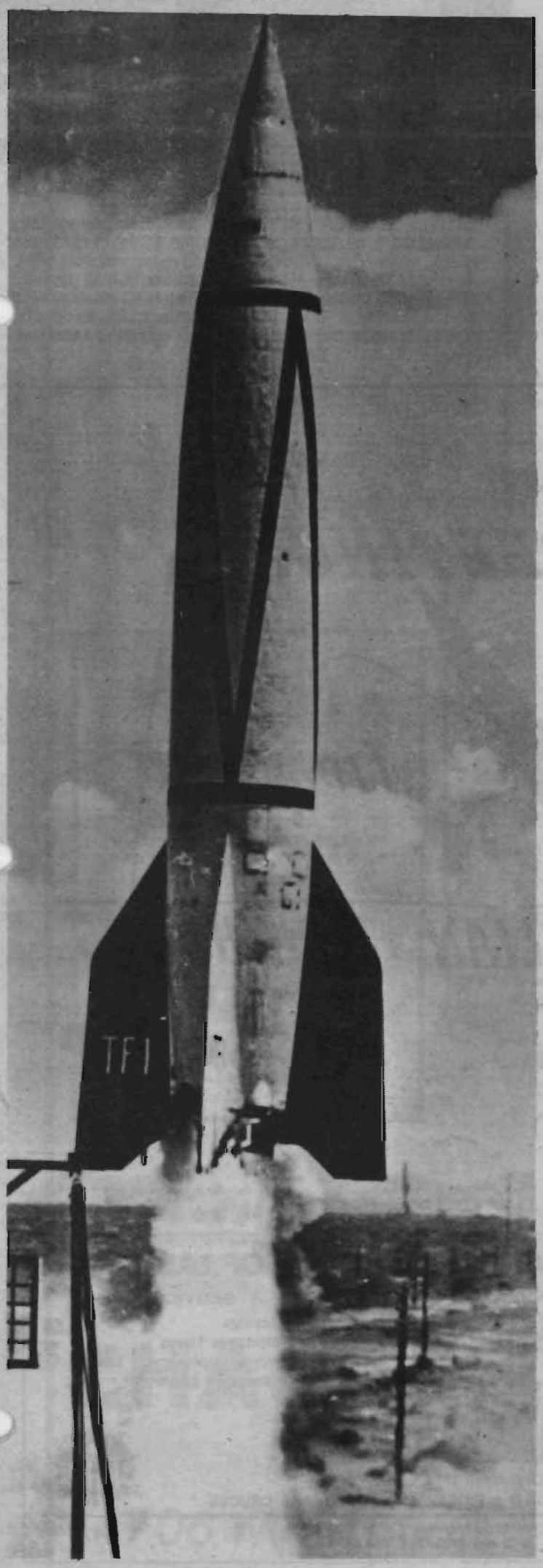
Special 25th Anniversary Edition

THE WHITE SANDS
MISSILE RANGER

WHITE SANDS MISSILE RANGE, N.M., JULY 9, 1970–PAGE 1-B



1945

Anniversary Message

On the 9th of July 1970, White Sands Missile Range will reach another milestone and observe the 25th anniversary of its founding as the nation's first missile and rocket testing facility.

Throughout those 25 years, the military and civilian team on this installation has been in the forefront of America's missile and space activities. Every one from the pioneers of 1945 to the personnel who operate or support the busy complex today has just reason to be proud of White Sands Missile Range's accomplishments.

Congratulations to all White Sands personnel, past and present, for significant contributions to national defense and missile technology.

E. H. deSAUSSURE
Major General, USA
Commanding

1970

RCA, U.S. Army teamup to develop range radars

Long-time partners in development, operation and maintenance of advanced radar systems at White Sands Missile Range have been the U.S. Army and the Radio Corp. of America (RCA).

This partnership is typified by the fact that the nation's newest instrumentation radar, the AN/MPS-36, was developed over the past two years by RCA's Missile and Surface Radar Division, under contract to the Army at WSMR.

The first (prototype) model of this new radar system is now being operated by the RCA Service Co. as part of its responsibility under another contract for operation and maintenance of range radars.

As in the case of the AN/MPS-36, a majority of the advanced tracking systems developed by RCA have either been built under contract to WSMR or have been tested here. For example, the initial production model of the AN/FPS-16 – the nation's first instrumentation radar – was turned over to WSMR by RCA in 1957, at "C' Station.

The prototype AN/MPS-36 "turnkey" ceremonies in January of 1970, Philip A. Piro, vice president and general manager of RCA Missile and Surface Radar Division, noted that "it is hard to imagine a more graphic example of White Sands' pioneering role in radar systems development and operations than the testing of the prototype AN/-MPS-36 – the newest instrumentation radar – alongside the initial production model of the first instrumentation radar, the AN/FPS-16."

As a project engineer in 1957, Mr. Piro was a member of the RCA team that developed and installed the first FPS-16. Eleven more of these radars– sometimes referred to as the "work horses" of the range – subsequently were built and installed on White Sands Missile Range by RCA.

The prototype AN/MPS-25, the transportable version of the FPS-16, also was tested at WSMR. Two units of the MPS-25 currently are in operation on the range.

Thus the delivery of the prototype MPS-36 brought to 15 the number of RCA instrumentation radars employed by WSMR. Following acceptance of the first "36," the Army exercised an option in the contract for five production models of the new system. These are now being built at Moorestown, N. J., by RCA. Two are destined for use on other ranges and three, in addition to the prototype, will be used at WSMR.

The AN/MPS-36 is transportable, with electronics contained in a van and the antenna mounted on a trailer. The system can be moved from site to site at up to 60 miles per hour, and it can be in operation within eight hours after arrival.

It also is the first instrumentation radar to incorporate precision measurements of velocities as an inherent part of the system.

RCA's operations at WSMR have encompassed more than the development, operation and maintenance of radar systems. In 1956 and 1957, to cite one example, RCA emplaced, tested and operated the Land-Based Talos Defense Unit in the WSMR launching area.

The firm also has been associated with other contractors and other Government agencies, including the U.S. Air Force and the National Aeronautics and Space Administration, in numerous defense and scientific research and development projects.

MOBILE RADAR – This is the new mobile instrumentation radar, the AN/MPS-36, developed for WSMR by the Radio Corp. of America. RCA operates the radar under an Army contract. The antenna is mounted on a 36-foot trailer. The system can be towed at speeds up to 60 miles an hour and moved from place to place on the range, and can be ready for operation eight hours after arrival at a tracking site. (U.S. ARMY PHOTO)

FOR THE RECORD — When pert Barbara Randolph does her thing, servicemen overseas listen, because Barbara's thing is a record show carried by American Forces Radio and Television Service, Los Angeles. Now that's "Soul!"

