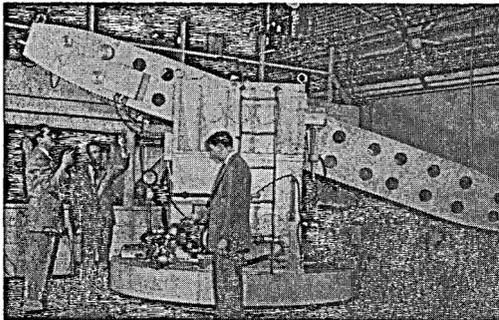
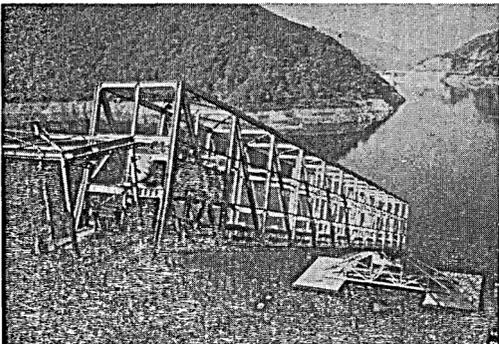


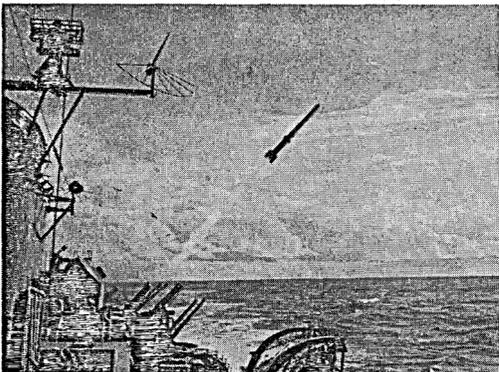
NOTS Pasadena Develops Underwater Ordnance



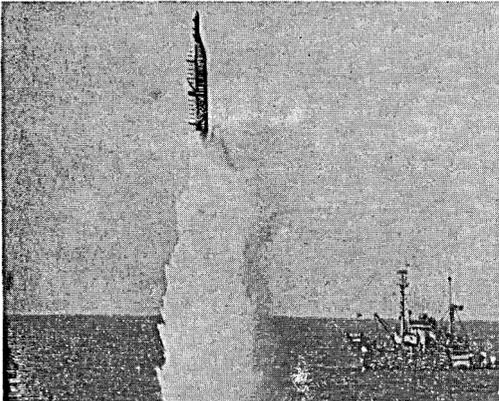
FOOLS TORPEDOES—The Hydrodynamic Simulator, at the Foothill location, helps the Navy test torpedoes on dry land. It creates by use of an electric computer actual sea firing conditions for a torpedo, without ever going to sea.



AIR GUN—Called the largest blow gun in the world, the Variable-Angle Launcher, at the Morris Dam Test Range, is used to study water entry and underwater trajectories of full-scale missiles. Compressed air is used to fire torpedoes through this 300 foot long launching tube.



PART-BIRD, PART-FISH—The Navy's new rocket-thrown torpedo, RAT, is propelled by rocket motor to the target area, then swimming beneath the sea, as a fast homing torpedo, seeks out and destroys the enemy submarines.



OPERATION POP-UP—The Navy fires a dummy Polaris missile from a new pop-up launcher off San Clemente Island. A geyser of spray carries the missile hundreds of feet into the air.

Mission

Mighty Weapons For Fleet Ships

In providing underwater weapons systems for the Fleet, NOTS Pasadena carries out an extensive program of research, 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 fire-control systems.

Foothill Headquarters
At 3202 E. Foothill Blvd., in Pasadena, are the headquarters of NOTS Pasadena. Located here are the hydrodynamic simulator, the hydroballistics laboratory, the structures laboratory, headquarters of the Underwater Ordnance Department, and divisions of Test, Engineering, Public Works, Supply, and Personnel Departments, as well as the Administration Division for Pasadena Annex.

Morris Dam
Located at the Morris Dam Test Range, near Azusa, are such facilities as the Variable-Angle Launcher, shops, test pits, and laboratories for the underwater propulsion applied research groups.

Here, test stands for model performance studies provide facilities for final engineering and design work on new weapons systems and components.

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 at the U.S. Naval Station, Long Beach.

Navy Weapons On Display At Victory Park

RAT, TERRIER, and SIDEWINDER are but a few of the NOTS-developed weapons on display at the all-service open house, being held Armed Forces Day at Victory Park, Paloma and Sierra Madre Blvds., Pasadena.

Also on display from NOTS Pasadena is "Jake," the dummy diver, fully clothed in 190 lbs. of deep-sea diving equipment; the Engineering Department will demonstrate the use of precision measuring instruments; and many more displays.

The all-service open house, the largest in Southern California, has on display over three acres of military equipment and demonstrations.

The Navy, Army, Air Force, Marine Corps, and Coast Guard have combined their efforts to show Southern California residents the 1958 Armed Forces Day theme—Power for Peace.



PASADENA ANNEX—There are several NOTS facilities known collectively as the Pasadena Annex. Major parts of NOTS Pasadena include the Foothill Plant in Pasadena (shown above), which is the headquarters; the Morris Dam Test Range, which is used for torpedo water-entry and underwater-trajectory studies; and specialized facilities at Long Beach and San Clemente Island for sea-range tests.

Officer In Charge Pasadena Annex



LCDR W. H. Robinson, Jr.

Providing advice and coordinating weapon development, the Officer in Charge, with his many years of Fleet experience, guarantees that NOTS-developed weapons can be used by the Fleet with the greatest possible care, efficiency, and effectiveness.

Head, Underwater Ordnance Dept.



Douglas J. Wilcox

The only Head of Underwater Ordnance Department to make his career entirely within the organization, Wilcox has come up through the ranks to his present position of guiding the underwater ordnance program of NOTS. He is a graduate of Cornell University.

