Page Eight

THE ROCKETEER

ANNEX

WHAT



PASADENA

HYDRODYNAMIC SIMULATOR-A unique NOTS creation, the Hydrodynamic Simulator is a device designed to duplicate, in a dry run, a torpedo's behavior exactly as it would occur during detection and pursuit is to provide underwater clude the Foothill Plant in Pasadena (shown above), which is the headof a target in the ocean. The Simulator and attached computer provide weapons systems for the Fleet quarters and chief work area for the Annex; the Morris Dam Test an exact record of each movement of the torpedo in terms of deviation, through a program of repitch. depth. and roll.



SLINGSHOT LAUNCHER-With this facility, large projectiles can be raised on a cable up to 160 feet and slung into the water below. Photographic coverage of these drops gives weapons designers information of mportance on the water-entry forces. critical





in the world, has two 300-foot launching tubes____ one 22.5 inches and another 32 inches in diameter are several NOTS facilities known —through which torpedoes or other projectiles taining the launching tubes is supported on one end by floating barges that can be Located at the Morris Dam Test

jectile to any vertical angle up to 40 degrees. Thus, lities as the Variable-Angle Launchthis facility makes it possible to simulate the re- er, shops, test pits, and laboratories lease of a projectile from an aircraft at controlled for the underwater propulsion apvelocity and angle of attack. A battery of high-speed motion picture plied research groups. cameras record performance of the projectile as it enters the water. The Here, test stands for model per-

underwater trajectory is determined by an array of underwater ears formance studies provide facilities called hydrophones. Following the launchings, Navy divers recover the torpedoes.



Visitors on Armed Forces Day will see hourly firings on the VAL. Station, Long Beach.

IS NOTS? The Naval Ordnance Test

Station (NOTS) is the Navy's largest ordnance research center. The work here provides the Navy and other fighting forces of this country with superior weapons.

Our Mission

The principal objective of search, development, and testing.

NOTS is able to carry ordnance developments through from inception of an idea to the completion of weapons ready for mass production. It has all the specialized facilities and technical personnel for conducting research, production, engineering, and pilot production. Some of the weapons that NOTS deals with are rockets, guided missiles, torpedoes, and aircraft fireontrol systems.

Military-Civilian Teamwork Smooth, coordinated teamwork is naintained between scientist, engineer, and military at NOTS. To develop modern weapons,

amwork must be utilized. It is the military man's job to advise and coordinate weapon development so as to guarantee that these weapons can be used by the Fleet with the greatest possible ease, efficiency, and effectiveness. It is the engineer's job to develop the weapon and supervise it through production. It is the scientist's job to supply basic data on which to develop the weapons.

When one of the team comes up with a new idea for a weapon, between them they can be sure that the idea is well-grounded scientifically, is developed on sound engineering principles, and will give the Fleet what it needs. Such a three-man team pays off not only in efficiency but in mutual stimulation among all concerned.

Locations

The Naval Ordnance Test Station s located in a number of different physical locations. The main facility, covering over 1,000 square miles, s 155 miles northeast of Los Anceles in the northwestern part of the Majove Desert.

In the vicinity of Pasadena, there collectively as the Pasadena An-

moved to change the water-entry angle of the pro- Range, near Azusa, are such faci-

for final engineering and design work on new weapon systems and components.

Foothill Headquarters

At 3202 E. Foothill Boulevard in Pasadent are the headquarters of Pasadena Annex. Here also are located the Hydroballistics Laboratory, the Structures Laboratory, the Hydrodynamic Simulator, the Headquarters of the Underwater Ordnance Department, and divisions of the Engineering, Public Works, Supply, and Personnel Departments, as well as the Command Administration Division for Pasadena Annex.

Sea Ranges

Underwater and air-to-air-rockets are tested in extensive deep-water facilities at San Clemente Island sixty miles off the California coast. and on a sea range operated from a base located at the U.S. Naval



the Pasadena Annex of the PASADENA ANNEX-There are several NOTS facilities known collect Naval Ordnance Test Station tively as the Pasadena Annex. Major parts of the Pasadena Annex in-Range, which is used for torpedo water-entry and underwater-trajectory studies; and specialized facilities at Long Beach and San Clemente 1sland for sea-range tests.