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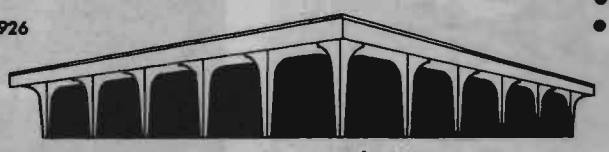

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Jumbo, giant steel vessel, rests today at Trinity Site

by
V. H. HUNT

America's first atomic bomb test operation, known as Project Trinity, took place early in the morning on Monday, July 16, 1945, in the north-central portion of the old Alamogordo bombing and gunnery range, now a part of White Sands Missile Range.

After the detonation of the atomic device, the tower from which it had been suspended had virtually disappeared. Only the metal stumps of the tower legs, which had been imbedded in concrete, remained.

That, and a green, glass-like substance where the sand had melted and solidified again, and Jumbo.

Jumbo was one of the costliest unused schemes involved in the super-secret Manhattan Project to develop the atomic bomb. Jumbo was conceived because, about a year before the Trinity test, there was barely enough plutonium available to conduct the essential experiments, and the outlook for increased production was bleak. It seemed absolutely imperative that the active material not be wasted in an unsuccessful test.

One idea, which was adopted after several others were considered, was to have a steel vessel built strong enough to contain the plutonium if it were only scattered by the dynamite, rather than a full-scale nuclear explosion.

Although the container, promptly dubbed Jumbo, became a high priority project at the outset and all test plans, until the last minute, were based on the assumption that it would be used, there is little evidence that the idea met with much enthusiasm at Los Alamos where the bomb was being built.

Even J. Robert Oppenheimer, director of the laboratory at Los Alamos, wrote that "the probability that the reaction would not shatter the container is extremely small.'

Despite the high priority, fabrication of the vessel was easier said than done, and Jumbo turned out to be one of the most agonizing of the Manhattan Project's endless procurement headaches.

In May 1944, scale model "Jumbinos' were delivered to Los Alamos where numerous tests were conducted to prove the feasibility of the design. Although the design appeared practicable, there was scarcely a steel man in the country who felt he could manufacture the container.

Specifications required that Jumbo must, without rupture, contain the explosion of the implosion bomb's high explosive material and permit mechanical and chemical recovery of the active material.

To do this required an elongated vessel 25 feet long and 12 feet in diameter with 14-inch-thick walls and weighing 214 tons. Steel company heads expressed strong doubts that Jumbo could be manufactured to specifications.

Eventually, an Ohio firm agreed to take a crack at the job and the order was placed in August 1944. At this point, an unconfirmed story indicates this company had more than its share of troubles in building the monster vessel.

The manufacturer, so it goes, assigned the entire third floor of his plant to assemble the jug, and put his people on a feverish work schedule.

Then, about three weeks before the vessel was due to be finished, the plant manager, working in his office late, felt a terrible shudder go through his building, followed by a thunderous crunching and tearing sound of breaking timbers.

What he saw, when he reached the basement, drained the blood from his face and he ran to a telephone. "You'd better get on a plane, quick!' he shouted at a Manhattan Project representative on the other end of the line.

Later, in the basement of the plant, the awed official stood with the plant manager. Both men gazed silently at the 428,000-pound, jug-shaped monster embedded in the crushed basement floor.

That's only part of the story. Orders reportedly were issued to seal the first Jumbo in cement, and supposedly it's still there. The contractor got paid for his work and received a voucher for the cost of repairing the ruined floors.

However, the troubles with Jumbo were far from over.

By virtue of a round-the-clock work schedule, the monster was finally constructed. However, no sooner had the finishing touches been put on the jug than the Ohio people discovered to their dismay that there was no truck in the United States large enough or rugged enough to haul it.

Worse, the "whiz kids'' of the Manhattan Project gloomily reported that only a few bridges existed in the country sturdy enough to withstand the tremendous load weight.

However, Major General Leslie R. Groves, the director of the Manhattan Engineer District, was not a man easily discouraged. He ordered a special reinforced flatbed rail car built which would take Jumbo to a forlorn, one-shack railroad siding at Pope, N. M.

At the same time, a high priority purchase order went out to build what probably was the world's largest trailer. It was a 64-wheel job, with eight rows of eight independently suspended wheels using the biggest commercial truck tires on the market.

Finally, in the spring of 1945, after a roundabout trip from Ohio, Jumbo was delivered to the siding at Pope. The train crew, which had promptly named their cargo "The Thing,'' had orders to reach Pope at exactly 9:30 a.m.... not before, not after.

The thing had become the biggest mystery along the Santa Fe line. On several occasions, high winds had caused the canvas covering Jumbo to flap about considerably, thus revealing what Jumbo looked like, and at Pope the spring winds finally blew off the canvas altogether.

To the railroaders Jumbo looked like a huge thermos bottle liner, made of steel, but no one could rightly guess what it was for. Many of them saw it during the next several days, for it sat on the siding for no apparent reason except nothing was available to carry it away from there.

One day a huge trailer arrived at Pope, which had been an old Santa Fe station that served as a link with the Southern Pacific and the Pacific Coast in the 1890's.

A real piece of engineering know-how was required to unload Jumbo from its huge flat car and place it onto the trailer. Then, four Caterpillar-type tractors were hooked up to the trailer to make the slow overland trip to Trinity Site.

But it was too late. During the last months before the test, all of the elaborate recovery schemes were abandoned. By then there was greater confidence in the success of the bomb and, more importantly, there was increasing protest that Jumbo would spoil nearly all the sought-after measurements which were, after all, the prime reason for conducting the test at all.

The fate of Jumbo, however, was not absolutely settled until the very last minute. On June 11, 1945, Kenneth Bainbridge, the test director, wrote that "Jumbo is a silent partner in all our plans and is not yet dead. . .We must continue preparations for (its) use until Oppenheimer says to forget it for the first shot."

And a silent partner it remained. The decision was made to detonate the atomic device on top of a tower, without Jumbo. The huge vessel was erected on a tower near Ground Zero to stand idly by during the test. It survived the explosion unscathed.

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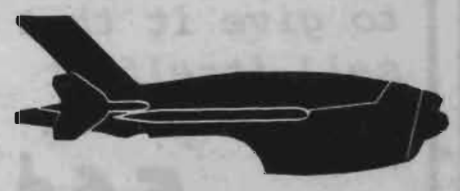
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Oldtimers here 21-years plus

White Sands Missile Range has come a long way since a flag raising ceremony in 1945 proclaimed the barren tract of New Mexico desert as the nation's first missile range.