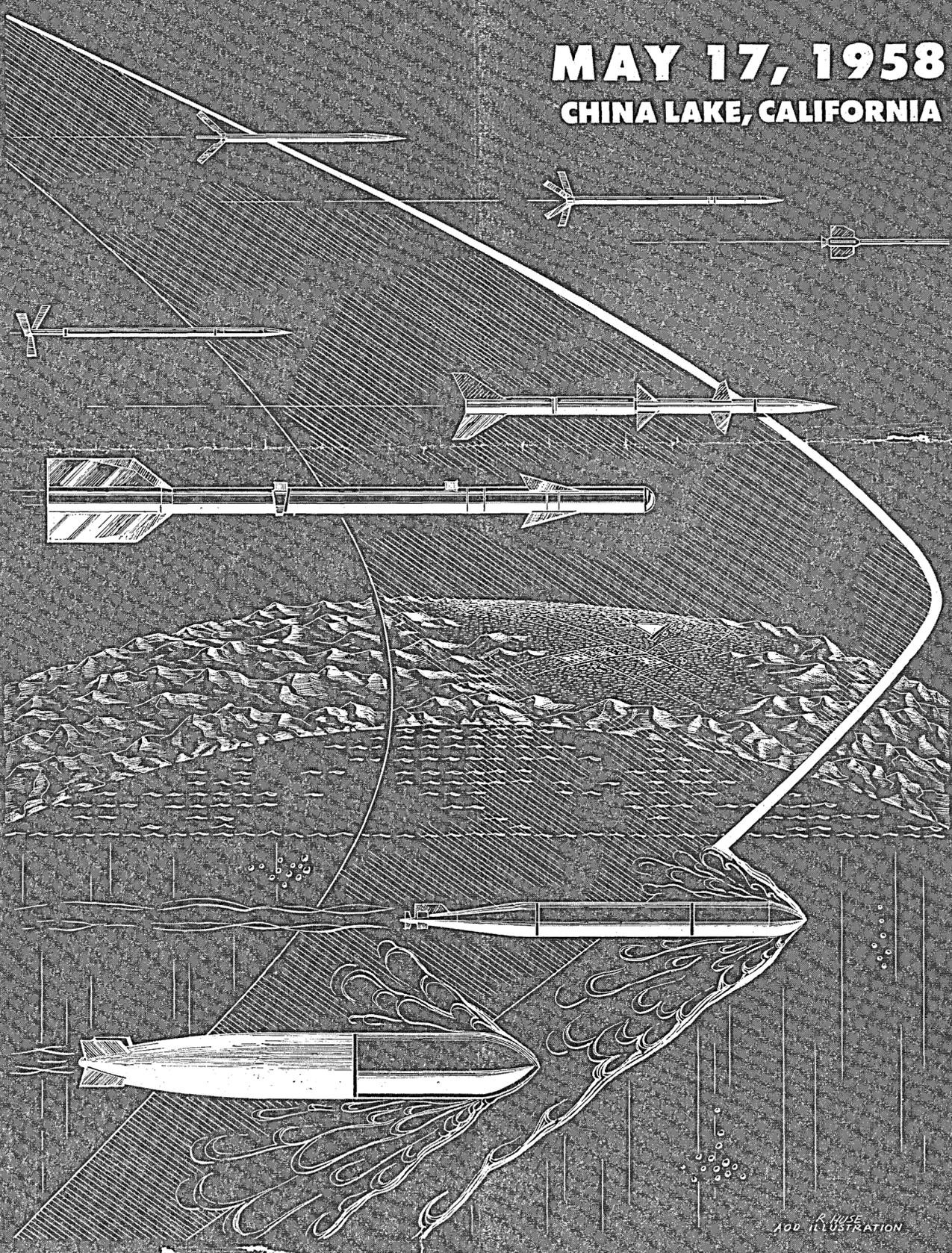
ARMED FORCES DAY ALL-SERVICES OPEN HOUSE VICTORY PARK, PASADENA Saturday, May 17, 1958

Time	Event
10 a.m.-12 Noon	Pasadena High School Band Concert
11 a.m.	John Muir High School Drill Team Exhibit
12 Noon	Navy Ship Model fire power demonstration with surface-to-air "Terrier" missiles
11:30 a.m.	Civil Air Patrol Drill Team—nationally honored for its intricate exhibitions
12 Noon-2 p.m.	John Muir High School Band Concert
1-2 p.m.	Navy Ship Model fire power demonstration with surface-to-air "Terrier" missiles
2-4 p.m.	63rd Infantry Division, U. S. Army Band Concert
2:30 p.m.	Fly-over of aircraft from U. S. Air Force—50 planes including KC 97s, B-47s, F-100s, F-86s, etc.
2:30 p.m.	Arrival of Armed Forces Day Queen on Army Tank
3 p.m.	California Institute of Technology Drill Team
3-4 p.m.	Navy Ship Model fire power demonstration with surface-to-air "Terrier" missiles

All Day Inclusive, there will be displays of equipment from the Navy, Army, Air Force, Marine Corps, and Coast Guard. There will be planes, the newest in guided missiles, tanks, helicopters, submarine, guns, radios, radar, armored vehicles, displays of military clothing and equipment of every description. Refreshments.

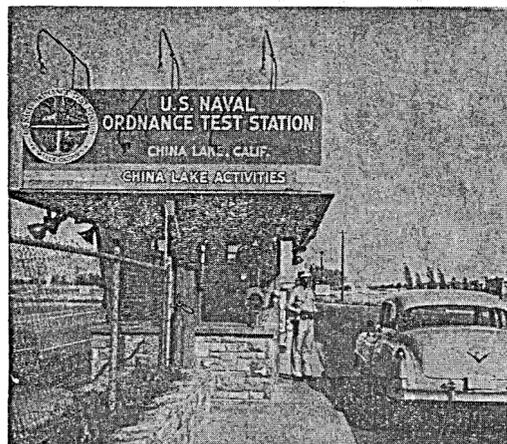
ROCKETEER SOUVENIR EDITION ARMED FORCES DAY

MAY 17, 1958 CHINA LAKE, CALIFORNIA

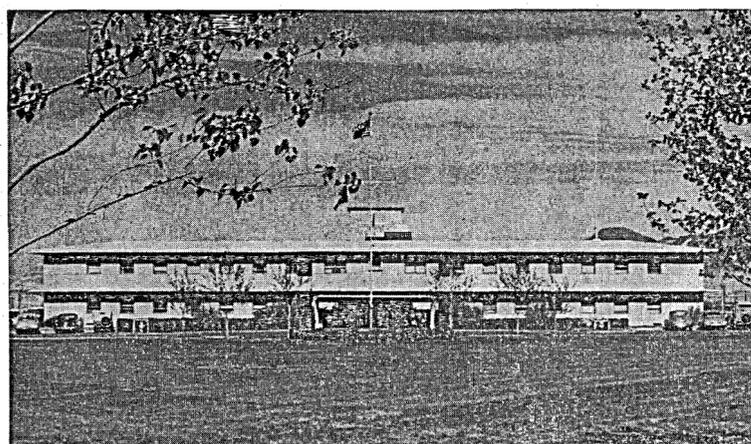


R. HULSE AOD ILLUSTRATION

WELCOME TO CHINA LAKE



Main Entrance



Administration Building



Capt. W. W. Hollister, USN
Commander, NOTS

The Station you have chosen to visit is one of the Navy's principal research and development centers for new weapons.

We are proud of our facilities and people. Our laboratories have the very best equipment for scientific research. They are ideally located here with machine shops and pilot plants for converting ideas into trial weapons and highly instrumented test ranges for testing them. Our people are a team of civilian scientists and experienced military personnel who collectively are among the nation's best creative, scientific minds with a practical military outlook.

We are proud to show you the "proof of the pudding"—the economical, practical, and effective weapons which have been developed at NOTS. These include the MIGHTY MOUSE aircraft rocket; the ZUNI aircraft rocket; SIDEWINDER, the nation's most effective air-to-air guided missile; and RAT, a rocket assisted torpedo which is the Navy's newest anti-submarine weapon. Also for your inspection are other vital weapons and aircraft from the nation's arsenal which are involved in our research and development programs.

