

NAVAL AVIATION

# NEWS

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PH 120



40th Year of Publication

**JUNE 1959**

NavAer No. 00-75R-3





## BULLPUP

The U.S. Navy air-to-surface guided missile Bullpup is now operational with the USS Lexington (CVA-16) in the Seventh Fleet. Aboard the Lexington is VA-212, home based at Moffett Field, Calif. The squadron is the first Navy air unit to take the Martin-manufactured Bullpup into an operational assignment. It is launched from FJ-4B Fury jet aircraft which carries five of the missiles.

The Bullpup missile is the first guided missile which requires no checking from factory to firing. It can be loaded into a plane as quickly and easily as a bomb or rocket and uses normal shipboard stowage and handling equipment.

On this page is shown the Bullpup (top) carried by A4D-2 Skyhawk and FJ-4B Fury belonging to Air Development Squadron Four that did the testing at Point Mugu, Headquarters Pacific Missile Range. At left, a series of shots shows one successful test run of a VX-4 North American Fury.

# NAVAL AVIATION NEWS

OUR FORTIETH YEAR OF CONTINUOUS PUBLICATION, JUNE 1959

## Navy Receives Starfighter F-104 to be Used in Special Tests

A supersonic Lockheed F-104 *Starfighter* has been received at NOTS CHINA LAKE, on loan from the Air Force, for high altitude, high speed missile test programs and special projects in connection with *Sidewinder* tests.

The plane was the second F-104 off the production line and one of several used in initial Air Force phase and acceptance tests at Edwards AF Base.

It was flown to China Lake by LCdr. Herk Camp from the Lockheed plant in Palmdale, Calif.

Other NOTS pilots qualified to fly the *Starfighter* are Cdr. G. H. Duncan, Lt. R. G. Pipkin, Capt. R. E. Howard.

## USCG to Get More S-58's Has Increased Rescue Capabilities

The U.S. Coast Guard is taking delivery on six Sikorsky S-58 type helicopters for its search and rescue work. These will be the first Coast Guard helicopters equipped to operate in instrument weather—an important factor in rescue operations.

Purchase of the S-58's is being made with a view to increasing the number of helicopters in proportion to fixed-wing airplanes. At present the Coast Guard has 127 aircraft, three-fourths of which are airplanes.

The Coast Guard version of the S-58 is one of the most highly instrumented helicopters ever built. It carries a wide variety of communications equipment, automatic stabilization equipment, all-weather flying instrumentation, and navigation aids.

Electronic equipment enables a pilot to place the helicopter on automatic "hands off" control and come to a hover at a pre-selected altitude. An auxiliary fuel tank gives the aircraft extended range for long missions.

Bubble-type windows facilitate downward vision for rescue work. The helicopters are painted the standard Coast Guard yellow for high visibility.

The Coast Guard's present work horse helicopter is the Sikorsky S-55. The larger S-58, which is in the medium transport class, will enable the Coast Guardsmen to carry more passengers and fly longer distances. The increased power also will facilitate mountain rescue operations at high altitudes.

## Navy, AF Combine Center Guam Typhoon Warning One Unit

A joint Typhoon Warning Center at Guam, manned by Navy and Air Force personnel, became operational May 1. It is located in the Fleet Weather Central.

This combination was approved by top level authorities in both services to insure uniformity of typhoon warnings in the West Pacific and to reduce duplication of effort. The new unit is called Fleet Weather Central and Joint Typhoon Warning Center, Guam. Commanding officer of Fleet Weather Central Guam is in charge.

Arrangement merges a unit of Detachment Two, 15th Weather Squadron at Anderson AF Base and FWC Guam.



LTJG. ELMER E. Wilkin has been named "Naval Aviation Cadet of 1958." Wilkin met SecNav Thomas S. Gates in Washington where he received an award from the National Society of Daughters of the American Colonists.

## FASRons to be Dissolved Maintenance to Take Over Duties

In an effort to improve aircraft maintenance, the Navy is investigating the desirability of disestablishing its Fleet Aircraft Service Squadrons. This would combine parallel functions which are now performed by FASRon and air station personnel.

To implement this effort, the following squadrons will be disestablished effective 1 July 1959: FASRon 2, NAS QUONSET POINT; FASRons 6 and 109, NAS JACKSONVILLE; FASRon 8 Detachment, NAAS FALLON; FASRons 8 and 116, NAS ALAMEDA; and FASRon 112, NAS WHIDBEY.

Pending the outcome of trial disestablishments, a decision will be made concerning the disposition of the other existing FASRons.

The majority of FASRon personnel and missions will be transferred to the air stations, as will materials, facilities, fleet administrative and combat readiness training aircraft. Other aircraft will go to various squadrons and units.

Navy spokesmen have emphasized that in the transfer and setting up of new billets, care has been taken not to destroy career patterns. Fleet-shore rotation of enlisted and officer personnel will not be changed.

With the disestablishment of the FASRons, their major mission—that of aircraft maintenance—will be performed by an Aircraft Maintenance Department to be established at each air station, with the exception of Fallon. Such a department will be a combination of the station Maintenance Division of the Operations Department and the former FASRon Maintenance Department.

It is planned at NAAS FALLON to have all maintenance done by an aircraft maintenance division which will be part of the Operations Department.

## Wheel Changed in Mid-air Pilot Hovers H04S Just Off Deck

Helicopter maintenance crewmen at Ellyson Field replaced a missing wheel while Lt. John Martens hovered his H04S within two feet of the deck. A probable crash was averted.

Lt. Martens was taking off from Chevalier Field with several passengers when he noticed a wheel rolling down the runway ahead of him. His starboard main wheel had broken and come off the aircraft.

He decided to return to Ellyson Field, since there was no apparent damage to the helicopter. Also at Ellyson, he reasoned, were maintenance men who were more familiar with rotary wing aircraft.

Arriving at Ellyson and informing the Operations Control Tower of his condition, Lt. Martens hovered close to the ground to allow his passengers to get out. With his copilot, LCDr. J. E. Johnson, he took his plane back into the air while crash trucks began to roll.

First it was decided to settle the H04S on a platform and mattress which would act as a support while the wheel was being replaced. The idea was discarded.

While crash trucks stood by, Lt. Martens hovered his whirlybird about two feet above the ground as a spare was brought forward.

Working under the fast-whirling rotor blades and under the bulk of the

big helicopter, C. A. Acord, AD1, M. W. George, AM2, R. Brocato, AD2, G. T. Morgan, AA and J. M. Comparetta, AA, began their task.

CPO C. C. Wilson, H04S type chief, watched the progress and directed the pilot during the operation. Wilson said that at times the wheels were less than six inches above the deck. Crewman got on their knees to work. The job was completed in 10 minutes.

## Sidewinder Contracts Mount Production Totals over \$19 Million

Contracts totaling over \$19 million for continued production of *Sidewinder* guided missiles have been awarded to Philco Corporation, Philadelphia, Pa., and General Electric Company, Utica, N. Y., according to RAdm. P. D. Stroop, Chief of BUORD.

Philco's contract amounts to approximately \$13.5 million; General Electric's to nearly \$6 million. The two contracts are to meet the requirements of both the Navy and Air Force for *Sidewinder* missiles.

The USAF, in addition to arming some of its newest jet fighters with *Sidewinders*, supplies the weapon to the Military Assistance Program which, in turn, makes the missiles available to a number of foreign countries. Other countries buy *Sidewinders* directly from the U. S. Navy.

Sweden has completed negotiations with the Navy for the purchase of *Sidewinders* for her Royal Air Force.

## Copter Computer Patented Provides Important Payload Data

A pocket computer, designed to permit helicopter pilots to make rapid calculations for a proper load, has been patented by Marine Major Archie J. Clapp, Jr., of Marine Corps Headquarters in Washington.

Maj. Clapp, a helicopter pilot, noted that sometimes a pilot taking off at sea level to make a rescue in mountains has trouble at his destination because of different atmospheric conditions. He also observed that some pilots tend to overestimate their margins of safety and fail to realize full use of the helicopter.