Having a part in transforming that 100-mile-long piece of real estate into the multi-million dollar national range that is White Sands Missile Range today are more than 100 civilian employes who have worked at the installation continuously for 21 or more years and including one who came to the area before the installation was actually established.

The "oldtimers" are the men, and a few women, who came to White Sands Proving Ground – the official name until 1958 – on or before Dec. 31, 1949. They represent a cross section of jobs ranging from telephone operators and administrative personnel to engineers and scientists, carpenters and mechanics. They have watched the installation grow and mature and have played important roles in its development.

Many of the others now working at WSMR were employed at the newborn missile range prior to 1950, either as military or civilian, but for one reason or another left and then later returned. Although they are not included in the list of oldtimers, they too have had an important part in the making of the missile range that will be, on July 9, 1970, a quarter century old.

According to available records, Charles A. Brink, engineer with Plans and Engineering Office, National Range Operations, is the only person who has worked at the range continuously since early 1945 and was present for the first flag raising. Former Army Master Sergeant David Johns, Data Collection Directorate, NRO, is the only former military who has been at the installation continuously since 1946.

Mr. Brink, initally with the Corps of Engineers, came to the New Mexico desert site in early 1945 with a team to survey the Tularosa Basin for the first missile range. After extending his temporary duty orders several times, he transferred to Ordnance Corps with a permanent change of station to the installation.

Master Sergeant Johns, a native of Silver City and veteran of Bataan of World War II, was among troops detailed to Colonel Harold R. Turner at White Sands Proving Ground. Johns reported to the range in November 1946, and after serving seven years in a military capacity, he retired from the Army and accepted a job as a civilian.

The largest group of the veteran employes started working at the range in 1948, and the second largest began in 1947. Among these oldtimers are three women, Mary Cramer Newman, Civilian Personnel and Training, and Rita P. Mundy, Communications, who came to the range to work in 1947, and Ruth A. Mabe, Information Office, who joined them in early 1948. Also hired during the formative years, but away for varying lengths of time, were Gladys Griffee, Communications, who transferred to WSMR in 1946 from Holloman Air Force Base, which was then the Alamogordo Bombing Range; Virginia Johnson Horsley, National Range Engineering, who was first employed in 1947; Louise McCool, Communications, and Elisa Brown Regan, NRO, both originally hired in 1948.

At WSMR today are 11 people who have worked continuously at the installation since 1946; 34 who were employed in 1947; 39 whose date of employment was 1948, and 22 in 1949. However, as the years pass, the veterans list dwindles. In 1965, there were 140 on the roll including 15 hired in 1946; 43 in 1947; 51 in 1948, and 30 in 1949.

In a geographical breakdown, Las Cruces leads with 72 of today's oldtimers; El Paso claims 17; Alamogordo, 14; Tularosa, 3, and one from La Mesa, N. M.

In work assignments, 42 of the group are assigned with Post Engineer while 15 are with Maintenance Directorate, Logistics, 13 with Data Collection Directorate, NRO, and 8 with Transportation and Equipment, Logistics. The others are widely dispersed with no more than five in any one office or organization.

Following is the oldtimer roster by year and place of residence:

1945 – Las Cruces: Charles A. Brink.

1946 – Las Cruces: Milo Bennett, Ben Billups, Carl B. Bundschuh, Bon Burt, Arthur C. Dittmar, Marvin W. Norvell and David Johns.

El Paso: Robert H. Nelson.

Alamogordo: Felix V. Vega, Fred M. Malone and Claud Holguin.

1947 – Las Cruces: Ernesto Alvarez, Lester M. Christiansen, Ernesto M. Dominguez, John D. Fairall, George M. Gibson, Paul V. Gonzalez, Frank S. Hemingway, Wilbert R. Johnson, Earl F. Jones, Willard A. Jones, Cecil P. Landcaster, Mary C. Newman,

(Continued on Page 7-B)

CHARTER EMPLOYE – Charles A. Brink, engineer with Plans and Engineering, National Range Operations, is the only employe at WSMR for 25 years. Originally a member of a survey team from Corps of Engineers sent to survey the area selected for the nation's first missile range, he extended temporary orders several times and finally transferred to Ordnance Corps and stayed at the installation. During the years, he has watched the bivouac of July 9, 1945, grow into a multi-million dollar establishment that claims to be the best instrumented missile range in the Western World. (U. S. Army Photo)

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Improved cinetheodolite is produced by N.J. firm

Closely associated with the development of improved instrumentation systems for White Sands Missile Range, and especially with design and production of the WSMR Cinetheodolite, has been the Keuffel & Esser Co., of Morristown, N.J.

The firm was awarded its first contract for design of the WSMR Cinetheodolite in October of 1961.

The cinetheodolite is primarily an angle-measuring (azimuth and elevation) instrument used for obtaining trajectory information. The angles, plus a picture of the object being tracked and a time code, are recorded simultaneously on film at selected frame rates. Data reduction of film records from two or more cinetheodolites provides the primary source of space-position, velocity and acceleration data..

After adjustment for tilt, orientation, refraction and circle eccentricities, and rotation in a common coordinate system, the azimuth and elevation angles from all available instruments, for each instant in time, are combined to obtain a mathematical estimate of vehicle position.. That point is selected which minimizes the sums of the squares of the angular errors of all angles used in the solution.

The cinetheodolites used at WSMR in the early days were European-made instruments. The WSMR Cinetheodolite is the first to be designed and built in America.

The WSMR Cinetheodolite is designed for greater accuracy than the early European instrument. The basis for improved accuracy is a concept for an optical system referenced to a gravity-controlled device that renders results immune to mechanical perturbations under dynamic conditions.

This optical system was conceived by William E. Mimmack, long-time civilian employe of the Instrumentation Development Directorate of National Range Engineering. He is a resident of El Paso.

The system was developed and incorporated into the new cinetheodolite by Keuffel & Esser's Instrument Research and Development Department.

After the original award in 1961, there were numerous modifications to the K&E contract, over a period of years. As a result, several years later K&E contracted to deliver and install a complete experimental working model, or prototype, of the new instrument.

In May of 1967, Keuffell & Esser completed installation of the prototype at Bill Site, north of the main post area near the intersection of the WSMR Access Road and U.S. Highway 70.

In March of 1969, K&E was awarded a contract to perform a redesign study of the WSMR Cinetheodolite optical system. This study was completed in July of 1969.