We sincerely hope your visit today is a pleasant, informative, and reassuring experience.



Dr. Wm. B. McLean
Technical Director

Home of the U. S. Naval Ordnance Test Station

The Naval Ordnance Test Station (NOTS), the Navy's largest ordnance research and development center, provides the Navy and other fighting forces of this country with superior weapons. This permanent field station of the Bureau of Ordnance is manned by a civilian-military team of some 630 individuals concerned not only with immediate requirements but also with weapon systems required five and 10 years from now.

Civilian scientists and engineers originate ideas on new weapons and carry these ideas through the development 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.

The Naval Ordnance Test Station is located in a number of different physical locations. The main facility is 155 miles northeast of Los Angeles and covers an area of 1,000 square miles, a mere drop in the bucket for the Mojave desert—but the Station itself is larger than the entire state of 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 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 in a team that can focus its effort on difficult weapon development problems and can come up with answers needed by the military forces.

A factor of particular significance in the China Lake

philosophy of operation is the importance of the individual. It is a place where ideas count, and ideas are generated best by individuals who are encouraged to use their initiative and are given opportunities to develop themselves along the lines of their individual specialties.

China Lake itself is a modern, trim and prosperous community of more than 10,000 people. Trees and lawns have appeared like magic within the few years since its establishment in 1942, spreading an emerald carpet of green in the midst of the desert vastness.

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, and amuse themselves as people do anywhere. There is a complete shopping center, including a super-market-type commissary store, Navy Exchange, theater, library, telegraph office, bank, post office, barber shop, laundry, dry cleaners, telephone exchange, eating establishments, and other facilities.

A community chapel is used by different religious denominations for church, Sunday School, and other religious services. The public-school system, covering kindergarten through high school, is among the best in California.

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 of the High Sierras—China Lake is a sun-worshipper's paradise in a region romantically linked with the lusty sagas of the West.

THE ROCKETEER
OFFICIAL WEEKLY PUBLICATION
of the
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Cover design by AOD Illustration Section staff.

Armed Forces Day Open House Bus Schedule

Saturday, May 17, 1958

Originating Point	Time	Destination
Main Gate	8 to 9:30 a.m. (Buses will shuttle back and forth between points)	Bennington Plaza (Station Theatre)
Bennington Plaza (Station Theatre)	8:30 to 11:30 a.m. (Buses will shuttle back and forth between points)	Naval Air Facility
Naval Air Facility	At conclusion of Air Show (Buses will shuttle back and forth between points)	Bennington Plaza (Station Theatre and Kelly Field)
Bennington Plaza (Station Theatre and Kelly Field)	Starting at 12:30 p.m. As needed (Buses will shuttle back and forth via Michelson Lab.)	SNORT Track 1:30 p.m. Firing
SNORT Track	At conclusion of firing (Buses will shuttle back and forth via Michelson Lab.)	Bennington Plaza (Station Theatre)
Bennington Plaza (Station Theatre)	As needed (Buses will shuttle back and forth via Michelson Lab.)	SNORT Track 3 p.m. Firing
SNORT Track	At conclusion of firing (Buses will shuttle back and forth via Michelson Lab.)	Bennington Plaza (Station Theatre)

Local Stations Will Broadcast Today's Events

In addition to the demonstrations planned for Armed Forces Day the morning program will be broadcast in its entirety over radio stations KRKS (1240) and KRCK (1360) in a joint three hour broadcast from 9 a.m. to 12 noon.

Manning the microphone will be Ernie George, Station Information Specialist, assisted by LCDr. W. W. West as technical advisor.

Pilot Interviews
The broadcasts will provide an on-the-spot report, interviews with some of the pilots flying jets in the air show, and descriptions of the flight demonstrations. These broadcasts are planned to keep informed those who are late in arriving, or parked beyond the coverage of the public address system, or persons who prefer to enjoy the program in the comfort of their automobiles or homes.

Throngs Expected
Due to the various events planned locally in addition to the Armed Forces Day demonstrations, thousands of visitors to the area are expected, therefore, the broadcasts will serve to alleviate traffic congestions by keeping the listening audience informed on traffic conditions.

Armed Forces Day Program Saturday, May 17, 1958

8 a.m.
Gates Open to Public

9 a.m.
Static Displays at Naval Air Facility open to viewing by the public. Displays include T1D prepared exhibits of Weapon Development Cycles at NOTS, a miniature SNORT track, Mighty Mouse, Zuni, and Sidewinder.
NAF and VX-5 static aircraft displays of an F4D Skyray, F8U Crusader, F3H Demon, F2H Banshee, F6F Drone, AD Skyraider, a twin-engine JD with a Ryan "Firebee" Drone, A4D Skyhawk "buddy tanker" with refueling gear, an F4U Fury with three external fuel tanks and a simulated nuclear bomb shape, an Air Force B-47 bomber exhibit, and a display of Terrier missiles, carriers, and launchers.

10 a.m.
Launching of jet aircraft and drone planes.

10 to 12 Noon
Air Show
Parade of colors by China Lake CAP Squadron 84. Propellant demonstration. Strafing demonstration by six NAF pilots flying F9F-6 Cougars—an ADA firing 2.75 Mighty Mouse rockets—an F4U firing 5.0 Zuni rockets—MK-10 bombing by an A4D-1—A4D-2 in HI Glide Bombing—A4D-2 Over the Shoulder Bombing—A4D-2 Low Angle Loft Bombing—In Flight Refueling Demonstration—Aircraft Flybys—CAP Rescue—FJ-4 with Sidewinder—Flyby and Sidewinder Firing—Firefighting Demonstration.

12 Noon to 1 p.m.
Lunch Break
Picnic area open at Kelly Football Field (Halsey and Richmond). Hot dogs, popcorn, ice cream and soft drinks for sale.

1 p.m.
Michelson Laboratory open to visitors. Continuous showing of NOTS and Navy films at Station Theatre.