WELCOME ABOARD

We of the Naval Ordnance Test Station welcome each of you to the Morris Dam Test Range. You are seeing part of the Navy team dedicated to research and development of inexpensive but hard-hitting weapons for your Fleet. Through the continuous efforts of Navy personnel and civilian scientists here and at a handful of similar stations, your Navy is kept abreast of the nuclear age.

Once a year, we have the opportunity to welcome you aboard. There much that cannot be shown: in fact, all the details of the latest and most dramatic underwater weapons must be kept under a security cloak. However, you can see many of the research tools used and meet some of the men who use them. We hope you enjoy your visit.

J. J. O'BRIEN Commander, USN Officer in Charge Pasadena Annex

D. J. WILCOX Head, Underwater Ordnance Department





nex. The Pasadena Annex is the UNDERWATER CABLEWAY-This is a device used for underwater can be blown into the water by compressed air. operational center for NOTS in un- testing of captive torpedoes. This cableway is about one-half mile long, and it operates at a depth of about 60 feet

Pasadena Annex and other Naval Activities







den XYAXA

L

OWER FOR PEACE

THE ROCKETEER

May 18, 1957

WELCOME CHINA LAKE





Main Entrance



Capt. F. L. Ashworth, USN Commander, NOTS

Administration Building

Your Naval Ordnance Test Station welcomes you and your family on Armed Forces Day.

We who are working here at the Naval Ordnance Test Station are proud of the progress we are making for you in building the defenses of our nation.

This Station is engaged in research and development work. Progress at this type of military installation must be continuous in many areas, often secret. Periodically, developments become a reality in the Fleet and can then be demonstrated.

Accomplished developments of this type which have been disclosed here since last Armed Forces Day are momentous. The NOTS-developed SIDEWINDER missile has entered the Fleet and is revolutionary for simplicity, effectiveness and economy. The Marine Corps has proved here at NOTS that the TERRIER missile, already in use by the Fleet, is effective in Marine Corps tactics. Navy Air Development Squadron Five has been able to unveil the advanced bombing technique which they developed here.

Pridefully, we exhibited these developments in actual demonstrations on March 1 of this year for the press so that they could be reported to you in the manner to which you are accustomed

Today, on the Eighth Armed Forces Day at NOTS, we are privileged to demonstrate these developments for you first hand. We hope you will find these and other demonstrations and exhibits interesting and informative.



Wm. B. McLean **Technical Director**

Home of the U.S Naval Ordnance Test Station

Bureau of Ordnance is manned by a civilian-military team lines of their individual specialties. of some 6300 individuals concerned not only with immediate requirements but also with weapon systems required five and 10 years from now.

weapons and carry these ideas through the development in the midst of the desert vastness. cycle to the completion of weapons ready for mass production. Military personnel provide operational know-how and bring to the attention of the Station the ordnance needs of the Fleet.

ert-but the Station itself is larger than the entire state of other facilities. Rhode Island. It is in this vast "proving ground" of sand that top civilian scientists and engineers join hands with the military to analyze new ideas in ordnance, and support all phases of research, development, experimental production through high school, is among the best in California. and testing of rockets and guided missiles.

In spite of this imposing list of physical facilities, the most important asset of China Lake is its people. Men and women-on the weapon-development team represent many different professions and trades, particularly in the scientific and engineering fields. They are specialists working together as a team that can focus its effort on difficult weapon development problems and can come up with answers needed by the military forces.