The company was awarded another contract modification in October of last year, to produce a prototype of the redesigned optical system. This redesigned system was delivered to WSMR in June of 1970.

These radars also provide early acquisition data to the on-range radars for missile guidance and measurement requirements during payload re-entry.

Several more standard Athenas are scheduled for launch during the balance of this year. A larger version, the Athena H, is expected to become operational early in 1971. This newer version utilizes a powerful single-stage booster instead of the two stages used by the standard missile.

Data from the Athena program have been used by the Army, Navy and Air Force for development of such ballistic missile re-entry systems as those in the Titan, Minuteman, Polaris and Poseidon intercontinental ballistic missiles.

Athena, however, is just one segment of the Advanced Ballistic Re-entry Systems (ABRES) advanced technology program managed for the Department of Defense by SAMSO. Full scale testing also is conducted at Vandenberg AFB, Calif.; Barking Sands, Hawaii, and on Kwajalein Atoll in the Pacific.

EARLY CINETHEODOLITE – Picture taken in 1949 shows pioneer Land-Air employe operating early cinetheodolite – German-made Askania surveyor's theodolite combined with a motion picture camera. Tracking was manual. Board fence around the ground-level instrument was built to keep out curious cattle. Modern cinetheodolites are housed in astrodomes and have power driven tracking systems. (Land-Air photo by B.M. Reavis)

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CHECK THIS – The Lenkurt 76C Microwave Radio installation at the Range Control Center is shown in the background as Bob Canavero, Lenkurt installation supervisor, left kneeling, and Chuck Parker, WSMR program manager for Lenkurt, examine over-all system plans. Ray McPherson, White Sands test technician, is pictured standing. (U.S. Army Photo by Robin Broun)

Did you know?

There are several precautions to take to avoid snake bite. Never place your hand under ledges, under fallen logs or in crevices without first carefully looking to see if a snake might be there. If bitten, make longitudinal slits through fang marks and by suction try to remove the venom. Very few snake bite victims die if properly treated.

Check your VRB

See your Career Counselor at Building #153 (Post Office Bldg.) or call him at 678-2305.

"The duty roster will be finished in about five minutes, Sarge."

Oldtimers

(Continued from Page 5-B)

Albert D. Ortega, Benito D. Salazar, Placido Trujillo, Rafael N. Urquidez, Ruben L. Vanegas and Manuel M. Gallegos.

El Paso: Thurman W. Dunn, Demetrio E. Garcia, Armando M. Gonzalez, James C. Hayes, William A. Lieberman, Rita P. Mundy, Eddie C. Pacheco, Albert J. Zopelli and Ruben Gonzalez.

Alamogordo: Kenneth J. Ford, Stanley T. Fulcher, Thomas S. Pate, Vick V. Serna and Lewis E. Vaughan.

Tularosa: Zeke M. Sanchez and Thomas R. Yarbrough.

1948 – Las Cruces: Ben W. Ames, Nestor A. Anaya, Jose Archuleta, Carolos Y. Banegas, James S. Bourquet, George S. Boyland, Charles P. Cutler, Aron R. DeLaO, Frank O. Dominguez, Raymundo W. Duran, Leland E. Fine, George V. Gallegos, Daniel T. Guerro, Edward V. Lopez, Jack S. Marsh, Richard R. Medina, Alfred J. Mendez, Malcolm Mullins, Ramon Rede, Arnulfo C. Reyes, Donald Risinger, Manuel L. Serna, Bennie N. Silva, Richard Telles, Bruce Topley and Nazario L. Walters.

El Paso: Samuel D. Barela, Miguel Elorreaga, Ruth A. Mabe, Jose Y. Ramirez, Ray V. Torres, Orlando M. Unruh and William D. Propst.

Alamogordo: Julian G. Casillas, Jose M. Galla and James M. Shows.

Tularosa: Manuel R. Duran.

La Mesa: Tony C. Lucero.

1949 -- Las Cruces: Carl A. Ahlgren, Albert B. Barela, William Bassford, Edward N. Brown, Richard S. Cordero, Joe H. Gold, Alfonso Martin, Ernesto T. Medina, Vernor L. Miller, Arturo L. Molina, Edward E. Padilla, John H. Phillips, Jose T. Romero, Manuel P. Ruiz, Rafael C. Salas, Fidel Sarabia, Jose L. Tellez, Pablo Tellez and George A. Wright.

Alamogordo: Eugene R. Edson, S. G. Gonzalez and Harvey R. Latta.

My Neighbors

"Don't look now, Harold, but I think our tree's been bugged."

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UNIVAC has valuable part in Mis

by
R. P. Anastos
Branch Manger, UNIVAC FSD,
El Paso

UNIVAC has participated in numerous projects at White Sands Missile Range (WSMR).

During the 1950's UNIVAC installed the first large-scale Digital Computer System on the range. It was used for scientific analysis and data reduction on upper atmospheric research and ballistic missile test and evaluation. Much basic and fundamental missile work was developed on the UNIVAC Scientific 1103-A, or the "03" as the old-timers refer to it.

The 1103-A was one of the pioneers of the first generation of computers, and as such was a giant in its day both in computing power and in size. It contained electronic tubes by the thousands, hundreds of miles of wire and an operator console with over 500 buttons and lights plus what looked like a small screen TV. When in operation with all the electronic tubes, tape drives, and other devices going, the computer required almost 75 tons of air-conditioning.

Since 1958, UNIVAC's Federal Systems Division, under contract to Bell Telephone Laboratories, has been supplying data processing equipment and programming in the Nike-Zeus and Nike-X missile defense system.

UNIVAC was instrumental in the development of the multifunction array radar that required the use of high-performance multiprocessors in the system. UNIVAC was given the responsiblity to design and develop the system's control processor and its associated memory.

The MAR-I system development effort was one of the more complex projects of its kind completed at UNIVAC. The program was developed over a period of two and one-half years with the bulk of the effort being expended during the second year. The staff nucleus consisted of experienced Nike-Zeus analysts and programmers with experience from other projects. Over 100,000 instructions were written in approximately two years. In addition, a number of maintenance and utility programs written for Nike-Zeus Phase II program were adapted to MAR-I.

The Athena Guidance Computer is the principal element in the ground-based system which tracks and controls the Titan-I missile during its initial powered flight.

Under prime contract to the Air Force, UNIVAC designed and developed the Athena general-purpose guidance computer and its associated input/output. During the Athena effort, UNIVAC received technical direction from Bell Telephone Laboratories, which were also under prime contract to the Air Force. UNIVAC provided all operational and

E-6s Under Seven Get Big Promotion Break

WASHINGTON (ANF)—A new change to the Army-wide promotion policy to the grade of E-7, approved by Department of Defense (DOD), now allows outstanding E-6s to be considered for promotion without satisfying the seven-year service requirement, provided the individual has three years in grade.