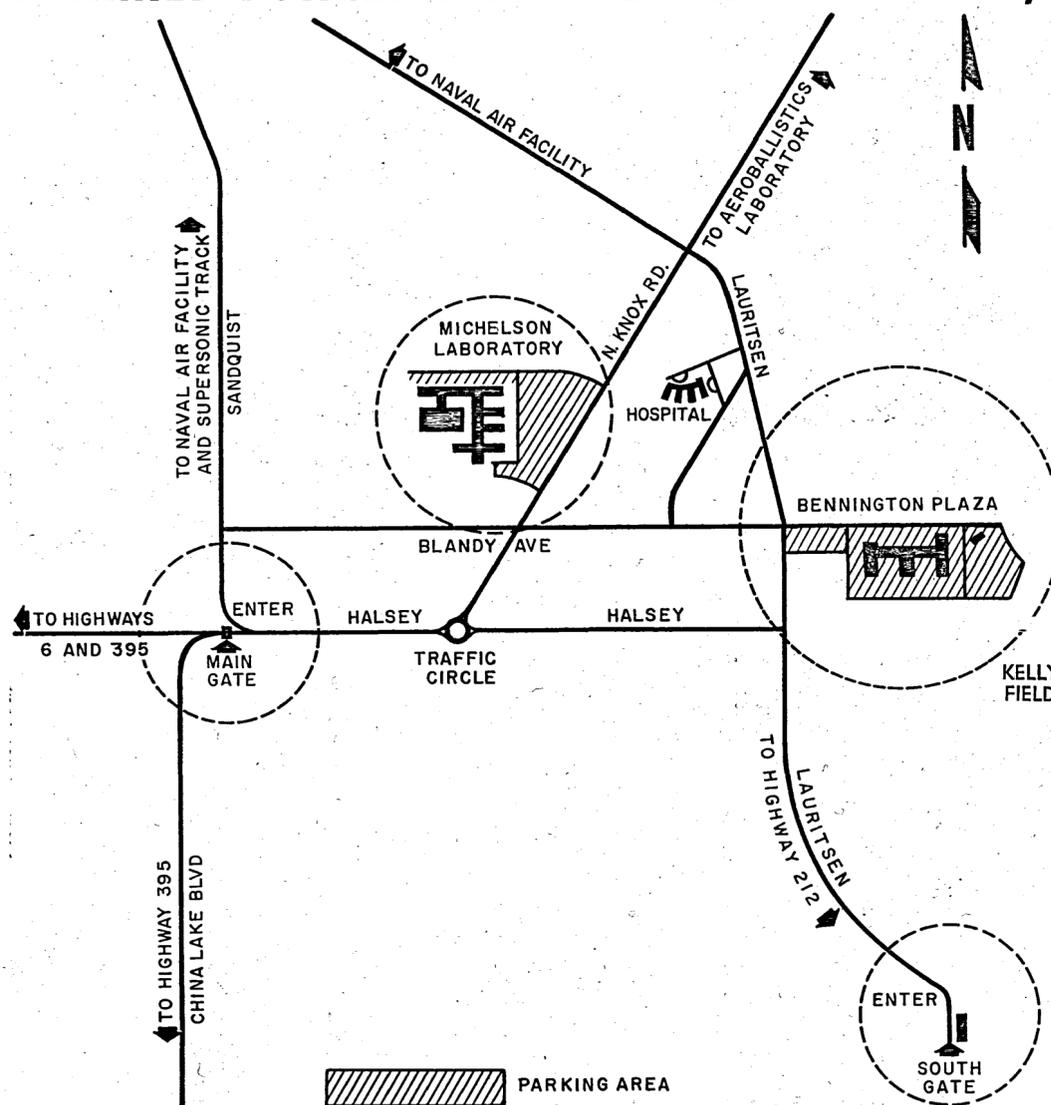
1:30 p.m.
SNORT FIRING
Tours through SNORT building and Static Display of Sleds.

3 p.m. SNORT Firing

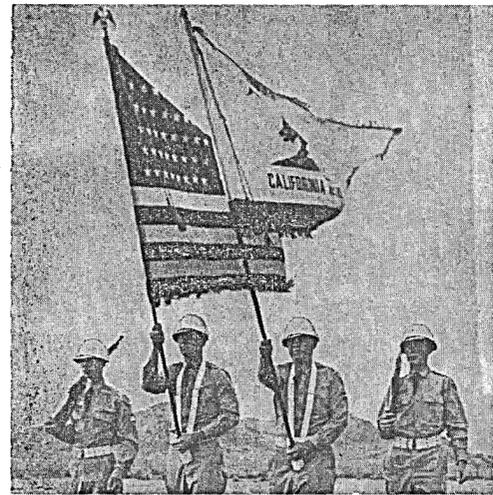
4 p.m. Air Force Flyover

5 p.m. Visiting Ends

NOTS ARMED FORCES DAY AREA MAP - MAY 17, 1958



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. Rest rooms are located at Naval Air Facility, Bennington Plaza and Kelly Field.



TO OPEN AIR SHOW—A ceremonial parade of the colors by the China Lake Civil Air Patrol Cadet Squadron 84 will mark the opening of the Air Show at the Naval Air Facility. Cadets (l. to r.) are: Leon Ammerman, Richard Clodfelter, Richard Aldrich and Mike Curran.

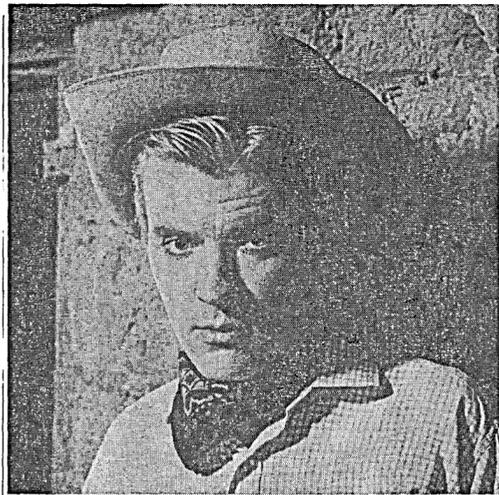
TV's 'Sugarfoot' Will Be Guest Star

Blue-eyed and sandy-haired "Sugarfoot" Will Hutchins, whose speech and manner reminds one of the late Will Rogers, was whisked by jet aircraft to NOTS early this morning by a Naval Air Facility pilot, for his appearance as guest star at tonight's annual Babe Ruth-Little League opening ceremonies at 7 p.m., May 17, at Schoeffel Field. He also plans to attend the Armed Forces Day Demonstrations.

Born in Los Angeles on May 5, 1932, as Marshall Lowell Hutchason, "Sugarfoot" graduated with a B. A. degree in drama from Pomona College in 1952. After a two-year stint with the Army, he entered UCLA to earn his M. A. degree in motion picture production.

It was while at UCLA that Hutchins auditioned for "Matinee" and subsequently found himself being tabbed as one of the most promising young talent to hit Hollywood in many years.

Although he would prefer to be a comedian, his ability as a dramatic actor has deprived him, so far, of his chances for comedy. Currently playing the lead part of Tom Brewster in the bi-weekly western series "Sugarfoot" at 7:30 p.m. on Channel 7, from which he gets his nickname.



"SUGARFOOT" TO OPEN LEAGUE PLAY—TV Western hero, Will "Sugarfoot" Hutchins, will forsake the badmen and the gunsmoke of the video range, to throw out the first ball to officially open Little League play at 7 p.m. Saturday, at Schoeffel Field. The Western Star is under contract to Warner Bros. with starring successes in TV and stage.

Little League Season to Open Tonight at Schoeffel Field

A record crowd is expected to turn out for the annual China Lake Youth Baseball opening night ceremonies tonight at 7 o'clock on Schoeffel Field. Popular western television series star "Sugarfoot" Will Hutchins will be guest of honor and Eli Besser will act as master of ceremonies.

Following the invocation by Rev. John H. Bunce, the emcee will introduce Captain W. W. Hollister, Captain F. A. Chenuault, Dr. Wm. B. McLean, H. G. Wilson, "Sugarfoot" and other guests.