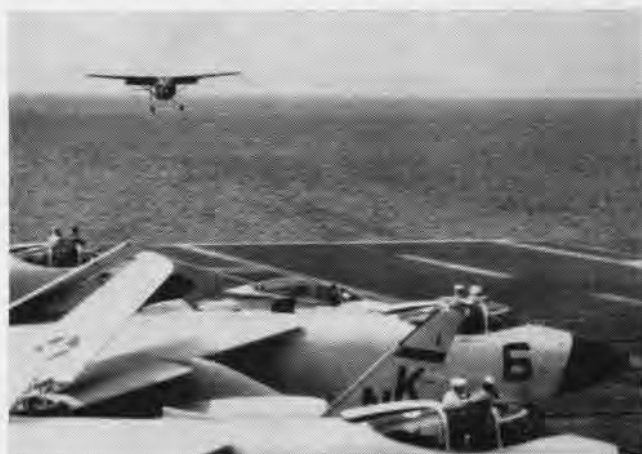
With the new computer, the pilot moves a series of dials accounting for all payload factors, and within minutes, he can calculate a proper load.

## S2F Program Ends at Jax Pensacola to Handle Tracker O&R

The last S2F *Tracker* to go through Overhaul and Repair at NAS JACKSONVILLE has rolled off the line. The S2F program formerly done by O&R JACKSONVILLE will be taken over by O&R PENSACOLA.

When Jacksonville first began the job of overhauling the S2F four years ago it set a record in the fixed wing airplane category, taking but 160 days to complete the first job.

Since then, O&R JACKSONVILLE has completed 205 overhauls and 12 modifications of the anti-sub aircraft.



**FLIGHT DECK** personnel of the USS Ranger (CVA-61) who get right lonesome without the scream of 70,000-pound jets landing and taking off, were in for a surprise as the big ship lay at anchor off Okinawa. Suddenly they saw four Marine OE-1's, Cessna Cub type airplanes, each weighing a mere 2340 pounds fully loaded, circling the Ranger's four-acre flight deck. They were going aboard the big



carrier for transportation to Sasebo. When Ranger Control gave the landing instructions, the tiny planes began peeling off. They were given the full treatment as the LSO signalled them in and flight deck personnel rushed out to direct each of the pilots. Current joke around the ship was that the Marines had posted a guard on the OE's for fear some one would put them in their lockers as souvenirs.

## Chiefs Enter New School Top EM to get Leadership Training

Sixty chief petty officers from the Naval Air Training Command marched through the doors of the newly-formed CPO Leadership School at Pensacola in May to become the training command's first class of specially trained chiefs under the improved leadership program now underway throughout the Navy.

The school will train the chiefs in theoretical and practical phases of positive leadership. Courses of instruction will include military law, moral leadership, supervision and management, communicative skills and public speaking, world affairs and physical training.

Cdr. Robert L. Ashcraft has been named the school's first officer in charge. His assistant is Lt. K. R. Bailey.

The instructor staff includes S. P. Gray, BUCS; R. F. Watson, ADC; W. M. Opava, ADC; R. G. Crowe, PHC; R. J. Frazier, AEC; R. A. Breed, AEC; and John S. Rogers, RMC(SS).

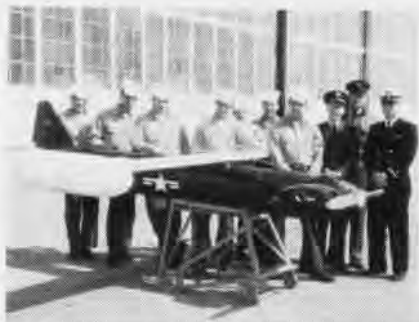
Formal instruction by the staff will be supplemented by military and civilian leaders as guest speakers.

## VU-2's Added Capability KD2R5 Target Drone is Being Used

Utility Squadron 2 now has a KD2R5 target pilotless aircraft capability in order to provide additional aircraft services to fleet surface units in the Narragansett Bay area. This is a brand new operation for the Quonset-based squadron.

The KD2R5 target will be launched from the fantails of Newport-based destroyers for anti-aircraft practice. In the past, VU-2 has provided aircraft services both in the Narragansett Bay and San Juan areas through the employment of the JD-1, FJ-2 *Fury*, and the F9F *Cougar*.

VU-6 at Norfolk provided the training for VU-2 personnel. In the picture above is the nucleus of a VU-2 detachment which will operate and maintain the pilotless aircraft: (left to right) Milton K. Deisch, AMS3; Thomas D. Erwin, ADR3; Carroll E. Stambaugh, AT2; Wayne O. Davis, AD2; Thomas F. Henry, AMS3; Clifford L. Corrin, AD1; W. E. Mooneyham, AM1; Lt. J. K. Stewart, Pilotless



VU-6 TRAINED VU-2 UNIT AS NAS NORFOLK

Aircraft Project Officer; C. P. Spencer, Jr., ATCA; and Ens. Claude D. Wilson, Jr., Drone Unit Controller.

## Flood Victims Rescued Icebreaker Helos Help Uruguayans

Two helicopters of the HU-2 detachment aboard the icebreaker *Edisto* flew continuous flood relief missions into the interior of flood-stricken Uruguay, making more than 603 sorties. Over 200 persons were evacuated. The *Edisto* was in Montevideo, en route home from the Antarctic.

Despite raging storms and high winds, the small Bell HUL rescued 31 flood victims stranded in the swamped countryside near Treinta Y Tres, a city of 28,000. The amphibious helicopter was often so overloaded the pilot had to make running take-offs in flood currents. Homes in the area were almost submerged in eight feet of water.

*Edisto's* helicopters carried 3800 pounds of food and 3500 pounds of tents, clothing and other emergency cargo to Chamberlain where a refugee city had been set up. The ship has contributed approximately 1600 gallons of powdered milk and a truckload of medical supplies.

Simultaneously, a Sikorsky HO4S helicopter was conducting rescues in the central regions of the country.



GEN. MAGNAVI, LTJG. ERICKSON CONFER

That helicopter helped to evacuate Paso De La Toros, a city imperiled by rising waters of the Rio Negro.

The country's major dam and source of electricity is at Paso de La Toros and the power stations were secured when the city was evacuated. Montevideo was thus without electricity.

As the flood raged, Mercedes, a city of 25,000 faced possible annihilation. Both helicopters joined in evacuating that city. The HO4S had previously flown explosives in for blasting a diversionary channel to drain the swollen Rio Negro.

The HUL was flown by Ltjg. Howell H. Purvis and Eugene M. Davis, AD1. The HO4S crew was made up of Ltjg. A. M. Erickson, Ens. R. M. Nelson, P. E. Noonan, PH1, and Ken Forrester, AD1.

In the picture below, Gen. Enrique O. Magnavi, Chief of Staff of the Uruguayan Army is shown with Erickson.

## VP-10 Demonstrates ASW P2V's Return from South America

Six P2V *Neptunes* of VP-10 have returned to NAS BRUNSWICK, Maine, after demonstrating anti-submarine warfare tactics to selected naval groups in South America.

The demonstrations were staged for Latin-American countries which have put American aircraft into use in ASW.

Patrol Squadron 10 is commanded by Cdr. William T. Rapp. It is a tactical unit of Fleet Air Wing Three, under the command of Capt. George P. Koch.

## High Records for ATU-611 Hours: 30,000 — Landings: 80,000

Advanced Training Unit 611 passed two milestones in April. The unit completed its 30,000th safe flight hour and its 80,000th landing without an accident.

Flight students with no previous experience in flying multi-engine, high performance, fleet-type aircraft are taught by ATU-611 to solo their aircraft after only nine flights.

With an additional six flights of instrument review, the students start a series of cross-country flights in two-student teams, commanding their own flights, to build confidence and experience. The training finale consists of field carrier landings and then carrier qualifications on the *Antietam*.



# GRAMPAW PETTIBONE

## Sweat Job

It was a black night shortly after midnight, overcast, a heavy sea was running and the big attack carrier was steaming through rain squalls as a young night fighter pilot was catapulted in his F4D *Skyray* for a night CAP mission.

The launch was normal, but at 600 feet the pilot was in solid weather, with heavy rain, mild turbulence, and a moderate amount of static electricity throughout his climb. At 12,000 feet he broke out on top, CAVU, and proceeded with his mission.

Approximately one hour later he reported over his marshal point and was told to disregard his expected approach time, conserve fuel, be prepared to divert to a land base, and that the next scheduled launch had been cancelled due to weather. Mulling this over, he maintained his position and awaited instructions.

He was cleared for a CCA approach! Making a "tear drop" let-down, he descended and finally broke out of the overcast four miles astern of the ship at 600 feet. The LSO stated that it was raining, and visibility was down to a half mile with low scud under the overcast.