The change is designed to afford better promotion opportunities to outstanding E-6s, many of whom were promoted to grade E-6 early in their careers. The majority of soldiers promoted early are in the combat arms.

Individuals who already meet minimum requirements (with waiver) of seven years in service and six months in grade may continue to be considered for promotion to E-7 without obtaining three years in grade E-6.

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Missile Range growth

targeting programs written to program specifications developed by Bell Telephone Laboratories.

As the Athena guidance program developed, a greater computational burden was placed on the UNIVAC computer. In spite of these additional requirements, the computer has participated successfully in more than 100 missile launches without being responsible for a stoppage, failure, or delay in the countdown.

The Army's SAFEGUARD System Evaluation Agency (SAFSEA) is currently using a UNIVAC 1108 computer complex at White Sands as a tool for evaluating critical aspects of the SAFEGUARD Ballistic Missile Defense System.

This system, being used with UNIVAC's EXEC 8 software, is the main operating, test and simulation device used by the agency. A large-scale computer which processes data in billionths of a second, it was installed and operating with the EXEC 8 software system 75 days after receipt of the order.

The sophisticated system also includes an on-line UNIVAC 9300 computer, eight UNISCOPE 300 visual communications terminals, one UNIVAC 1557/1558 graphic display system, a UNIVAC 1004 card processor, and a high-speed communications subsystem.

TEAM-UP – for Test Evaluation Analysis Mangement Uniformity Plan – is a program to modernize and standardize management information and scientific data systems within the U. S. Army Test and Evaluation Command (TECOM), immediate higher headquarters of WSMR.

Part "C" involves the scientific and engineering portion of TEAM-UP and is unique to White Sands Missile Range. It provides for reduction of all instrumentation data, automation of instrumentation control and real-time data gatherings. Part C will consist of five Model 1108 UNIVAC Computers. This third generation system will replace second generation equipment presently installed.

When the new computers are in operation they will provide (1) faster data processing and more rapid information retrieval for all levels of mangement, and (2) flexibility to meet rapidly expanding and changing requirements.

COMPUTER OPERATION – The site of the art in computer input/output devices is shown in this picture taken at Holloman Air Force Base in 1958. Dr. Garner McCrossen, left, and Billy G. Medley are operating the UNIVAC 1103-A computer. This was one of three large-scale scientific computers used at WSMR for data reduction, missile ballistics and some of the early real-time applications. (Photo courtesy UNIVAC)

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CITY OF LAS CRUCES

TO: The White Sands Missile Ranger DATE: July 9

FROM: City of Las Cruces

SUBJECT: 25th Anniversary Issue

The City of Las Cruces would like to take this opportunity to extend its congratulations to White Sands Missile Range for 25 years of service to the Las Cruces area.

We hope the future will bring us many more years of your excellent service and accomplishments.

Yours truly,

Graham

Mayor F. J. Graham

Exciting off-range programs began with success in 1963

by
V. H. Hunt

In 1963, one of the most exciting missile programs ever introduced was initiated by White Sands Missile Range. This was the inauguration of off-range missile launchings after a year of "conditioning" the public to accept firing missiles over public lands.

In Utah, the program was started with the establishment of the Green River test site, which now has become headquarters of the Utah Launch Complex (ULC), about 180 miles southeast of Salt Lake City.

For many years testing by WSMR was confined to the missile range proper, an area of 40 miles by 100 miles. As missiles became more sophisticated and developed longer flight capabilities with very high velocities, it became necessary to establish off-range locations to launch these test vehicles.

These needs led to the concept of a corridor over a sparsely populated region, for safety reasons, to accomodate the overland firing program.

Even with today's burgeoning population, the average population along the entire flight path which was established from southeastern Utah to the center of WSMR proper is considerably less than three persons per square mile.

In addition to the Green River test site, which has been mainly engaged in support of the Air Force's Athena program since 1963, launch sites were established at Blanding and Gilson Butte. Both of these locations were acquired for firing the Army's Pershing field artillery missile.

Blanding is southeast of Green River in the famed Four Corners area of Utah, Colorado, Arizona and New Mexico, while Gilson Butte is about 50 miles southwest of Green River. A total of 312,989 acres are under Army control in the Utah Launch Complex.

The Launch Complex supports a number of other WSMR programs, but most of these operations are of comparatively short duration and require only temporary or mobile facilities.

However, the Athena support requirements are long-range in nature, and have led to the establishment of Green River as a semi-permanent base and instrumentation complex.

Here, a permanent party of about 150 military, government and contractor personnel are involved with the Athena, a test vehicle conceived to simulate the trajectories of intercontinental missiles.

While the Athena program is currently the sole user of the launch facilities, instrumentation installed in the area also is utilized in fly-over tests conducted by other range users.

Valued at nearly $8 million, the ULC headquarters area includes 15,590 acres of land. Many of the structures are pre-fabricated metal buildings and special-purpose trailers.

These include office facilities, a fire station, mess hall, telephone exchange, housing trailers, and technical buildings of the Atlantic Research Corporation, prime contractor to the Air Force for the Athena project.

Approximately five miles southeast, between the headquarters area and launch site, is the instrumentation area with its radar, telemetry, optical instruments, frequency monitoring equipment and meteorological insturments.

The first Pershing missiles launched in Utah were fired from Black Mesa, about 15 miles southwest of Blanding, in September 1963. Five missiles were successfully fired in four days. Later, in May 1965, Pershing launches were commenced at Gilson Butte.

The Pershing firings provide annual practice for artillery troops stationed at Fort Sill, Okla., and Seventh U.S. Army in Europe, as well as for units of the Federal Republic of Germany Air Force.

Since the troops are in the area only temporarily, there are few permanent facilities at the two launch sites. However, troops are now housed in pre-fabricated metal buildings at Black Mesa.

Last year, a new county road was built to provide access to the site from Utah State Highway 95. Operations, communications and instrumentation facilities are housed in mobile vans.

Both Athena and Pershing firings are closely monitored from launch to impact at White Sands to insure complete safety. Road blocks are established, and residents in areas close to the launch sites are paid to evacuate their homes for firings.