The grand parade will consist of the China Lake Elementary Band, the Marine Color Guard, Ridgecrest Little League teams, China Lake Little League teams, Ridgecrest Pony League teams, China Lake Babe Ruth League teams which will be introduced by the emcee.

A drawing will be held to pick the two Little League teams and the two Pony League teams to play two innings each. The winning teams will be captained by Capt. W. W. Hollister and "Sugarfoot."

Included among the guests will be Little League queen Kelly Maxwell who was selected by Little Leaguers at last year's Fourth of July celebration.

COMING EVENTS

Quarter Midget Races
Novice, B and A class Quarter Midget Grand Prix Races will be held at 7:30 p.m. on Saturday, May 17, on their track on the SNORT road.

Burroughs Concert
The Burroughs High School music department will present its annual spring concert at 8:15 p.m. next Monday, May 19, in the school cafeteria. Admission is 50 cents for adults and 25 cents for students.

School Board Election
Voters of all nine precincts of China Lake are reminded to cast their ballots for two members of the six candidates to be elected to the China Lake Elementary School Board.

Fellowship Committees
The public is invited to hear the noted Rev. Carl Doss speak of his "International Family" at the joint Fellowship Committee meeting of the Methodist Community Church and NOTS Community Church next Friday, May 23, at 8 p.m. in the Richmond Auditorium.

Job Opportunities
Mathematician, GS-7, 9, or 11. This position is located in the Analysis and Reports Branch, Aircraft Projects Division, Aviation Ordnance Department.

The incumbent will serve as an analyst in the evaluation of aircraft fire control systems and allied problems involving studies of rocket ballistics, launching factors, pilot tracking error, etc. For further information, contact Joan Klaus, Ext. 71471.

NOTS GEBAs belong to NOTS employees. Boost it.

What's Doing IN RECREATION

By Jean Cone, Recreation Director

The Special Services Division would like to welcome the many guests to China Lake for this Armed Forces Day weekend. If this is your first visit to this area, we hope you will not only enjoy the beauties of the desert but also the friendly and helpful spirit of this community.

Coming Space Film Titles Announced

The eighth showing of the 17-week "Space Technology" film series will be presented today at 1 p.m. in the Station Theatre.

Slated for next week will be a lecture by Dr. Millard V. Barton of Ramo-Woodbridge Corporation on "Structures—Philosophy and Application of Integrated Design" and a discussion of "Structural Materials, Configurations, and Analyses" by Dr. Ernest E. Sechler of CIT.

Champion Drag Races

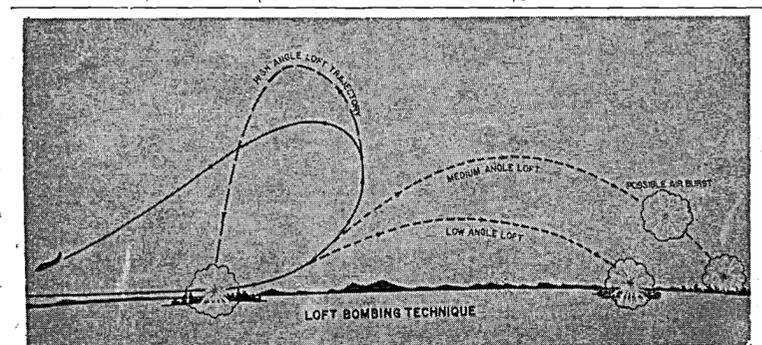
Western States Regional Championship Drag Races, sponsored by the National Hot Rod Assoc. and the local Dust Devils, will be held Saturday and Sunday, May 17 and 18, at the Inyokern Airport.

Gates will open at 10 a.m. Saturday and 9 a.m. Sunday with eliminations scheduled for 2:30 p.m. both days. Admission will be 90 cents for adults and children under 12 years will be admitted free.

Women's Guild

The four Circles of the Women's Guild of NOTS Community Church will meet next week as follows:

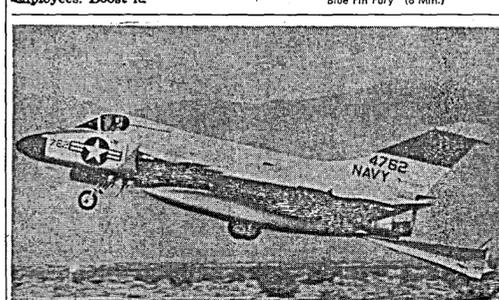
Naomi Circle: Monday at 8 p.m. at 203-A Ellis; Phoebe Circle: Tuesday at 9 a.m. at 604 Lexington; Mary-Martha Circle: Tuesday at 1:30 p.m. at 307-B Ranger; and Hannah Circle: Tuesday at 8 p.m. at 211-B Wasp.



VX-5 DEVELOPED—Referred to as the "idiot loop" by delivery pilots, loft bombing is the most effective technique yet devised by the VX-5 squadron to permit pilots to get away safely after releasing special

weapons. As the bomb is tossed toward the desired point of impact, the attack airplane continues up and over into a backward loop, escaping the blast effect of the weapon.

NOTS GEBAs belong to NOTS employees. Boost it.



DART TOW TARGET—Designed and developed at NOTS, Dart is used by the Navy and Air Force in air-to-air target practice. After the plane has gained altitude, the tow rope will gradually pay out from behind the tow reel and the Dart will trail 4,000 feet behind the aircraft.

Navy's Weapons Put Through Paces

Air Development Squadron Five

One of the Navy's top test squadrons, Air Development Squadron Five, is helping the Navy stretch the reach of its light attack bombers. In-flight refueling of the light attack bombers is one of the strike techniques being evaluated by VX-5 here at China Lake.

In days of old, the warrior king had a royal spear carrier whose labors preserved his master's strength for combat. Today's speedy attack planes go forth in company with a buddy tanker plane which carries the extra fuel required for a high speed attack on distant enemy bases.

Midway to the target, the buddy tanker extends the fueling drogue or coupling and the attack plane maneuvers for its drink. This fueling-in-flight act is performed by 9-ton Sky Hawks and 11-ton Furies sweeping through the sky at an altitude of six miles and hurtling toward the enemy at better than seven miles each minute.

The thirsty attack planes drink enough fuel in five minutes to power three Cadillac across the United States. Sated, the bomber breaks away and climbs on toward its ill-fated target. The buddy, its refueling mission accomplished returns to its home base, which may be an aircraft carrier or land station.

VX-5, commanded by Captain R. A. Beveridge, writes the instruction books for the Navy's hardware. Exhaustive trials of new techniques by fleet-trained pilots develop the do's and don'ts of naval aviation. Information gained by these dedicated men with marks of oxygen gas masks on their faces is translated into the jargon of the fleet and becomes the bible of the carrier pilot.

VX-5, since its commission on June 18, 1951, has been engaged in tactical development for the delivery of special weapons and the testing of the Navy's fastest aircraft.

Marine Corps Guided Missile Test Unit

The Marine Corps Guided Missile Test Unit (MCGMTU), consisting of six officers and forty-five men, was established at NOTS on May 1, 1956, for the purpose of testing and evaluating selected guided missile systems and components for the U. S. Marine Corps.