Following CCA instructions, the



pilot came on in on the glide slope, picked up the meatball at about a mile out, and then was asked to "check his lights" at a half mile astern. He refused, since the switch was located at the rear of the right console, and was given a waveoff!

He couldn't see the ship in the heavy rain, so CCA brought him around until he picked up the meatball again. This pass he ended up "low at the ramp," so he hit full power and burner and took a waveoff again.

He came out of afterburner, eased the power off and began to sink rapidly as he forged ahead of the ship. Alerted by a radio call from PriFly he glanced at his radio altimeter, saw "40 feet,"

pulled up, went into afterburner again, and continued around for his third pass.

Turning in from the 90° position he suddenly found himself in an extreme state of VERTIGO! Concentrating on his instruments, he forced himself to fly level, climbed and took another waveoff.

The fourth and fifth pass flown were very erratic patterns, high at the ramp, with no meatball at all and although he touched down, were bolters.

His sixth pass was a very steady one, but again the pilot did not have the meatball in sight. The LSO talked to him all the way. The F4D crossed the ramp slightly fast and touched down starboard wheel first. The starboard landing gear and starboard drop tank tore off, the pilot hit full left rudder to keep aligned with the angled deck, and bolted again! The *Skyray* was now down to 400 pounds of fuel so the pilot was ordered to "climb to altitude and eject."

He climbed to 9000 feet in a 360° climbing turn and ejected just two miles ahead of the carrier.

The ejection was normal, lap belt and chute opened in perfect sequence, and he was able to remove his pararaft from the seat cushion and let it dangle below him on the lanyard. Upon striking the water, he lost the chute as it pulled away from him in the wind. The life raft was also lost on impact with the water, for the "D" ring on the lanyard separated and the raft floated away.

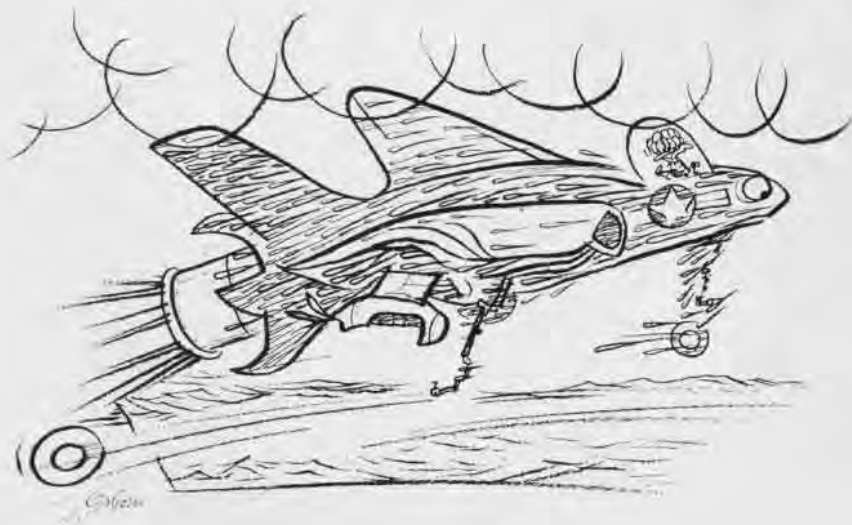
Floating in his exposure suit and Mae West, he ignited his night flares, and fired .38 caliber tracers vertically. He was picked up after 40 minutes in the force, pretty well exhausted but suffering only from minor bruises and abrasions.



*Grampaw Pettibone says:*

**Jumpin' Jehosaphat! This story sure puts sweat in the palms of your hands!**

**After a jet penetration and a visual mirror landing approach under ex-**



tremely adverse weather conditions, the quick transition back to instruments after a wave-off or bolter can be a sure vertigo producer. You've gotta shift control from the seat of your pants to your instruments and absolutely believe those gages to fight it. A wider pattern and an extended final approach leg will generally give a man more time to steady down for a good mirror approach on the second pass.

This man was a well-trained, well-qualified all weather fighter pilot, with plenty of time in model, but even the best pilots sometimes miss approaches in the weather. There seems to be a need for a better, more standard missed approach procedure for minimum weather conditions.


Ol' Gramps would like to hear from some of you gents in the all-weather business. I'll pass your ideas along where they'll do the most good.

## Spoiler

Immediately after takeoff from a West Coast base, and really loaded down for a bombing and rocket hop, a pilot found his AD-7 was so left wing heavy that it took 15° of right wing down trim and full right stick just to hold straight and level flight!

Cruising out over the water, he released two 500-lb. bombs and all rockets in 12 FFAR pods electrically, then jettisoned a 1000-lb. bomb and the 12 FFAR pods manually. Climbing on up to altitude, he checked the slow flight characteristics of the AD, found it reasonably stable, and made a steady straight in approach for a safe landing at the home base.

After landing, investigation revealed that the port wing ammunition can access door was not secured prior to the flight. When lift was developed on the wing, this door raised about 30° to the upper wing surface and had the same effect as a large spoiler.

 **Grampaw Pettibone says:**

Well, I'll be . . . ! The ordnance crew were really gunnin' for this lad! They had a lot of work hangin' all that ordnance on this machine, but there's no possible excuse for not buttonin' her up! The ordnance petty officer-in-charge better get with it! There's no place in an operating outfit for such a spoiler, human or mechanical. Betcha this pilot does a thorough pre-flight NOW. There's an old saying that really hits this one on the nut. "He who inspecteth not his aircraft giveth his angel cause for concern."

## Mayday

A P2V-3B took off from its Florida base on what was intended to be a routine night overwater navigation training hop. The destination was NAS CORPUS CHRISTI, and the nine men aboard quickly settled down to their duties as the flight progressed. The big plane droned steadily and smoothly along, cruising in the tops of a cloud layer at 6000 feet.



After about 1½ hours of flight, the #1 engine fire warning light came on steady, there was a muffled explosion, and fire began streaming out of the cowl flap openings and in the winter front door area! The engine was immediately feathered and fuel, oil, and hydraulic emergency cut-offs were actuated. The winter front door was opened and a dive started in an attempt to blow out the remaining fire. Cowl flaps were also opened wide but although the flames seemed to decrease somewhat, the metal itself now seemed to be burning intensely.

Simultaneously, the crew had been instructed to don their chutes, the radioman notified New Orleans radio of the emergency, and the navigator gave a heading to the nearest airfield, Tampa, about 150 miles away, and IFF was put on EMERGENCY. "Mayday" was declared and the intention to abandon the aircraft, its position and altitude were radioed to New Orleans.

The plane commander sent his copilot aft with instructions to insure a close bail out interval. As he left the cockpit, the plane lurched and the port engine fell off, burned through. The fire was gone.

Bail out instructions were immediately cancelled, and all hands resumed their normal flight positions. Flying the P2V was difficult; it took more right rudder than they had trim, so both pilot and copilot had to hold hard right rudder to keep her straight.

New Orleans Overseas Radio was notified of the change in status, and the pilot's intent to continue to MacDill AFB.

Loose gear was jettisoned to lighten the aircraft after a series of power losses on the starboard engine had necessitated a power reduction and constant regulation of the carburetor air control by the copilot to keep it running. Altitude was finally lost until the stricken P2V steadily settled down at 110 knots and 3400 feet.

Both G-2 and standby compasses had shown tremendous errors after the port engine had burned away, so the ADF was the pilot's only directional aid. The coastline and Tampa Bay were finally reached, and vectored by radar. The pilot, fearing a possible split-flap condition, made a no-flap steep approach to the MacDill AFB runway. A 100° left crosswind at 14 knots was reported but the pilot, using a wing-down correction for drift, made a perfect touchdown.

The main braking system failed on the rollout, but as the speed decreased, emergency brakes were actuated and the tired bird brought to a stop on the runway. The crew evacuated promptly on the pilot's command.