The Naval Ordnance Test Station (NOTS), the philosophy of operation is the importance of the individual. Navy's largest ordnance research and development center, It is a place where ideas count, and ideas are generated best provides the Navy and other fighting forces of this country by individuals who are encouraged to use their initiative OFFICIAL WEEKLY PUBLICATION with superior weapons. This permanent field station of the and are given opportunities to develop themselves along the

China Lake itself is a modern, trim and prosperous community of more than 10,000 people. Trees and lawns W. E. Jackman have appeared like magic within the few years since its Phillys Wair Civilian scientists and engineers originate ideas on new establishment in 1942, spreading an emerald carpet of green ROCKETEER PHOTO STAFF

In other respects, China Lake is similar to other communities of its size. Its physical appearance is much the same; its residents join clubs, participate in civic enterprises, Shav Monsen, A. E. Block, and amuse themselves as people do anywhere. There is a The Naval Ordnance Test Station is located in a num- complete shopping center, including a super-market-type ber of different physical locations. The main facility is 155 commissary store, Navy Exchange, theater, library, telemiles northeast of Los Angeles and covers an area of 1,000 graph office, bank, post office, barber shop, laundry, dry square miles, a mere drop in the bucket for the Mojave des- cleaners, telephone exchange, eating establishments, and

> A community chapel is used by different religious denominations for church, Sunday School, and other religious ********************** services. The public-school system, covering kindergarten

Evening classes for adults are particularly popular and provide educational opportunities in a wide variety of fields at both high-school and college levels. A graduate program in engineering and science subjects is offered by the University of California at Los Angeles.

Situated in a year-round vacationland of stark contrasts-ranging from historic Death Valley to the awe-inspiring mountain retreats in the High Sierras-China Lake is a sun-worshipper's paradise in a region romantically link-A factor of particular significance in the China Lake ed with the lusty sagas of the West.

***** THE ROCKETEER of the U.S. NAVAL ORDNANCE TEST STATION Captain F. L. Ashworth, USN Station Commander Ass't. Editor . Staff Writer Tom Long, PH2 . . Photographer

Ken Antholt, PH2. .. Photographer Art Illustration by Technical Information Department

PASADENA ANNEX Nova Semeyn

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Bus Schedule, and Map on Page 7

SNORT . Benningt (Station T

May 18, 1957

Armed Forces Day Open House Bus Schedule Saturday, May 18,1957			Local Stations	Armed Forces Day Open House
			Will Broadcast Today's Events	Saturday, May 18,1957 7:30 a.m. GATES OPEN TO PUBLIC 9:00 a.m. STATIC DISPLAYS at NAF including A3D
Bennington Plaza (Station Theatre)	8:30 to 10 a.m. (Buses will shuttle back and forth between points)	Naval Air Facility	WINDER, all developed here, will be demonstrated in actual firings at the Naval Air Facility, starting	Propellant demonstration — 1st TERRIER 10:00 a.m. firing — F4D takeoff and flyby — 2nd TER- RIER firing — Red Bird demonstration —
Naval Air Facility	At conclusion of Air Show (Buses will shuttle back and forth between points)	Bennington Plaza (Station Theatre)	at 10:30 a.m. In addition to the demonstrations planned, the morning program will be broadcast in its entirety over stations KRKS (1240) and KRCK	12:00 noon ter rescue — CAP flyby — SIDEWINDER
Bennington Plaza (Station Theatre)	Starting at noon as needed (Buses will shuttle back and forth between points)	SNORT Track 1:30 Firing	(1360) in a joint three hour broad- cast starting at 9 a.m. The broadcasts will provide an on-the-spot report, interviews, and descriptions of the flight demon-	firing — Marine Corps mock attack on ground positions — Land aircraft — Firefighting demonstration. PICNIC AREA
SNORT Track	At conclusion of firing (Buses will shuttle back and forth between points)	Bennington Plaza (Station Theatre)	strations. The broadcasts are plan-	12:00 noon KELLY FIELD — Hot dogs, popcorn, ice to 2 p.m. cream and soft drinks for sale.
Bennington Plaza (Station Theatre)	Starting at noon as needed (Buses will shuttle back and forth between points)	SNORT Track 3:30 Firing	personal reasons prefer to enjoy the program in the comfort of their autos or homes. Visitors are advised to bring their lunch, although hot dogs and	Laboratory (open all afternoon), Aeroballistics
SNORT Track	At conclusion of firing (Buses will shuttle back and forth between points)	Bennington Plaza (Station Theatre)	soft drinks will be sold. Sun glass- es and wide-brimmed hats are ad- visable.	1 10 SNOPT FIRING

THE ROCKETEER



STATION RESIDENTS are urged to use the free bus service which will be shuttling back and forth from Bennington Plaza to the Naval Air Facility air show and the SNORT track firings because parking space for private vehicles will be extremely limited during the demonstrations. Buses will be available for every event taking place today, both at NAF and SNORT.