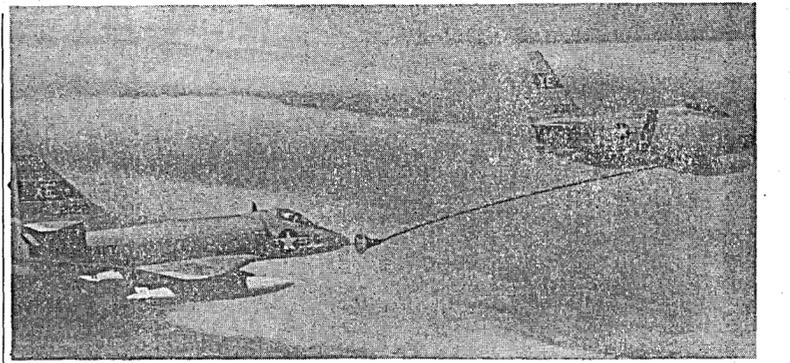
Previously, Marine personnel had served at NOTS since 1950 with the 1st Provisional Marine Guided Missile Battalion, now designated as the 1st Medium Anti-Aircraft Missile Battalion, the only completely mobile surface-to-air missile organization in existence.

Probably one of the most interesting tests conducted during the past year in its test and evaluation program on the reliability of the missile system was the tactical feasibility of launching missiles directly over the heads of personnel without inflicting casualties.

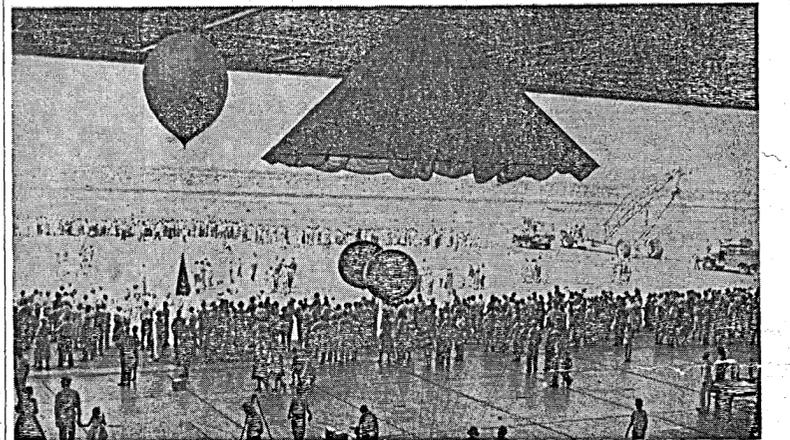
Continued participation in a joint NOTS-Marine Corps BuOrd evaluation of advanced Terrier missiles has resulted in significant improvements in the design of these missiles.

The unit is presently evaluating different types of ground coverings that will withstand the terrific blast of the Terrier booster as it leaves the launcher and yet be light, completely mobile, and still be capable of installation without the use of special equipment.

In addition to developing modern technical skill, Marines are required to maintain the legendary skill of the Marine Corps in marksmanship for which they have been famous for generations.



AIRBORNE SERVICE STATION—The Navy's airborne service station, a Skyhawk tanker (upper right) refuels a Skyhawk attack bomber (lower left). These carrier teammates work together to extend the reach of the Navy's air arm. This team is a unit of Air Development Squadron Five based at the Naval Air Facility, China Lake. This tanker carries enough fuel to propel 3 Cadillacs across the U.S.



AIR SHOW SITE—Weather balloons and parachutes lend an air of festivity to the Naval Air Facility year's Armed Forces Day aircraft maneuvers.



Guided Missile Unit 25

Guided Missile Unit 25 was established by the Secretary of the Navy on June 25, 1955. As directed by the Chief of the Bureau of Ordnance, its function is to assemble, operate, maintain and repair the Terrier and Tartar surface-to-air guided missiles, missile test equipment, fire control radar equipment and associated computers, directors, and missile launchers during development testing.

Another important objective of GMU-25 is to train personnel who will later be assigned for duty aboard guided missile ships equipped with Terrier or Tartar missiles.

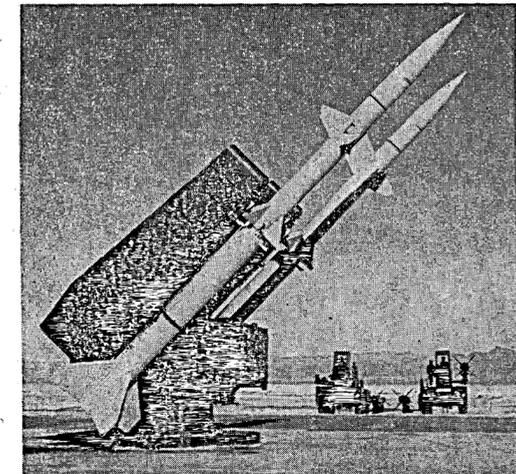
At present, three combat vessels equipped with Terrier are the USS BOSTON, USS CANBERRA, and the USS GYATT. Several more ships will be equipped with these missiles in the near future.

NAF Welcomes Air Show Visitors

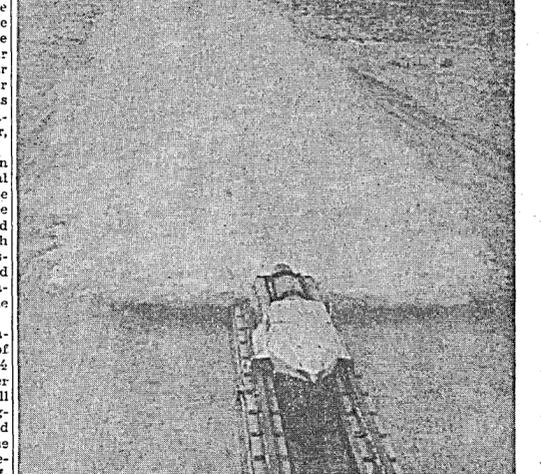
The Naval Air Facility once again welcomes you to one of the most popular events at China Lake during Armed Forces Day. The "Air Show" at the Air Facility this year is expected to be bigger and better than ever and many arrangements have been made to give the spectators a real demonstration of power, speed and accuracy.

The Naval Air Facility's mission in the organization of the Naval Ordnance Test Station is to provide flight facilities and support for the research, development, testing and evaluation work in connection with aviation ordnance. Additional missions provide for maintenance and operation of aircraft to furnish facilities for any other projects at the Naval Ordnance Test Station.

Indicating the future acceleration of the planned programs of the Naval Air Facility is the 3 1/2 million dollar hangar now under construction. The construction will include two structural steel hangar buildings, with a shop area and radar tower between them. The major structure will be a double-bay hangar with a gross area sufficient to hold 75 two bedroom houses. The hangar bays will be 40 ft. high, which is sufficient to accommodate any known U. S. aircraft.