**Grampaw Pettibone says:**

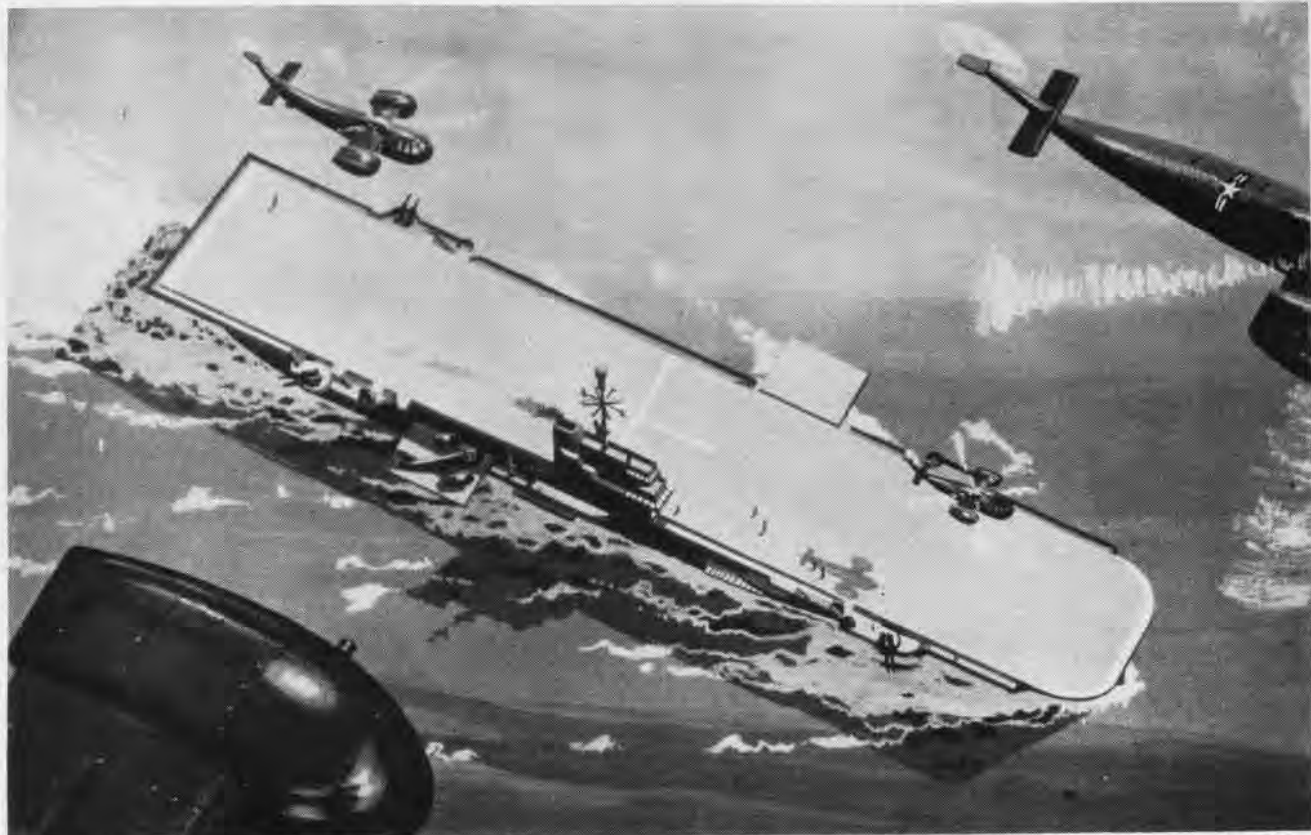
Your old Dad is real proud of this cool, mighty professional crew! The plane commander did EVERYTHING right and is the kind of professional patrol plane commander that every C.O. would like to have a dozen of! The actions of the entire crew speak well of the training given them by the Heavy Attack Wing. These boys are trainin' for real high performance aircraft and look good.



Even a sour old rooster like me likes to crow once in a while when it looks like the young-uns are masterin' the trade, and I'm really crowing now.

## LPH-AMPHIBIOUS ASSAULT SHIP

# LEATHERNECK POWER HOUSE



NOW UNDER CONSTRUCTION, THE LPH OF THE FUTURE WILL INCLUDE MANY STRUCTURAL CHANGES FROM SHIPS IN USE TODAY

THE MARINES have landed" has always been synonymous with "the situation is well in hand." The Marines have kept their traditional mission abreast of the times by some revolutionary innovations in Navy-Marine Corps amphibious warfare.

Latest—and one of the most dramatic—is the LPH, Amphibious Assault Ship. Part heliport, part transport, part command ship, it is an essential component of the concept of vertical envelopment which has been in the planning stages for the past 10 years. In wartime, the ship's mission is to carry combat-loaded Marines and their equipment to an objective area and land them by helicopter. The aircraft can be launched to approach the objective from several directions. They can fly over enemy defenses and seize critical points which dominate the landing area, thus freeing the beach for later surface logistics support. At the same time, the attacking Naval force can be dispersed over a large area—a necessity in this day of enemy nuclear capability when landing operations are actually underway.

In July 1956, USS *Thetis Bay* (CVHA-1) was placed in commission. The first ship designed to operate helicopters exclusively, it has been used primarily as a research and development vehicle to perfect the practical techniques of the ship-to-shore phase. Aircraft control and spotting, rapid loading, refueling, and tactical flight patterns were practiced and polished until a high degree of proficiency was attained. The feasibility of vertical envelopment was conclusively proved. The advantages of increased mobility, versatility and speed were so apparent that it became clear that the lessons learned aboard the *Thetis Bay* ought to be incorporated in a new ship design without delay.

Construction of two amphibious assault ships was authorized in the 1958 and 1959 shipbuilding programs. The LPH-2, USS *Iwo Jima*, is being built at Puget Sound; the LPH-3, as yet unnamed, at the Philadelphia Naval Shipyard. (USS *Block Island*, CVE-106, was assigned LPH-1, but the conversion contract was cancelled.) These ships are in the future since completion is scheduled for 1962.





AT QUARTERS, THE PRINCETON MARINES PREPARE TO LEAVE PORT



LANDING NETS ARE STILL USED DURING AMPHIBIOUS OPERATIONS



COMBAT-READY 8TH PROV MAR STANDS BY ON BOXER HANGAR DECK

IN THE meantime, the Marine Corps had been reorganized to meet the requirements of vertical envelopment. The central feature of the reorganization was the creation of a streamlined division with increased firepower, the assault elements of which are completely transportable by helicopter (*Naval Aviation News*, May 1958). For years Battalion Landing Teams and helicopter squadrons had been training together ashore to assure efficiency of operation at all times. By the fall of 1958, men, equipment, aircraft and techniques were ready for effective implementation at sea. There was a pressing need for more flight decks.

From time to time in 1957 and 1958, the Navy had made available carrier decks for use by Marine helicopters in amphibious training exercises. To meet the permanent need, the USS *Boxer* (CVS-21) was transferred to the Atlantic Fleet and, in January 1959, redesignated LPH-4. In March, USS *Princeton*, also a support carrier, emerged as LPH-5 and remained in the Pacific. Both had been scheduled for mothballing until pegged for the new fleet assignment. Their axial decks make ideal floating platforms for the Marine helicopters.

As a result of the ships' new mission, a situation—unusual in the annals of Naval and Marine Corps history—has come about. Because of cutbacks in Naval personnel the 1000-man crews of the *Boxer* and the *Princeton* will include 337 Marines. During major exercises a 400-man helicopter squadron and an additional 1800-2000 Marine ground combat units are also embarked, causing the Navy population to become a definite minority.

Marines are no strangers to the sea. In the days of sailing ships, large numbers lived aboard in order to form boarding and landing parties when the frequent need arose. Thousands have been passengers in transports and amphibious ships. Major combatants and flagships today carry a Marine Detachment, numbering about 50, to act in guard capacity. But the LPH is the first ship in the modern U.S. Navy to be manned by such a large percentage of Marine Corps personnel serving as a part of ship's company.

Structural changes to the big ships in their new roles were relatively minor. Because many of the duties traditionally assigned to sailors must be performed by Leather-



MARINES AWAIT AIRLIFT TO VIEQUES BY HMR(L)-262 COPTERS



SQUADRON MECHS WORK ON HUS-1 ENGINE



WELCOME REST AFTER VIEQUES EXERCISES



DAMAGE CONTROL TECHNIQUES PUT TO TEST

necks, a thorough orientation in seamanship was necessary before they could assume their sea-going responsibilities.

A different sequence was followed on each ship because of varying circumstances. It is a reciprocal arrangement. Proved training methods on one are automatically applied for the benefit of the other.

Late last fall, a Marine Aviation Detachment, consisting of four officers and 100 men headed by LCol. A. G. Carlson, took over major responsibilities for the Air Department of the *Boxer*. A large amphibious exercise was in the offing, and this had been standing operating procedure for Navy-Marine vertical assault maneuvers. When it was decided that Leathernecks would be integrated into the crew, Washington representatives of the Navy and Marine Corps met in Norfolk with Capt. I. L. Dew, USN, commanding officer of the LPH-4.