THE ROCKETEER

NOTS Has \$200 Million Facilities for Ordnance Work

significance to the nation's security. There are complete and missiles under development. facilities for basic research in chemistry, physics, ballistics, aerodynamics, propulsion, explosives, and other fields.

There are facilities for complete testing during all stages nearly \$200,000,000.

Michelson Laboratory

Its 10.3 acres of floor area are used for offices and laboratories for weapon development personnel; laboratories for development and testing of ordnance items. research in chemistry and physics; a technical library; large machine shop; foundry; heat-treating shop; electroplating shop; and environmental test chamber where conditions of



climate and altitude may be simulated by varying temperature, humidity, and capable of detecting flaws in 5-inch steel, and computing equipment, including an IBM 704 digital computer. The building has 8 wings and a main corridor 762 feet long, and it is named in honor of Albert Michelson, America's first winner of the Nobel Prize for physics.

Thompson Aeroballistics Laboratory

This well-instrumented indoor range is 480 feet long and allows the observation in free-flight of full-scale rounds or models from 70 millimeters to 5 inches in diameter. Test vehicles passing through the range may be photographed



as many as 220 times to produce very accurate data about trol Section, Track Operation dustrial Division. The incumbent FRIDAY the performance of a test vehicle at transonic and super- Branch, SNORT. The incumbent is will be responsible for performing

Pilot Plants

Together, the China Lake and Salt Wells Pilot Plants have 220 buildings that are used for research, development pects of the testing program. Inter- of other Defense activities. Freand pilot production in the fields of propellants and ex- ested personnel contact Fawn Hay- quent nationwide travel is required.



plosives. At these pilot plants not only are new propellants and explosives developed, but also processing and handling the evaluation of the new guidance equipment is developed for use in mass-producing the new systems or components. For furthpropellants and explosives.

Ground Ranges

There are five major ground ranges at NOTS. These tion is located in the Drone Elec- will speak on the sale of season ranges, considered as a group, represent the nation's most complete test facilities for gathering data on the entire flight of short-distance rockets and guided missiles and for flight of short-distance rockets and guided missiles, and for Joan Klaus, Ext. 71471. obtaining data on the events occurring at launching and during the first part of the trajectory of long-distance rock- See Armed Forces Day Program, transportation may call Ext. 725124 ets and guided missiles. These ranges have a wide variety Bus Schedule, and Map on Page 7. or Ridgecrest 8-3922.

The completeness of its physical facilities is the major of photographic and electronic instruments for obtaining reason NOTS is able to develop weapons systems of major the data required to analyze the performance of rockets School Trustee Election

Test Tracks

NOTS has three well-instrumented test tracks used for Housing electors will vote on the captive testing of ordnance items, for pre-accelerating rock- stage of the Burroughs School of the development of a weapon, and there are facilities to ets and guided missiles to simulate aircraft or shipboard Multi-use room. produce pilot-production quantities of new weapons. Al- launchings, and for conducting terminal ballistics studies. together, buildings and equipment at NOTS are valued at One of the three tracks, the 4.1-mile Supersonic Naval Ordnance Research Track (SNORT), is designed to make possible sustained runs with heavy carriage weights at velocities The earthquake-resistant Michelson Lab is one of the up to 3,500 feet per second. Extensive electronic and pho-District world's most complete research and development centers. tographic instrument systems in connection with these tracks make possible the collection of data required for the

Aircraft Ranges

Considered as a group, the four aircraft ranges at NOTS represent some of the country's most complete facilities for developmental testing of aircraft ordnance and asso- the Propellants and Explosives Deciated equipment such as armament-control systems. Also, partment, will be the featured speaker at the May meeting of the the use of these well-instrumented ranges is valuable for American Institute of Chemical developing tactics for using completed weapon systems. Engineers next Monday, May 20. Many of the special cameras and electronic instruments on the aircraft ranges and on other NOTS ranges, have been developed at the Station to meet the unusual requirements developmental testing