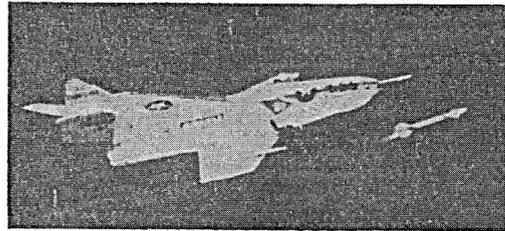


TERRIER LOADING—GMTU personnel approach missile launcher on twin missile carriers. Launcher loading can be accomplished in less than 1 1/2 minutes. The Marine Corps Guided Missile Test Unit and Guided Missile Unit 25 jointly participate in the evaluation of Terrier missiles.

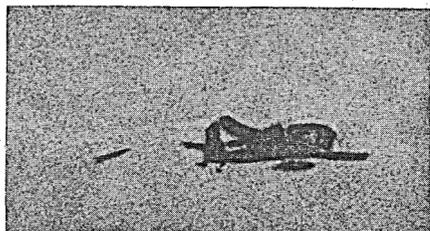


SNORT SLED—One of the outstanding events of Armed Forces Day demonstrations will be the SNORT sled blasting down the Supersonic Naval Ordnance Track (SNORT). The water brake forms artistic pattern as sled slows down after a 920 miles per hour test run.

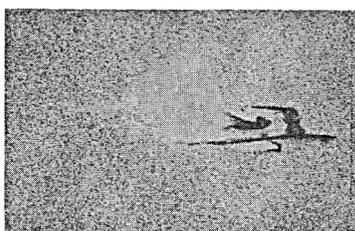
NOTS Departments and Units Develop "Power for Peace" Defense Weapons



SIDEWINDER seeks target



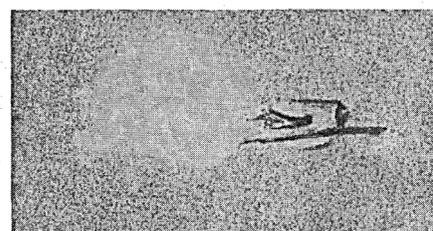
Here comes the kill . . .



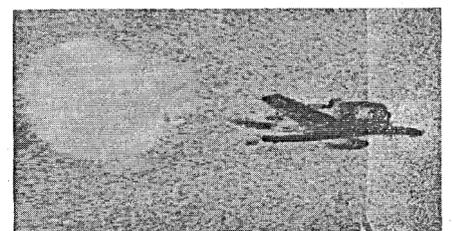
It's a hit . . .



It's a kill . . .



But no harm done . . .



Exercise head saves millions of \$\$\$.

Engineering Dept.

A design engineer with an idea, a slide rule and a drafting board, and a new weapon concept is born—but to help guide this new weapon from the initial drawing board stage to its acceptance and final use by the Fleet, the design engineer calls upon the production engineers and specialists from the Engineering Department.

A successful weapon must be producible in quantity and require a minimum of the nation's supply of critical materials and skills.

This producibility is an important concern of this department where talents and facilities are focused on adapting ideas and designs for ultimate full-scale production by industry.

The department has five divisions with a personnel complement of 450 people. It operates tools and equipment valued in excess of \$5,000,000, expending annually \$4,000,000 on labor, materials and contracts.

A visitor walking through the department will find teams of engineers and technicians, machinists and model makers engaged in production design and manufacturing processes. Lathes and milling machines are in full operation in the shop, while in the next room the most minute parts are being assembled into gyros and servomechanisms.

Our teams are daily required to improvise new techniques and methods to produce pilot models for which new jigs and fixtures often need to be developed.

In the Engineering Evaluation Branch, professional personnel work with the latest in technical equipment, conducting environmental, mechanical, chemical, metallurgical and nondestructive testing. Items tested may run from missile components to samples of concrete to be used for runways and hangars.

The "end-products" of this team effort are the production documents, procedures, designs and knowledge furnished to industry for pilot and full-scale production of weapons and ordnance components. These flow into the Fleet arsenals to assure that this nation has the "Power for Peace" for itself and the rest of the free world.



Machine Shop where ideas become realities

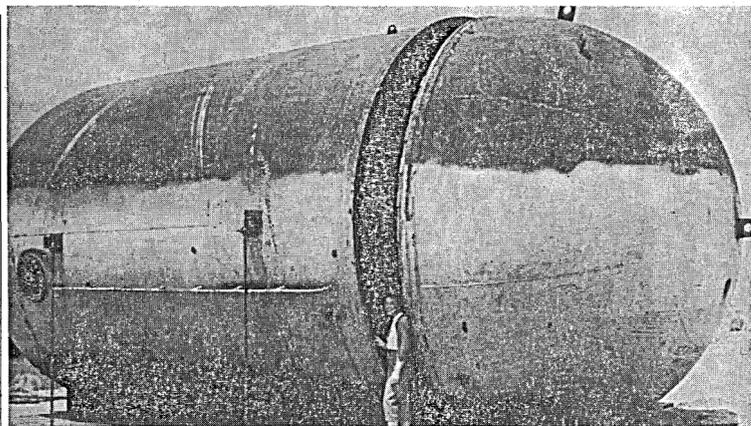
Propellants and Explosives Dept.

The Propellants and Explosives Department is located in a 50 square mile area east of the community of China Lake. It consists of two pilot plants with 230 buildings, two ranges and a magazine area. As one would assume from the name of the department, the work is primarily in the fields of propellants and explosives with additional work in the field of pyrotechnics.

To further work in the latter, the department has recently acquired the deck hangar of the troop-carrying submarine "Sea Lion." At present, this 50-ton compartment is undergoing alteration which will adapt it for use as a high-altitude test chamber for pyrotechnics, igniters, and small-scale rocket motors to be fired at extreme altitudes.

The department conducts basic and applied research and development work in these three fields and completes the cycle by providing guidance to industry on production techniques. The history of a propellant grain will serve to illustrate the various procedures of the department.

The story begins with a chemical formulation for a propellant. This formulation will be analyzed, tested, and varied, perhaps hundreds of times, until the formulation has the desired characteristics in regard to such properties as burning time, specific impulse, temperature resistance, and tensile strength.



MAGNITUDE of submarine deck hangar illustrated by comparison with woman.

Test Dept.

The Test Department has the use of many ranges for conducting its tests, but its Randsburg Wash marks the only place in the nation where targets varying in size from jet drone missiles to full-size B-29 bombers can be suspended as high as 15 feet above the ground for use as targets.

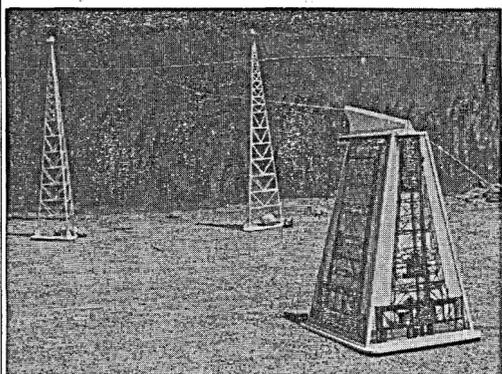
The Randsburg Wash Test Range, located in an isolated valley about 23 miles southeast of the Station itself, plays a unique and vital role in the development of products related to national defense.