Although the Pershing and

(Continued on Page 15-B)

UTAH CONTROL STATION – Utah's picturesque Book Cliff Mountains form the backdrop for the radar and control station on "ROD HILL" in the northeast corner of the WSMR Utah Launch Complex at Green River. The view is looking toward the north. To the left of the picture, not shown, is the cantonment area. The launch pads and blockhouse are on the east side of the complex. (U.S. ARMY PHOTO)

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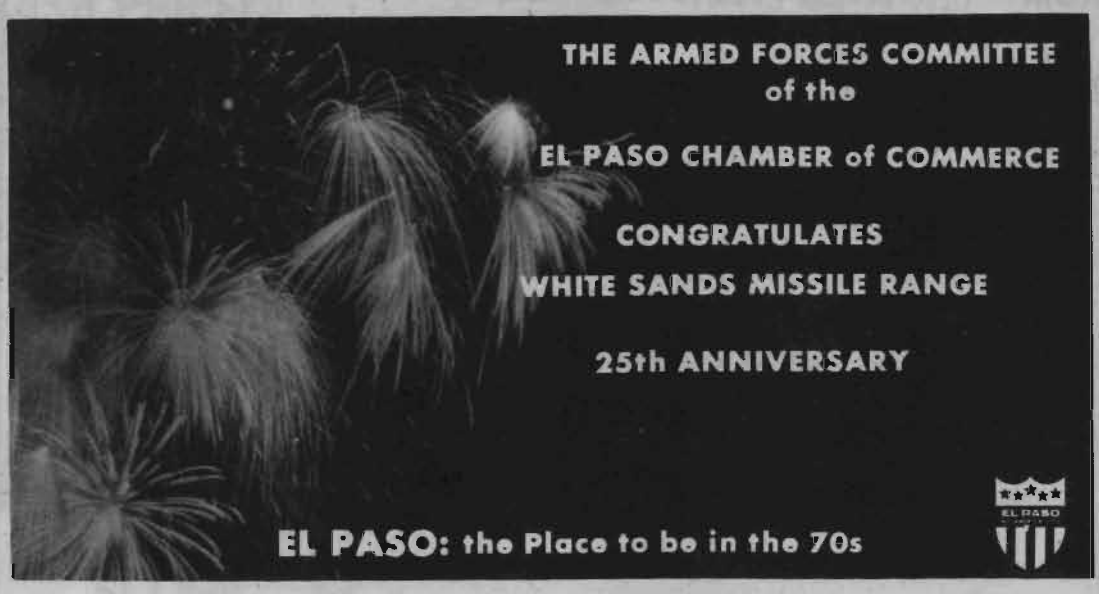

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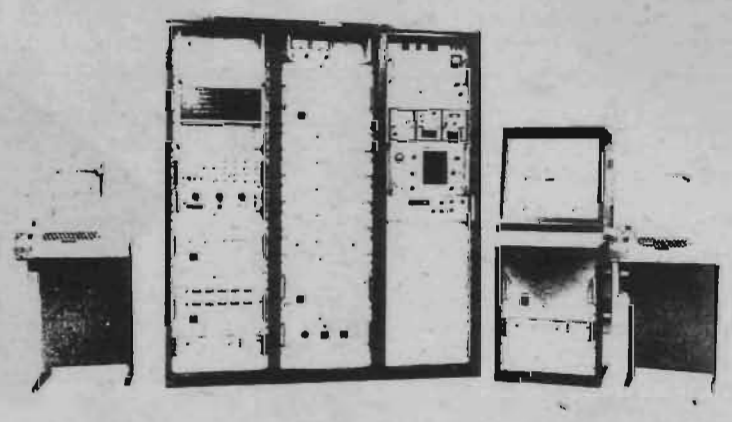
News Flash!

White Sands Missile Range acquires another new system from DEI.

The recently delivered ASTC-1 Automatic System Calibrator is the latest of a number of systems and equipments supplied to the White Sands Missile Range by DEI Industries. This relationship, extending over 10 years, is solid evidence of customer confidence in DEI products and the DEI name. Through close customer relationships and a continued program of product improvement DEI has become the brand name for aerospace telemetry products.



ASTC-1 AUTOMATIC SYSTEM CALIBRATOR

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DEI is proud of the part its products have played in the history of the White Sands Missile Range, and proud too in the knowledge that its new products such as the ASTC-1 will continue to serve White Sands in the future.

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122nd Athena missile firing from Utah scheduled July 10

by
V. H. Hunt

On July 10, an Athena ballistic missile is scheduled to be fired from the U.S. Army's Green River Launch Complex to impact, after a 470-mile flight, on White Sands Missile Range.

The launch will mark the 122nd time since July 1964, when the first Athena successfully impacted on the range, that these research test vehicles have streaked across desert skies over remote areas of Utah, Colorado and New Mexico.

Athena – named for the mythological Greek goddess of wisdom, skills and warfare – is a four-stage, solid-propellant, re-entry missile conceived to simulate the trajectories of intercontinental missiles.

It has proven to be one of the U.S. Air Force's most important research and development tools.

The Athena program is operated under direction of the Inland Range Field Office of the Air Force's Space and Missile Systems Organization (SAMSO), and is commanded by Colonel Leonard R. Sugerman.

The Field Office, which has a detachment at Green River, was located at WSMR in 1964 to act as the on-site representative for SAMSO to manage, contol and schedule test activities.

Colonel Sugerman also serves as test conductor for all Athena re-entry missions. He is assisted by a staff of eight military and four civilian personnel, and two technical advisors from Aerospace Corp., which provides systems engineering and technical direction to SAMSO.

The Athena program was initiated under the direction of the Air Force Systems Command, which is also the higher headquarters for Holloman AFB.

At the time, it was well-known that the U.S. defense effort required a remote land range where activities could not be monitored by sea-going spies.

In addition, the more convenient, inexpensive and precise placement of elaborate instruments on an inland range can measure performance more reliably than instruments on ocean vessels. Athena uses scores of different radar and instrumentation sites for payload measurements in flight.

The missile was developed under contract with Atlantic Research Corp., which is responsible for engineering, manufacturing, assembly, payload integration, testing and launching of the vehicle.

Atlantic Research also is responsible for ground support facilities at Green River and on WSMR proper.

Fifty feet high when all stages have been integrated, the 16,000-pound standard re-entry rocket was designed to gain an understanding of re-entry phenomena and the interaction of various types of these vehicles with re-entry environment.

Tests using Athena and subscale models of re-entry rockets can be conducted for about one-third the cost of a full scale re-entry system test.

In a typical mission, the first two stages provide the "brute force" required to put the final two stages and the re-entry payload on a ballistic return course to earth.

But instead of following a simple ballistic path, after the first two stages have burned and been separated, Athena is tipped over and the final two stages and payload are aimed back toward earth by a control system which uses precision gyro-sensors and reaction jets.