Air Facility

The Naval Air Facility at NOTS provides support for home of Sylvia Murray, 700-B Esnany of the Station's research, development, test, and eval- sex Circle next Monday, May 20, at uation projects in connection with guided missiles, aircraft 1:30 p.m. Reviews will be given by memrockets, rocket launchers, underwater ordnance, and arma- bers of the Sophomore English class ment-control systems. It has three runways, one of which of Burroughs Honor Program. is 10,000-feet long, extensive aircraft maintenance facilities, Dianne Renne will review "Ma-dame Bovary" by Flaubert. "Deand the only land-based aircraft catapult and arresting gear siree" by Annemarie Selinko, will installation on the Pacific Coast. Over 5,000 flights were be reviewed by Carolyn Barker, and made from NAF during 1956 in support of NOTS pro- "Tale of Two Cities" will be regrams.

Randsbura Wash Test Activities

The four permanent ranges of the Randsburg Wash gram) of Burroughs' Junior High Test Activities at NOTS have the most complete facilities the Middle East next Wednesday. in the United States for accurate fuze testing in an environ- May 22, at 8 p.m. at 501 Essex Cirment similar to tactical conditions. It is the only place in cle the United States where full-sized airplanes as large as B-29 tor of the first panel group on the bombers may be suspended as high as 250 feet above the historical background of the Midground for use as targets in fuze tests. These test ranges are dle East with Ardyce Hofer, Lor-rie Furman, Sandra Massaro, and located in an isolated 15-mile-long valley, 23 miles from Colin Jensen participating. Michelson Lab and the Station's administration building. The second panel group will dis-

Annex Vacancies

This position is located in the Engineering Department, Industrial by Linda Miller, Christene Walden, Division. Incumbent will be respon- Janice Oldfield, Joe Alpert, John General Ordnance Design Engin- sible for developing a standardiza- Hill and Pat Norris. Lorrie Furman er, GS-12. This is the position of tion program of rockets and asso- will render a piano solo. Head, Ballistic Missile Test Sec- ciated parts, ammunition, and tion, Track Project Branch, launchers, and will make engineer-SNORT. The incumbent of this ing evaluations of items to deterposition is in charge of the plan- mine the desirability of consolidatning, conduction and evaluation of ing, redesigning, or eliminating extests on systems associated with isting items. He will maintain conong range ballistic missiles. Inter- tinuing liaison with other Defense sted personnel contact Fawn Hay- activities, and will be required to travel on a nationwide basis.

Production Specialist (General), Ordnance Engineer, GS-12. This is GS-11. This position is also located the position of Head, Range Con- in the Engineering Department, Inin charge of all field operations in standardization work for a major progress on the three high speed group of items in the program detracks and has responsibility for scribed in the above position. He Her trials and tribulations and her fight back the overall supervision in the field will be required to make decisions of all operational engineering as- in consultation with representatives

Babe Ruth League Needs One Manager

the Design and Evaluation Section, Drone Electronic Instrumentation One more manager is needed in and Evaluation Branch, Target Air the Babe Ruth League, it was ancraft Maintenance Division of Nav- nounced recently by Les Fairall. Due to the fact that so many boys l Air Facility. For further infornation, contact Joan Klaus, Ext. in the 13-15 age bracket made application to play, four more teams had to be organized and one more Electronic Technician, GS-9. This manager is still needed. Anyone inosition is located in Naval Air terested should contact Fairall at Facility. The duties include the de-Ext. 8325. sign and development of drone and target aircraft instrumentation and

Navy Wives Club

The Navy Wives Club will mee next Monday, May 20, at 7:30 p.m. at the Anchorage. Guest speakers will be Captain C. K. Phillips who Electronic Mechanic. This posiconcert tickets, and Mrs. Sylvia Besser who will discuss the function of the Desert Family Service. A nomination committee will be

appointed for the next election of club officers. Anyone needing Friday, May 17, 1957 All China Lake and Wherry

Polls open from 7:00 a.m. t 7:00 p.m.

Candidates are as follows: China Lake School District Catherine Joy Anderson.