In this 320 square mile area are a number of installations the most interesting of these being the "rocket range" where it is possible to simulate rocket and missile launchings from airplanes against other airplane targets. This is done by firing the rounds from the top of a 150 foot launching tower toward suspended aircraft targets at the same elevation.

The unique feature is that these various aircraft are hoisted from two 300-foot high wooden towers by means of non-metallic suspension lines, to ensure that there will be no extraneous effects when they test "radio" fuzes or other devices.

The primary purpose of all this is to give accurate information about the sensitivity and effectivity of rocket and guided missile fuzes and also to obtain precise trajectory information.

Many years ago, the old Death Valley Borax Road which stretched across this valley was used by the famed 20-mule teams linking the borax mines with Mojave.



Miniature Randsburg Wash Rocket Range

Although this area will be closed during Armed Forces Day open house, a 6-foot high model of the rocket range will be shown at the SNORT Track and miniature rockets will be fired from the model launching tower.

After this extensive research, the composition will be turned over to development engineers who will study how the propellant processes can be scaled-up from laboratory-size batches to pilot-scale production without sacrificing any of the characteristics of the new composition. New equipment, as well as new procedures, will be devised, tried and modified until the problems of scaling-up are solved. Then, with a proven set of specifications, the entire process will be released to private industry for mass production.

This is the work of the Propellants and Explosives Department — the development of good, dependable propellants, explosives, and pyrotechnics from an idea to a reality.

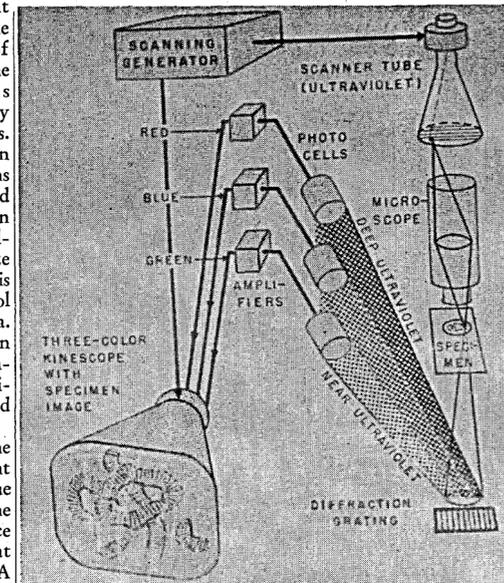
See Armed Forces Day Program, Bus Schedule, and Map on Page 7.

Aviation Ordnance Dept.

Development of better missiles and armament-control systems is the mission of the Aviation Ordnance Department.

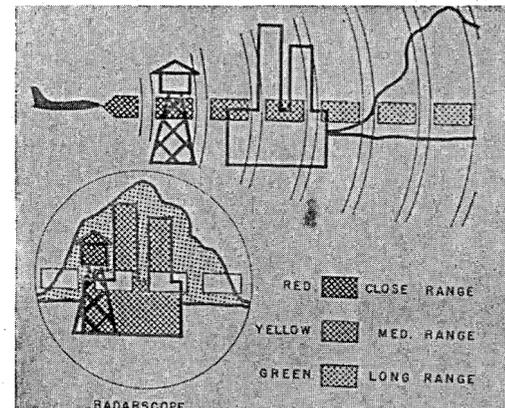
Paralleling its development work, AOD carries out the equally important task of testing and evaluating the armament-control systems conceived and nurtured by its engineers and scientists. To perform this function AOD operates and maintains a set of highly instrumented ranges. It also has its own data reduction and data analysis groups which specialize in the assessment and analysis of aircraft armament-control and missile flight-test data. The most important function of this analysis work is to uncover sources of error, deficiencies in the design, and manufacturing weaknesses.

Under development at the present time is the "Flight Line Recorder," a unique camera able to determine the position of a point in space to an accuracy of one foot at a distance of 10,000 feet. A significant feature is its ability to take ten pictures per second on film which is 9 1/2" wide. Several of these cameras will be installed on the



Ultraviolet Flying-Spot Microscope can be applied to medical research.

High-Altitude Bombing Range now under development at NOTS.



Ultraviolet Flying-Spot Microscope can be used with Radar for aviation.

Research Dept.

Functions of the Research Department are to plan and conduct research programs in the fields of physics, chemistry, mathematics, and ballistics.

In the Chemistry Division, many types of instruments are used in spectroscopic research—X-ray machines, infrared and ultraviolet spectrophotometers, mass spectrometers, including its newest addition, the Varian Nuclear Magnetic Resonance (NMR) Spectrometer. By use of proton resonance, it is now possible for department chemists to get significant structural information from organic molecules, identify unknown compounds, analyze mixtures, and observe slow reactions. This technique permits NOTS scientists to take advantage of the latest developments in scientific instrumentation.

Part of the equipment of the Mathematics Division is an electronic analog computer which eliminates hours of laborious hand calculations in solving problems in research and development.

They work for power AND peace.

Guided Missile Unit 61

Synonymous with the name Sidewinder is Guided Missile Unit SIXTY ONE (GMU-61), a small organization, but one which contributes significantly to the developmental work being accomplished at NOTS. Under its Officer-in-Charge, Cdr. S. N. May, the unit comprises two officers and 28 men. Working as additional members of the unit are two officers and two enlisted men from the Naval Air Facility and a Marine Officer from NOTS.

The mission of GMU-61 is to assist in the development and testing of the Sidewinder guided missile including missile improvements, and related equipment. This work is carried out through flight test work vitally supported by the efforts of its aviation guided missilemen, aviation ordnancemen, aviation fire control technicians, and, of course, the very necessary yeoman and personnelman.

Working closely with Station scientists and project engineers, the unit checks out, assembles, and loads missiles for firing, evaluates missile test and handling equipment, and maintains aircraft radar and fire control systems.

In the airborne phase of GMU-61's work, the officers, all project pilots, fly some of the Navy's newest jet fighter aircraft including the supersonic F8U-1 "Crusader," the F3H-2N "Demon," the FJ-4 "Fury," the F9F-8 "Cougar," and the F3D "Skynight."

Sidewinder training is another vital job performed by the unit. This includes indoctrination of pilots and ground personnel from fleet and Air Force fighter squadron and training units, lectures to U.S. Naval Academy Midshipmen, and frequent briefing for visiting Navy and civilian personnel.



PROJECT PILOTS—GMU-61 pilots who put Sidewinder through its paces are (front l. to r.) LCdr. Gordon Duncan; Cdr. S. N. May, Officer-in-Charge; and LCdr. H. E. Camp. Shown on wing (l. to r.) are: Lt. T. S. Rogers and Capt. R. E. Howard, USMC.



Problems of chemistry, physics, optics, thermodynamics, electronics, engineering, and pure mathematics are solved with this computer and the answers are in error less than 0.5 per cent. Many Station problems are solved with it by Mathematics Division personnel although the operator instructions are given to professional personnel of other technical departments.

Nuclear Magnetic Resonance Spectrometer

See Armed Forces Day Program, Bus Schedule, and Map on Page 7.