The payload is driven back into the atmosphere by the remaining stages at velocities in excess of 22,5000 feet per second. After burnout of the third and fourth stage motors, the payload is ejected and descends over WSMR.

Athena has contributed a number of significant firsts in its eventful life span. From three successful flights in 1964, Athena returned more radar and optical data than had been obtained on any prior re-entry systems testing program.

ATHENA FLIGHT BEGINS – Shooting upward from its launching rail, out of a cloud of flames and smoke, a U.S. Air Force Athena missile begins its flight from Green River, Utah, to White Sands Missile Range. The re-entry study vehicles are launched from the Utah Launch Complex of WSMR operated by the U.S. Army.

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Historical Condron Field is former Indian village, burial grounds

by
Ruth A. Mabe

Few spots in the 100-mile long Tularosa Basin have the historical background of Condron Field, White Sands Missile Range's official airport, some six miles from Headquarters building just off the "C" Station road.

During the past 1,100 years– earlier records not available – the site of Condron Field has been an Indian village and burial ground; a lake used by sportsmen for hunting and fishing; a dry-lake bed rumored to have been utilized as a landing strip by smugglers; an emergency landing site for anti-aircraft target planes during World War II, and since late 1945, the airport for the missile range.

The approximately five-square-mile tract of caliche and sand – liberally studded with tumbleweeds and cacti – was named for 2nd LT Max H. Condron, a Ft. Bliss liaison pilot from Nebraska, who was killed there in 1942 when his anti-aircraft target plane crashed during a mission. From then on, the area was referred to as "Condron Field."

With the birth of White Sands Proving Ground in mid-summer of 1945, an airport for cargo planes, VIP and other air traffic to and from the nation's first rocket center became imperative. So, with a minimum amount of work and money, runways were levelled off in the old dry-lake bed, runway markers erected, communication lines strung and a forest ranger look-out tower moved in for a control tower.

By 1948, Condron Field was in business. It had been officially named and commissioned and listed in air facility charts as an Army Air Field. Personnel included two officer – one a rated Air Force pilot – some 23 enlisted men and eight civilians.

Volumes could be written on unusual happenings in the course of a day's work – such as GEN Lawton Collins being lowered from his C-54 aircraft with a forklift because a regular step-ramp was not available; a Navy TBM aircraft got stuck on a wet runway – so did the vehicle sent to pull it out – and the fire truck was dispatched to rescue both. Often it was necessary to drive deer from the runways so aircraft could land, and clearing runways of cattle and horses was an everyday event.

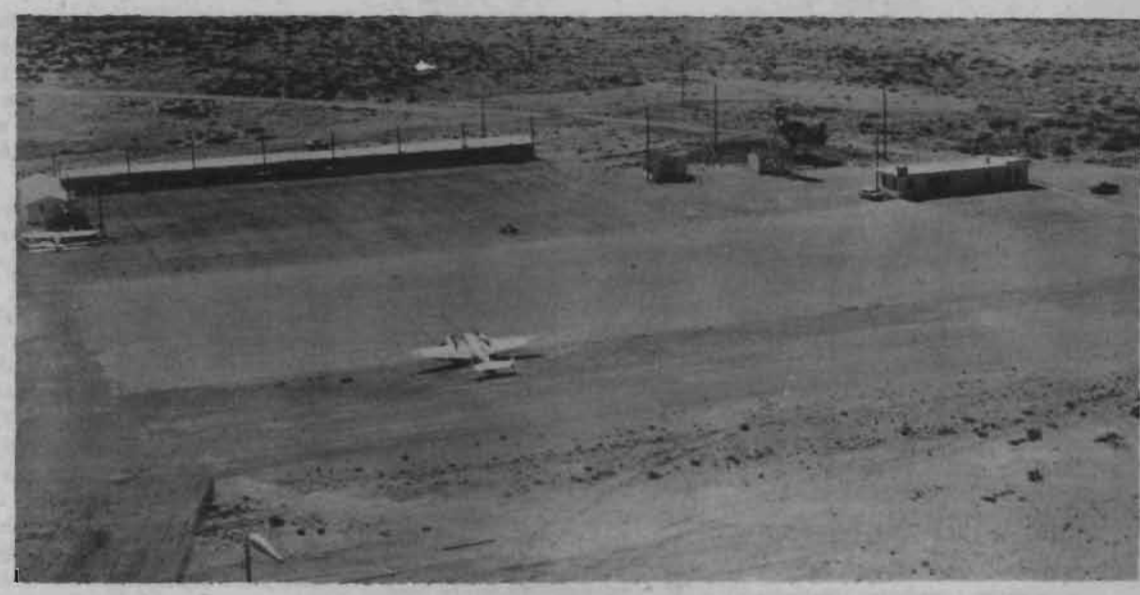
Three Air Force aircraft, a C-47 twin-engine cargo – passenger plane, a T-11 and a B-26, were assigned to the WSMR commanding general for range missions. Later the second B-26 was assigned.

By 1951, Condron Field had a new permanent-type operations building with running water and latrines. Air traffic averaged 400 operations a month and included practically all prop-type aircraft but not jets and seaplanes. However, a few times, a seaplane might well have landed for water from exceptionally heavy rains has stood on the field as long as a month.

October 1952, with more than 600 operations, set the field's all-time-high traffic record.

Until a few years ago, liaison aircraft – first Air Force and then Army – flew the road-sweep before missled firings as well as missile recovery. Then, due to the lack of range instrumentation and radars, locating the impact and recovery of missiles were needle-in-the-

(Continued on Page 15-B)



DESERT AIR FIELD – Dwarfed by the expanse of desert, the operations building, right, at Condron Field looks much less than its 100 feet long and 20 feet wide. Barely visible behind the building is a 75-foot forest ranger tower modified for traffic control. Structures at left are shop and hangars belonging to the White Sands Missile Range Flying Club. Plans are underway for paving a runway at the historic air field that lies in a dry lake bed and atop an Indian burial ground. (U.S. Army Photo)