Kern County Union High School Albert S. Gould

D. E. Ruggenberg

Member, County Board of Educa-Curtis H. Graves.

AICE Dinner Meeting Dr. Henry L. Coles, consultant in

AAUW Groups Meet Book Review Group

The Book Review group of the China Lake Branch of the American Association of University Women will hold its May meeting at the

Dianne Renne will review "Ma-

International Relations The 8-1 group (Gifted Child Pro-

LeRoy Jackson will be modera-

cuss current events of the Middle East with Keith Emerson as moderator. Mary Davidson, Judy Green, Phil Kelley and Judy Warr will Ordnance Design Engineer, GS-12. participate in this discussion.

An original skit will be presented



"I'LL CRY TOMORROW" (117 Min.) Susan Hayward, Eddie Alber

The story of Lillian Roth, a to accepted society. An excellent movie.

"ANNIE GET YOUR GUN" (107 Min.) Betty Hutton, Howard Keel Filled with song, Annie joins the Buffalo ill wild west show. She is a dead shot with rifle, but slow to hook her man. Lots of

SHORT: "Neopolitan Mouse" (7 MATINEE

George Montgomery SHORTS: "Hotsy Footsy" (7 Min.)

MAY 19-20 UN.-MON "GUNFIGHT AT OK CORRAL" (122 Min.) Burt Lancaster, Kirk Douglas, Rhonda Fleming Trigger-taut drama of the strangest alliance etween the West's most famous lawman and deadliest gambling killer. MAY 21-22

UES.-WED. "THE VINTAGE" (93 Min.) Pier Angeli, Mel Ferrer

A drama with a romantic tale of I ople during French vineyard season SHORTS: "Donald's Gold Mine" (7 Min.) "Winged Fury" (9 Min.)

MAY 23 WEST POINT STORY" (107 Min.) James Cagney, Virginia Mayo

Broken-down producer is conned into pro ducing show at the Point to woo a talented lad from the Army. Plenty of fun and songs this musical comedy. SHORT: "Matador Magoo" (7 Min.

May 18, 1957



ments.

HOLY MOSES the pilot very rarely

In addition, the HOLY MOSES

Thus, BuOrd and NOTS engineers Late in 1956, the task was accomrecognized the need for an even plished and production was begun higher velocity rocket whose time on the ZUNI. The NOTS team had to target would be so short that the come up with a rocket that travpilot could see its destruction elled faster than sound, enabling the against the target before pulling pilot to see its effect on the target out of his dive; a rocket that would after firing and before pulling out function well in any kind of weath- of his dive; a rocket that was efer; and one that was compact fective in any kind of weather; and enough to enable the aircraft to one that was compact enough to carry more than one in each of its guadruple the payload of the HOLY MOSES. Where only one of the old launchers

rockets could be carried in each Station Takes Over launcher. four ZUNI's could be ac-The ZUNI program began at NOTS in 1953, with the project be- commodated, and up to 48 on one ing undertaken essentially by four aircraft. men. Early developments in the ul- Thus another valuable addition tra-high velocity rocket were con- was made to this nation's stockpile ceived by J. C. McDonald, who is no of effective weapon systems, and longer on the Station. NOTS scientists and engineers once Shefler Heads Project again demonstrated their ability to Project Engineer in the ZUNI come up with the right weapon at

program almost since its inception the right time. has been Sydney Shefler of the Engineering Department. Mr. Shefler is responsible for the design of the



Job

Opportunities

ock, Ext. 71577 or 71514.

cock, Ext. 71577 or 71514.

1471.

Ext. 71471.

Supervisory General Engineer,

GS-11. Incumbent will be Head of

er information, contact Joan Klaus

THE ROCKETEER

Page Three



Chief of the Navy's Bureau of Or- tanks, and gun emplacements. dnance, recently explained that the In night attack, one ZUNI can il-ZUNI replaces HOLY MOSES, the luminate two square miles of sur-Navy-developed 5-inch rocket used face area with its flare head, while by all the services for air-to-ground a second burst can deliver highbombardment in World War II and explosive warheads to destroy the Korea.