Each billet was analyzed to determine the best utilization of Marine personnel and to arrive at a specific count. The number was set at 10 officers and 327 men, including the Aviation Detachment already aboard, which would become the Air Company. The balance would not be embarked until several months after the exercise, which took place in January, and would receive appropriate training ashore. LCol. Carlson would remain as commanding officer

of the Marine Detachment. Since the original group would be adept in their seagoing tasks from their actual experience on the LPH, the transition could be made easily.

In the meantime, the *Princeton* had to be manned on the West Coast. Armed with the facts and figures gleaned at Norfolk, a syllabus was set up for the full Marine Detachment, which consists of two companies.

First on the agenda was a four-week course in San Diego broken down into two weeks abbreviated sea school at the Marine Corps Recruit Depot, and one week each of fire fighting and damage control instruction at NS SAN DIEGO.

At the Recruit Depot, subjects included atomic warfare, Navy terms, ship's compartmentation, and other related items pertinent to the future jobs of the Marines. Part of the time was spent with the Landing Force Training Unit, Coronado, for refresher training in amphibious assaults and landings on simulated beachheads.

Separate courses in fire fighting were given to each of the companies in keeping with their shipboard billets. Guard and Support Company concentrated on below-deck techniques, while the Air Company, concerned with helicopter operations, was specially schooled in flight deck procedures. Using standard shipboard equipment they brought raging fires under control in short order. In



TEAMWORK IN RADIO SHACK ABOARD LPH-5



INTEGRATED GUN CREW PRACTICES LOADING PROCEDURE ON PRINCETON 5-INCH MOUNT

Damage Control School, dummy compartments were flooded for practice in quickly checking the water intake and making repairs.

On 14 March, the Marines led by LCol. H. S. Hill, marched aboard the *Princeton* in a colorful ceremony at NAS NORTH ISLAND. Capt. William L. Dawson, commanding, welcomed them aboard. In honor of the occasion, VAdm. A. M. Pride, ComNavAirPac; VAdm. John Sylvester, ComPhibPac; and BGen. R. G. Weede, CG Recruit Training Command, were guest speakers.

The ship then moved to Long Beach, California, and the Leathernecks spent two of the initial three weeks of Navy-Marine transitional training in port. This gave them a chance to become accustomed to their home-afloat, and to further their recently-acquired basic knowledge. They familiarized themselves with shipboard organization, nomenclature, regulations and etiquette. Orientation lectures covered subjects associated with daily routine: sound-

in the MOS of the average Marine. The "Sweet Pea" group performed well.

Orientation did not stop when the ship returned to port. The cycle continued when HUS-1 and HR2S helicopters from 3rd MAW landed aboard, giving the Air Company the first opportunity to handle all flight operations.

The reduction of Naval personnel is to be phased over a two-month period, allowing the transition to take place smoothly and gradually. At the end of that period, the Marines will be at home in the radio shack, galley, gun mounts and fire control plot, and will be able to handle a line with the best of the bluejackets. They'll respond "Aye, aye, sir" automatically to "House your anchor."

The entire training effort will culminate in a full-scale exercise. The Battalion Landing Team and an expanded helicopter squadron will embark. The well-oiled machinery will be set in motion when the 2000-plus Marines and 675 Navy men put to sea with each man playing an essential



LOOKING LIKE POWERFUL CROSS-EYED MONSTERS, HR2S HELICOPTERS ARE READIED FOR MANEUVERS ON THE BOXER FLIGHT DECK

powered telephone and radio techniques, use of fire extinguishing agents, ammunition hoist and loading, maintenance and operation of elevators, anti-aircraft defense, station safety precautions, hangar deck sprinkler systems, aircraft handling and spotting.

Basic seamanship skills were not overlooked. Experienced Navy hands passed on the fine arts of knot tying, boat handling, the use and care of ground tackle, swabbing, chipping and painting. Finally, the special sea-and-anchor watch was set, and the ship moved out to sea for seven days of underway training. The Leathernecks proved that they could be just as salty as the best-seasoned bluejacket.

General quarters sounded time and again as the signal for all hands to man battle stations to practice problems under wartime conditions. Integrated Navy and Marine gun crews in the five-inch, 38 caliber twin-mounts compiled enviable records firing at canvas sleeves towed by aircraft from shore bases. One morning a destroyer came alongside for topping off. The next day the *Princeton* rendezvoused with USS *Guadalupe*, AO-32, and took on almost one half million gallons of black fuel oil. These evolutions are second nature to sailors; they are not included

and integrated part in each phase of the vital operation.

The experiment on the LPH-5 has been successful. In the words of LCol. Hill: "Outstanding cooperation and an extremely helpful attitude on the part of All Hands of the USS *Princeton* have been of the greatest assistance to this Detachment. . . . It is considered that within the minimum period of time this Detachment will provide along with its shipmates of the USS *Princeton* a fighting team with a tremendous capability in furtherance of the Navy-Marine Corps concept of amphibious operations and vertical envelopment."

Following the pattern set on the West Coast, the Marine Detachment at Portsmouth, Virginia was activated this month to form the Guard and Support Company on the *Boxer*. After sea school, fire fighting and damage control courses at Norfolk, the 200 men will join their shipmates—sailors and Leathernecks—on the LPH-4, for a period of shipboard orientation guided by Capt. Dew.

The Navy-Marine Corps team has always been, and continues to be, the nation's force-in-readiness. Today as always it will be there at the right time with the proper weapons.

## Fault Localizer Designed Inventive CPO Solves Camera Bugs

A Fault Localizer for naval aircraft electronic camera control systems has been designed and constructed by W. L. Creel, ATC, an instructor in the Camera Repair School at NATTU, Naval Air Station, Pensacola, Florida.

It is a light, compact, line test unit

which will be used on the flight line to quickly pinpoint faults.

Creel built the localizer in his spare time, using scrap material. He was using it as a training aid in the Camera Repair School until a BuAer inspection party observed the unit and ordered him to report to the Bureau of Aeronautics to put on a demonstration.



CHIEF CREEL WITH HIS FAULT LOCALIZER



**PRODUCTION HISTORY** of the Douglas F4D-1 Skyray is shown in this sequence. At top, the first production model is towed out of its hangar. In fleet service, center, the Skyray launches a rocket. At bottom, the last production F4D stands ready for delivery. When the Skyray broke several records for time-to-climb last year, it proved the soundness of the delta-wing plane's design objectives. This climb performance, combined with the F4D's all-weather kill capability, make it a vital component of fleet air defense. Production has been completed, but the Skyray still has a long service life ahead in the fleet.

After the demonstration, held at NADC JOHNSVILLE, BUAEER selected the unit for manufacture and distribution to the fleet.

Another accomplishment by Creel was the design and construction of a test unit for use on the camera control systems in the F9F-8P aircraft.

When the F9F-8P's first reached the fleet, there was no test equipment to test the camera control systems. A number of malfunctions developed with the equipment. Creel's test unit resulted in the squadron (VFP-62) being able to remedy to a great extent serious conditions, and it substantially increased aircraft availability for photographic missions.

In 1958 Creel designed and built a single bay universal camera control system which is presently installed in NATTU PENSACOLA SNB-5P aircraft.

## Ready for Japanese Defense Mitsubishi Delivers its First S-55

First delivery of an S-55 helicopter, built under Sikorsky license by Nagoya Aircraft Works, Japan, has been made to the Japanese Air Self Defense Force.

The license agreement, with Mitsubishi Heavy Industries, Ltd., of which Nagoya is a division, was signed in 1958. Under its terms, Nagoya will build S-55A and S-55C aircraft. The first six to be delivered by Nagoya will be assembled in Japan from components and "knockdown" airframes shipped from Sikorsky. From then on, only certain components will be built in the United States.

In addition to the Sikorsky aircraft, the Nagoya Aircraft Works also builds the F86F jet fighter, overhauls Pratt & Whitney Aircraft engines, and produces aviation products under license.

# DE FLOREZ RECEIVES DFC

**M**R. SPECIAL DEVICES himself, RAdm. Luis de Florez, USNR (Ret.), who has won notable distinctions as engineer, inventor, scientist and Naval Officer, received on May 2 the Distinguished Flying Cross. It was presented by Secretary of the Navy Thomas S. Gates, Jr., on behalf of the President of the United States.