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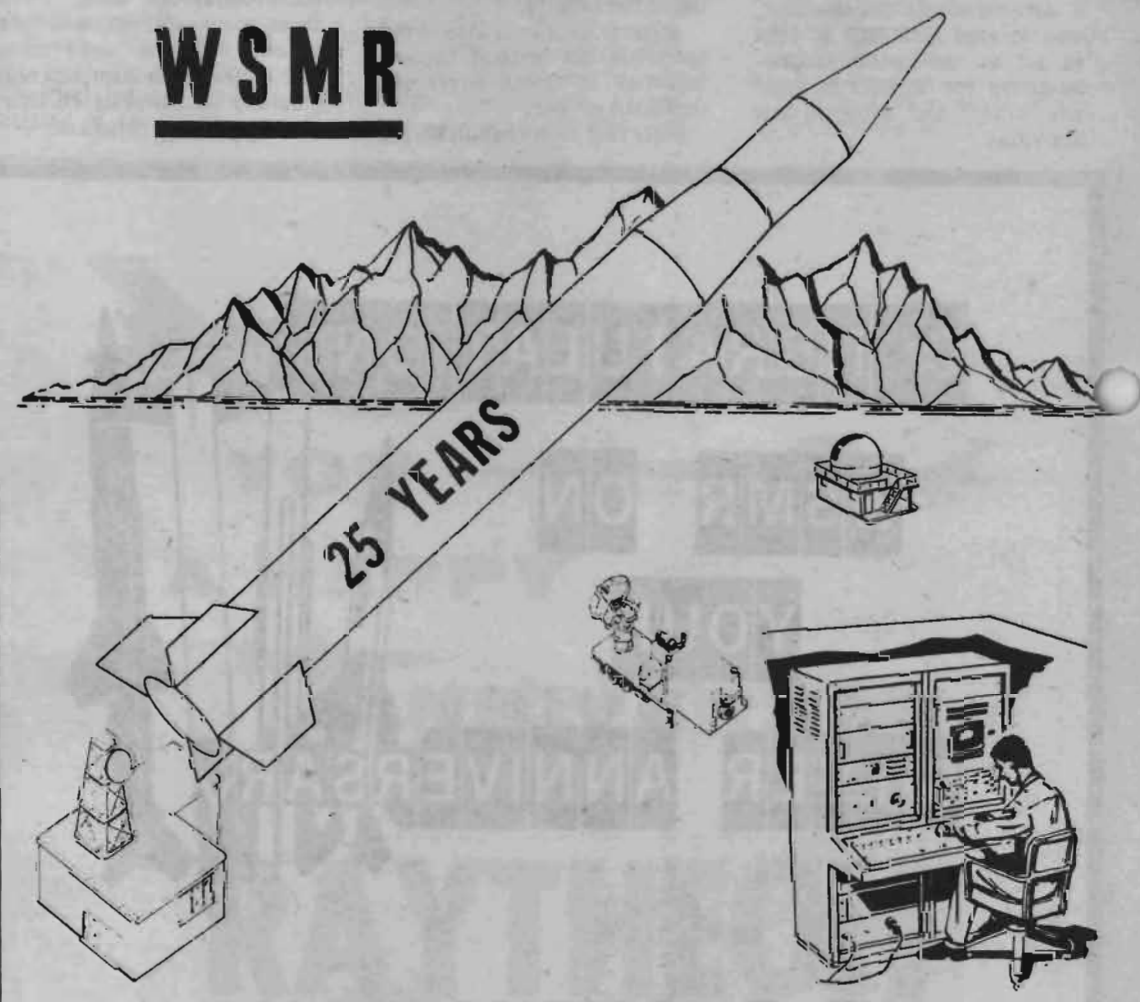

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Historical

(Continued from Page 14-B)

haystack processes. Pilots and observers stacked up hundreds of hours a month flying at boondock level scanning the desert floor for missile parts and impact sites. In fact, the altitude record setting – 244 miles – two-stage V-2 rocket fired Feb. 24, 1949, was recovered almost two years to-a-day later.

Despite the hours and hours of dangerously-low flying day after day over the vast range, only two WSMR recovery planes had major crashes, with two fatalities in one of them.

However, three L-13 recovery aircraft tied down on the ramp at Condron Field, with sand bags on wings and surrounded by heavy motor vehicles to break the wind, were totally destroyed during a severe windstorm in May 1950. The last day of the week-long blow, wind velocity hit a steady 80 miles per hour with gusts up to 100 mph. With that reading, the frightened operator abandoned the control tower.

It was the wind continually whipping around the mountain that brought the remains of the Indian pueblo and burial ground to the surface a few years ago. Top soil was blown away until the adobe brick outline of the old Indian compound cropped out on the surface. The outcropping was spotted by a Post Engineer employe who was pulling a drag over the runways.

The ancient village covered a large area and was located just off the west end of the east-west runway. Anthropologists from the Universities of Arizona and New Mexico identified skeletons and bits of pottery from the pueblo as that of a Pueblo Indian peculiar to the Tularosa Basin between 800 and 1,100 A.D.

When the WSMR and Alamogordo Bombing Range were formally integrated in 1952, the Air Force assumed responsibility for air activity on the entire 4,000-square-mile White Sands range.

Exciting

(Continued from Page 10-B)

Ahtena programs are the major activities in Utah, WSMR supports a variety of programs for its "customers" – the military services, other government agencies and government contractors.

For example, the Air Force is using the airspace over the Utah complex, and ULC ground support, for research and development testing on its Hound Dog. The Hound Dog is a supersonic, jet propelled, air-to-surface standoff missile developed for the Strategic Air Command.

Other flight tests in the area involve advanced inertial navigation systems being evaluated for use by our latest military aircraft, and to develop and evaluate the Sparrow air-to-air missile and its integration into the F-111 aircraft. The avionics, photographic and infrared systems of the F-111 also are being tested.

ULC also supports scientific experiments involving orbiting satellite vehicles launched by the United States and other countries. This support includes both radar and optical instrumentation. The information obtained is provided to Defens Department and Air Force agencies.

Another program – HIREWIMP – is a study of wind profiles being conducted for NASA. HIREWIMP is an acronym for High Resolution Wind Measurement Program. The objective is to obtain detailed profile measurements, and to determine the nature of turbulence, for use in design and performance studies of space vehicles.

Eight balloons, released over a 12-hour period, are tracked by an FPS-16 radar – one of the range's "workhouse" radars – to record the measurements. Information acquired is then correlated with similar measurements made by two of WSMR's sister ranges – the Eastern Test Range in Florida, and the Western Test Range in California.

Two Army-initiated projects are SOTRAN (for Sound Transmission) and ASROV (Aerospace Sounding Rocket Vehicle).

SOTRAN was the subject of a feature article in Time magazine which related how scientists since the time of the first Queen Elizabeth have been mystified by variations in sound transmission through the atmosphere. The research program was conceived to study such phenomena, and more importantly, to ask what these sound propagation variations can tell us about the atmosphere.

Similarly, the ASROV project is designed to provide weather scientists with information concerning the properties and environment of the upper atmosphere and near space. Information gathered is used in Army research and development programs.

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