Development of the ZUNI was tacking aircraft. accomplished here at the Naval Ordnance Test Station. NOTS engineers designed the weapon as one velocity and short time to target in a series of folding-fin aircraft rockets that can be used together in a unified system with the MK-16 head fragments. fire-control unit, another NOTS development which tells the pilot when to fire his rockets in order to the 2."75-inch diameter MIGHTY hit the enemy. The ZUNI can also MOUSE, also developed at NOTS. be used with other fire-control sys- the 5-inch ZUNI is part of a weatems of the Navy and Air Force.

diameter, ZUNI packs enough wal- to carry the rockets on the aircraft. lop with its 15 pounds of high ex- These low cost launchers also serve plosives to knock out tanks, pill- as shipping, storage, and handling boxes, gun emplacements, and even containers. The launcher's nose and trains and small ships. Its folding tail fairings are paper cones that fins make it possible to stow the streamline them for supersonic weapon so compactly that super- flight. When the rockets are fired older rockets.

tribe of the southwest United flight home States, ZUNI is another example of Today, you'll see eight of these Station

air-to-ground and air-to-air attacks, power of the ZUNI rocket: anoth ZUNI's warheads—armor-piercing. er NOTS development.



target in the same pass by the at-

Although not designed chiefly as an air-to-air weapon, ZUNI's high are effective in bringing down heavy bombers in a cloud of war-

Like its pint-sized older brother, pons system that includes a fire-Nine feet long and five inches in control unit and package launchers give the attacking plane an extra Named after a famous Indian margin of speed and safety in its

a versatile yet simple weapon pro- rockets fired in pairs at one-secduced by the Naval Ordnance Test ond intervals to straddle the ground target. You'll get a first hand idea The ZUNI is effective for both of the terrific speed and explosive



ROCKETS AWAY—An F9F Cougar fires a pair of high-velocity Zuni rockets into a ground target at NOTS. The high speed of the powerful rockets produces a sonic aircraft can carry four times the paper cones are distroyed; the sonic "boom" on the way to the target. The Zuni can also be used air-to-air. as many of the new ZUNI's as the launchers are then jettisoned to

5-inch Zuni rocket in flight. ZUNI Development Another Example of Teamwork Here

The development of the ZUNI rocket is another instance of teamwork at NOTS; a Station that has contributed a number of ordnance items to the defense of the nation, several of which have come at very strategic mo-

Japanese pillboxes and factories.

More Speed Needed In the first place, it did not have quite the velocity desired of an airto-ground rocket. When the attacking aircraft dove and fired the

saw the results of his labor. He

weather as the Korean conflict brought out, and only one rocket could be carried in each launcher.

During World War II and the Propellant grain expert on the Korean War, the NOTS-developed project was G. S. Morefield, now at HOLY MOSES rocket was in op- Salt Wells, and James Metcalf haneration. A five-inch, high-velocity dled the propellant manufacture for aircraft rocket, the HOLY MOSES ZUNI operations at the Pilot Plant. broke the enemy's back in the Bat- Leonard LaRosa, Jr., conducted tle of the Bulge and was used with most of the tests during the early devastating effectiveness a g a i n s t stages of development, and designed many of the metal parts.

effective it did have its weak points. taking requests for hardware and procuring the off-Station materials required as well as parts manufactured on Station.

Civilian-Military Effort ce again the military coordination at NOTS was was forced to pull out of his dive as the rocket's time to target was too conducting the important air-firing tests. Lt. H. F. Tipton, who recently wasn't altogether effective in cold left the Station, was project officer ing the past year.

Mission Accomplished

Shop planner Ken Catcott kept Four to a package, com-However, though the rocket was the project moving right along by plete with disposable pod.



Two Zuni's hit a night-time target.



ZUNI TEAM—Some of the men responsible for the successful development of the Zuni weapon system (l. to r.) are: Ken Catcott, shop planner; G. S. Morefield, See Armed Forces Day Program, propellant grain expert; Sid Shefler, project engineer; Jim Metcalf, grain manurocket and much of its hardware. Bus Schedule, and Map on Page 7. | facturer; and Lt. H. F. Tipton, project pilot. Leonard LaRosa was not present.



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