The presentation, made at Naval Air Station, Anacostia, was attended by



**SECNAV GATES** congratulates RAdm. de Florez on his brilliant record of achievements.



**RADM. DE FLOREZ**, noted aviator and inventor, has served U. S. Navy more than forty years.

tific American Prize for Aircraft Improvement in 1934, and the Collier Trophy in 1943."

The citation points out that RAdm. de Florez is a pilot as well as designer and qualified in carrier operations and in almost every aircraft type and model in contemporary use, including helicopters and jet planes.

The citation concludes: "From 1956 to 1958, while attached to the Office of Naval Research, he made significant contributions to design and testing activities, including personal project flying on short takeoff and landing aircraft, aircraft silencing, and other important projects of a classified character. By his leadership, keen foresight, and inspiring devotion to duty throughout, Rear Admiral de Florez upheld the highest traditions of the United States Naval Service."

In addition to the honors already mentioned, Adm. de Florez has received the Legion of Merit, the Distinguished Service Medal, the Victory Medals of both World Wars, and the Naval Reserve Medal.

As far back as 1912, Adm. de Florez had already embarked on a career that was to be distinguished by originality of thought and brilliancy of execution. In that year at the Massachusetts Institute of Technology, he wrote the first thesis on aeronautics presented at that institution. It was entitled "Thrust in Flight of Propellers." The very

same year he started to learn to fly.

From there on he steadily contributed the many devices that make flying safer as well as various special devices that made rapid and thorough training of combat crews and pilots possible. As a Naval Aviator who has dedicated so much of his time and skill to the advancement of flight, his award of the DFC is appropriate.

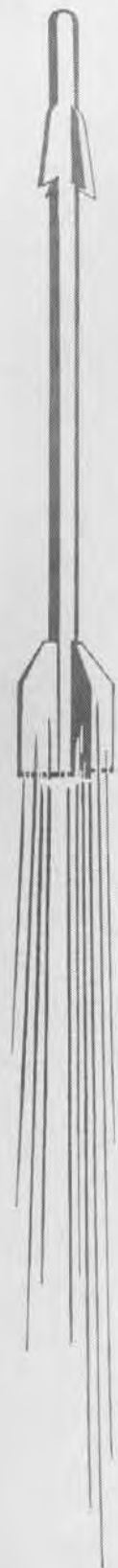
## NAS Atlanta Commissioned Many Notables Attend Ceremonies

Despite rain and cancellation of the air show, spirits were high at the dedication of the new NAS ATLANTA, Marietta, Ga., Capt. R. E. Steiler, commanding at that time. Cdr. E. W. Pacek relieved him when he went to the staff of Naval Air Bases, 11 ND.

The air station at its new location adjoining Dobbins AFB, is home base for the following Weekend Warrior units: ASW-67, CV FasRon 671, VA 672 and 673; VP-671, 672 and 673; VR-671, 672, 673, and 674; AirTu 671, 672 and 673; MARG-8, VMA-243, VMA-351 and MACS-15.

On hand for the occasion were Senator H. E. Talmadge and his wife, Betty, who was the sponsor; U. S. Representatives J. C. Davis and L. Mendel Rivers; the Lt. Governor of Georgia Garland Byrd. Naval officials included VAdm. R. G. Goldthwaite, CNATRA; RAdms. J. C. Clifton, CNaVanTra; R. E. Dixon, Chief, BUAE; R. T. S. Keith, ACNO (Naval Reserve); J. M. Carson, CNaBaTra; Allen Smith, Jr., CNAResTra; J. C. Daniel, ComSix; Kenneth Craig, ComFairJax; and BGen. F. C. Croft, Commander of Marine Air Reserve Training.

Principal speaker was Hon. Fred A. Bantz, Assistant Secretary of the Navy (Material). Mr. Bantz, in his speech said: "As one of the greatest of all football coaches said—the best defense is a good offense. That is what America has and must continue to have. We salute this new Naval Air Station and commend it to its important assigned mission. Naval Aviation in the Atlanta area has had an illustrious history and faces a demanding future. We are confident that the men of the area will be equal to the task."



# MISSILE MAGIC . . .



**HIGH ABOVE** the Pacific a lone F4D Skyray carrying a Sidewinder air-to-air missile stalks a KDA-4 target aircraft (out of camera range) during a fleet gunnery exercise. In the second view, the 155-pound Sidewinder is on its way, guided by an infra-red or heat-seeking device. Next sequence shows instant of kill as unerring Sidewinder explodes on impact with distant target. In the last scene, Skyray, followed by VFP-61 Photo Crusader which filmed episode, closes on white puff of smoke marking one-shot destruction of simulated enemy aircraft.



**M**ASTERY OF SPACE takes *space*, and nothing proves this more quickly than a quick look at the missile ranges developed and organized for the national defense. Where ordnance proving grounds once covered thousands of acres, thousands of miles are now required for the development and testing of intermediate and intercontinental missiles. The U.S. system of missile ranges is designed to meet this need.

The three ranges which the military services have developed are the White Sands Missile Range, New Mexico, operated by the Army; the Atlantic Missile Range at Cape Canaveral, Florida, directed by the Air Force; and the Pacific Missile Range, Point Mugu, California, operated by the Navy.

The Pacific Missile Range is the newest, having been brought into being by a Secretary of Defense authorization, December 7, 1957, for the expanded development of the U.S. Naval Air Missile Test Center, now simply the Navy Missile Center, Point Mugu, California.

The ranges are not in competition.

Each has unique capabilities. They are designed to supplement each other, so that together they are capable of delivering a fully integrated program for testing in the missile and space field. In each case, the service in charge of the range makes it available to the other services as well as government agencies and contractors associated with space missile and space vehicle programs. The Pacific Missile Range will not duplicate either the Cape

Canaveral or White Sands installations, but will offer facilities not available at other sites.

The very name, Pacific Missile Range, not only gives its location, but suggests the extent of this largest of the three ranges, for it is the Pacific it covers—from Point Mugu to the far reaches of that ocean.

The test corridors that shoot out over the Pacific will be used for long range flights of intermediate range and intercontinental missiles. Both shore-based and ship-based instrumentation will be used for launching, tracking and collecting data in guided missile, satellite and space vehicle programs. The same network will serve guided missile training programs.

The Naval Missile Center at Point Mugu is the nucleus around which the Pacific Missile Range has been developed. Point Mugu has been an important facility of missile research since it was established right after World War II. During that conflict, it had become clear that if the nation's guided missile program was to progress, the Navy would have to have a test



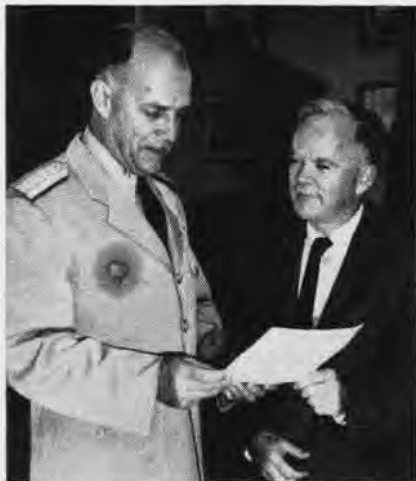


range based upon Naval requirements. The result of this decision was the establishment of the Naval Air Missile Test Center in 1946. At the present time, the Center is manned by 7000 military, civilian and contractor personnel.

In recent years as the national ballistics program gained momentum, the need for increased range capacity became critical. The Point Mugu Center which had built up a program, facilities and a corps of highly professional personnel, offered certain advantages for a new and enlarged long range facility. It was the only suitable site in the continental United States from which a satellite could be fired into a polar orbit with relative safety. While this was not the only consideration, it certainly was an important one.

The original Sea Test Range, 75 by 150 nautical miles, has been in operation for a number of years, but an expanded capability of 150 by 250 nautical miles was established in January 1959. This range will be used for *Sparrow III*, other advanced missiles, and fleet training.

The Sea Test Range will be extended to a full area of 500 by 1500 miles.



RADM. MONROE GIVES ENGINEER CITATION

The plans call for an IRBM impact area out to 1500 miles from the coast, and an ICBM area in the vicinity of Midway, Wake and Eniwetok. The IRBM training range was established in December 1958 with the firing of a *Tbor* missile. The ICBM training range is under development with the first firing scheduled some time this year.

Also in the plan are a polar orbit launching facility and an equatorial

orbit launching facility with corresponding satellite recovery areas. Still in the future but an equally important segment of the complex is an anti-missile missile range. Such missiles would be launched from some yet undetermined Pacific island.

The range as laid out allows for extension of the ICBM range to more than 10,000 miles if necessary. In order to give these range complexes flexibility and to assist in recovery operations, 12 instrumented range ships are planned. It has been estimated that it will take 15 years to carry out the long range goal and an outlay of \$4 billion for capital investment. This would require an investment of \$2 billion in the next five years and \$2 billion in the succeeding 10 years.

The first step is the development of the Naval Missile Facility at Point Arguello. Because of its location, Point Arguello offers certain advantages in security. On this facility, much of the future effectiveness of the Pacific Missile Range depends. Here missiles can be put into polar orbit.

Point Arguello includes 20,000 acres of what was once Camp Cook. The remaining acreage of the old Army



CONSTANT TESTING AT HUGE RANGE PERFECTS MISSILE POWER



TRACKING RADAR WITH 300-MILE RANGE IS ACCURATE TO 1/10 MIL

facility—70,000 acres—is now the Strategic Air Command's Vandenberg Air Force Base. By agreement, Vandenberg will provide housing and administrative facilities for Arguello personnel. The Naval Missile Facility will provide the technical arrangements, tracking radars, telemetry, safety equipment, operational control facilities, a communications center, and all the complex mechanisms essential to a missile test enterprise.

The terrain at Point Arguello is rough, mountainous and unimproved, but its hills and mountain tops provide ideal sites for surveillance radars and other instrumentation. The canyons afford security for observation and safety from blasts, either accidental or normal, from the large thrust engines that will be used.

Development is well under way. Tracking and surveillance radars are operating; roads and utilities are being constructed. Sites for telemetry, range operation and communications are being prepared. Concrete is being poured for the first launching pad. However, until launch complexes are completed at Naval Missile Facility, Point Arguello, nearly all major firing into the Pacific Missile Range will be from the completed mats at Vandenberg.

Commander of the Pacific Missile Range is RAdm Jack P. Monroe. Serving with him are deputy commanders representing the Army, Navy and the National Aeronautics and Space Administration. The Navy Deputy is also Deputy Range Commander. The USAF is represented by a liaison officer.

While the Naval Missile Center is the nucleus around which the Range was built, it is still responsible to the Bureau of Aeronautics and carries out research projects to meet BuAer's re-



NORTH AMERICAN FJ FURY, BULLPUP MISSILE ATTACHED TO WING, MAKES TEST RUN

quirement. The Naval Air Station is subordinate to the missile Center and at the same time supplies administrative services in support of Range headquarters.

Three directorates plan and coordinate the work of the Pacific Missile Range: The Range Support Director administers range operation, develops instrumentation and plans the over-all program. The Technical Support Directorate, as its name indicates, is responsible for matters pertaining to engineering, controls shop services and handles aircraft modification. The Test and Evaluation Directorate is responsible for research development of missile projects assigned to the Missile Center by BuAer and for aircraft maintenance.

In addition to commands and directorates, there are many military units and contractors on hand. Military units include a Marine Air Detachment which monitors projects of in-

terest to the Marine Corps, Air Development Squadron Four, and various other groups and units involved.

Scheduled launchings of the following approved programs includes:

Air-to-Air: *Sparrow III, Sidewinder, F-108/GAR-9.*

Air-to-Surface: *Bullpup, Corvus.*

Surface-to-Air: *Terrier, Hawk, Tartar, Nike-Zeus.*

Ballistic: *Thor, Atlas, Titan.*

Satellite: *Discoverer.*

In addition to these programs, both the Advanced Research Projects Agency and the National Aeronautics and Space Administration plan to use the facilities of the Pacific Missile Range in conducting their satellite and space vehicle programs. The field of space satellites is particularly important, for in a very short time these space vehicles will be providing new means of communications, navigation, surveillance, and intelligence in direct support of the Fleet and the other services.



PRIVATE JOE E. MANN IS TELEMETRY SHIP USED IN PMR TESTS



ANOTHER INSTRUMENTATION SHIP PMR USES IS THE KING COUNTY

# SUNDAY AT SEA ON THE MIDWAY



**SUNDAY** spells "holiday routine," and the best way to start off is with extra sleep.



**MIDWAY'S MEN** sing hymns of the church accompanied by the ship's orchestra. Sunday is "a day in which you worship God, rest, relax, forget your troubles and enjoy yourself."



**A VOLLEYBALL** tournament in which the various divisions participate, is held on Sunday.



**TWO MEMBERS** of the Midway's Boxing Team put on an exhibition for the 3500 men aboard.



**ON THE AIR** with music and news is one of the ways a Midway disc jockey spends Sunday.



**THE WORLD'S LARGEST** swimming pool, the Pacific Ocean, is a real drawing card on a Sunday afternoon. Other sailors are "spectator sports" who undoubtedly prefer a stroll on the deck.



**SWIM CALL** is sounded and over 1000 men go down the side for a swim in the Pacific.



# SKYHOOKING DAMAGED AIRCRAFT

**T**WO RECENT instances of salvage of downed aircraft under adverse conditions, reported by the Bureau of Aeronautics Maintenance Representative (BAMR) Western District, indicate there may be no such thing as an inaccessible area as long as there is an HR2S around to lend a hook.

In each case, salvage by conventional means was considered impossible. An HO4S had crashed 14 miles from China Lake in rugged, lava-strewn terrain. The other, an HUS, was lodged in a rocky box canyon near Twenty Nine Palms, California.

Enlisting the assistance of HMR-462 based at MCAS El Toro, BAMR employed an HR2S helo as a "skyhook" in airlifting the disabled aircraft to

HUS, CABLES ATTACHED, AWAITS HR2S LIFT



areas where conventional transportation was available.

With a reminder that such techniques have not been evaluated fully, BAMR points up the following procedures used in the recoveries:

- Determine from temperature, altitude, terrain, load, wind, etc., that recovery can be safely accomplished.

- Establish emergency procedures in case of engine, blade failure or fire.

- Maintain landing gear in the "down" position during recovery operations.

- Provide ground crew with suitable tight clothing, goggles, face masks, hard hats and other safety clothing. Hovering HR2S whips up 75-100 knot winds during hook-up operations.

- Provide radio communication between ground crew and HR2S crew.

- If air transit involves crossing vehicular traffic arteries, secure permission from civil authorities for airlift.

- Prior to take-off from home base, attach standard external cargo sling with a quick disconnect to HR2S.

- Remove rotor blades, fuel and other flammable liquids from disabled aircraft.

- Do not remove the engine unless the mounts are broken or the total load exceeds 6000 pounds.

- Close all openings in the disabled aircraft to reduce drag and minimize any tendency to sway.

- Discharge static electricity from the hovering aircraft with an insulating grounding device before commencing attachment.

- Maximum and minimum speeds and altitudes are discretionary. So far the "slow and low" system seems best.

LIFT OF HUS ENDS AT TWENTY NINE PALMS



# LET'S LOOK AT THE RECORD

## Transosonde Officer Lauded Pioneered the Experimental Unit

Ltjg. Richard C. Husted has been commended for his "outstanding performance of duty" as Officer in Charge of the U.S. Navy Transosonde Unit at MCAF IWAKUNI, Japan. The Letter of Commendation was signed by RAdm. Frederic S. Withington, Commander Naval Forces Japan, and presented to Lt. Husted by Capt. James B. Vredenburg, Chief of Staff. Attending the presentation was Cdr. Elbert W. Pate, OinC, Fleet Weather Facility, Yokosuka.

The letter pointed out that "the Transosonde Unit, under your direction, developed from an experimental



CAPT. VREDENBURGH, HUSTED, CDR. PATE

project to full operational status. The project was the first and only one of this type in the world." Valuable meteorological data were acquired by the station.

Ltjg. Husted headed the Transosonde unit from July 1957 to February 1959.

## Day Wins MIT Fellowship Will Get Ind. Management Degree

Leroy E. Day, head of the Controls and Inertial Guidance Division of the Laboratory Department, Test and Evaluation Directorate of the Pacific Missile Range at Point Mugu, has been awarded an Alfred P. Sloan Fellowship in Executive Development by Massachusetts Institute of Technology.

He was selected for a 12-month course in the fundamentals of industrial management, beginning in June. The course will lead to a M.A. degree in industrial management.

Fellowship candidates are selected

by their organizations for having demonstrated executive ability and marked promise for growth. The program at MIT is made possible by grants of the Alfred P. Sloan Foundation, Inc.



CHOSEN "Men of the Month" by VU-3 at Brown Field, V. E. Denslow (left) and J. R. Cherry, both AO2's, are treated to fancy living at world famous Desert Inn in Los Vegas. The Inn treats VU-3's outstanding men monthly.

## VF-124 Claims a Record 1026.1 F8U Hours Flown in Month

Fighter Squadron 124 claims the distinction of being the first Crusader squadron to fly more than 1000 hours in a month. Squadron pilots logged 1026.1 hours in March.

This figure accounts for slightly more than half the squadron's operations, however, since the unit's training department flew 946.1 hours in F9F-8T and TV-2 the same month.

VF-124, a CAG-12 unit, trains pilots and enlisted men in the Crusader and to conduct instrument training for pilots in other types of Naval aircraft.



IT'S BOBCAT vs. Cougar as Training Groups 203 and 213 at NAAS Chase Field, Beeville, Texas, race for superiority on their new "How Goes It" board. K. L. Riley, YN3, is shown as he brings the tally board up to date.



FIRST PILOTS to qualify for the Centurion Club aboard the Midway since her recommissioning are: Ltjg. A. G. Everett, Lt. J. W. Perry, Jr., Lt. R. E. Norman, Ltjg. J. M. Tallman, LCdr. G. M. Even, Ltjg. M. R. Varhalla.

## A Big Month at Whiting Flight Hour Total is Best Ever

The largest one-month accumulation of flight hours by Whiting Field since the phasing-in of the T-28's was made during March, according to Cdr. G. A. Hall, Training Director.

A total of 22,700 hours was chalked up, 814 hours better than the previous record set during March 1957. The new mark at Whiting Field was accomplished without a single accident.

## CVG-12 Proud of Total High Safety Total Made in March

Carrier Air Group Twelve, its squadrons based at NAS MOFFETT and NAS MIRAMAR, flew 5432 accident-free hours during the month of March. Aircraft flown included F8U, A4D, FJ, F11F, F3H, F9F-8 and TV.

The group is composed of VF-121, commanded by Cdr. J. M. Thomas; VF-124, Cdr. F. X. Timmes; VA-125, Cdr. F. E. Ward; and VA-126, Cdr. W. H. Anderson. Capt. R. H. Dale, commander of Carrier Air Group 12, attributed the group's success to professional attitude of all hands.

## Logs 1200th Safe Hour Instructor Never Had an Accident

Lt. William P. McDonnell has been commended for completing 1200 hours of accident-free flight instruction in the T-28 trainer at Whiting Field. He has also logged more than 300 accident-free hours instructing Naval Aviators in multi-engine aircraft and on radio-instrument flights.

Since joining the Navy as a NavCad in 1942, Lt. McDonnell has flown more than 4000 hours, and he has never been involved in an aircraft accident.



PBV CATALINA FLEW IN 'BLACK CAT' SQUADRON AT GUADALCANAL



NEEDLE-NOSED XF2Y-1 SEA DART, EXPERIMENTAL SEAPLANE FIGHTER

## 'HOLD AT NAS NORFOLK FOR

Here are a dozen random pictures of aircraft which are being held at Norfolk for ultimate display in the National Air Museum of the Smithsonian Institution. Their markings range from World War II to the present. Some earned everlasting fame in war, some in peace, and still others as first of their class. In all, Norfolk has received some 40 aircraft for holding until the Air Museum is completed in Washington. Other aircraft and related parts are stored at a dozen stations. Congress authorized the National Air Museum in 1946 and

P2V-1 NEPTUNE FLEW 11,235.6 MI. NONSTOP, PERTH TO COLUMBUS



SB2C HELLDIVER RAINED TONS OF DESTRUCTION ON ENEMY SHIPS

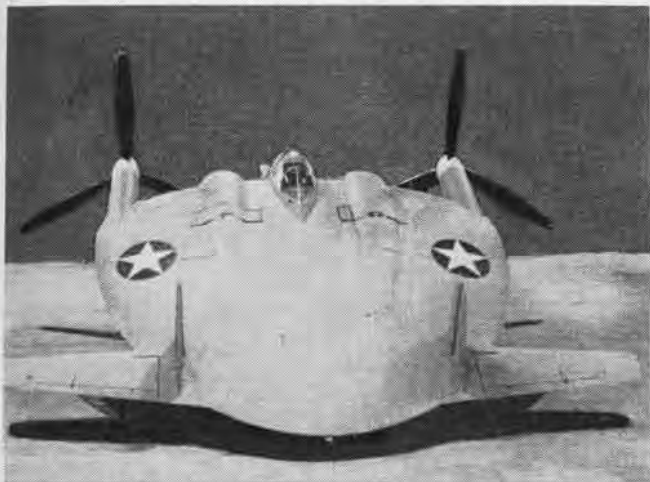


TBF-1 AVENGER EARNED PACIFIC WAR FAME AS A TORPEDO BOMBER

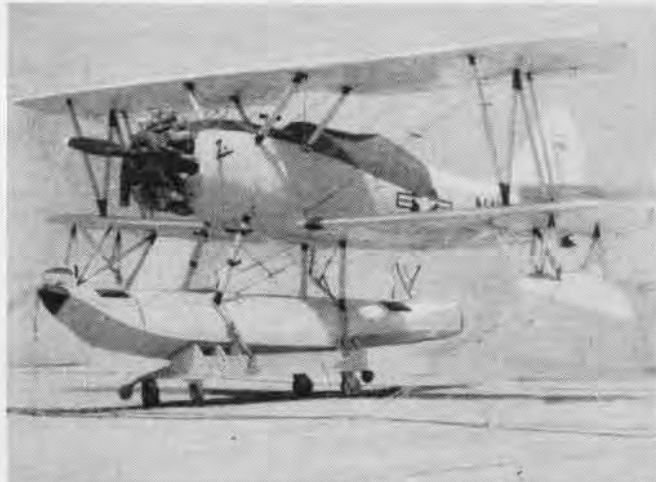


SBD-6 DAUNTLESS DIVE BOMBER WAS CARRIER WORK HORSE IN WW-II





V-173 WAS PROTOTYPE FOR XF5U-1 TO GET EXTREME SPEED RANGE



N3N YELLOW PERIL HELPED TRAIN THOUSANDS OF NAVAL AVIATORS

## THE NATIONAL AIR MUSEUM'

authorized in September the preliminary plans to be drawn for building a 500,000 sq .ft. building on the Mall, directly opposite the National Gallery of Art. The Museum already has some 150 aircraft, 200 engines and 350 models, including the Spirit of St. Louis, the NC-4, a Spad from WW-I and others of fame. Guidelines on which aircraft are considered appropriate for museum display may be found in BuAer Instruction 5722.1 of 9 April 1956. Latest acquisitions are F4B fighter and R4D which made first landing at the South Pole.

F4F WILDCAT WAS FIRST-LINE FIGHTER IN EARLY DAYS OF WW-II



F4U CORSAIR SERVED NAVY, MARINE FIGHTER PILOTS IN TWO WARS



FR-1 FIREBALL FIGHTER HAD BOTH CONVENTIONAL AND JET ENGINE



FJ-1 FURY ALL-JET FIGHTER WAS ORDERED BY THE NAVY IN 1945



# FIRM FOUNDATION FOR FLIGHT

**K**NOW THE USE of Plank formula? Function of a vapor separator? Concept of objective moral law? Theoretical Marxism? Origins of sea power? Principles of investment? Fleming's Left Hand Rule? Celestial Triangle?

Are you checked out on residual and parasite drag? How to survive on land and sea?

These are but a few of the subjects which are taught at one of the most remarkable educational institutions in the nation—the U. S. Naval School, Pre-Flight, located at NAS PENSACOLA, Florida. The school, under Capt. H. S. Jackson, provides initial training for Naval Aviation Cadets (NavCad), Aviation Officer Candidates (AOC), and Officer Indoctrinees.

Not too many years ago the prelude to a student's first flight was popularly portrayed as a brief and simple affair. Instructor and student met for the first time alongside the flying machine. The locations of wings, stick, throttle, engine, earth and sky having been pointed out, ground school was over and flight training commenced.

Today's candidate for wings—the Gold Wings of Naval Aviation—can't even draw his clothing allowance (it takes seven hours) in the time it may have taken his intrepid forebear to accomplish a complete check-out.

Sixteen weeks later, after he's "had the course" at Pre-Flight, the NavCad/AOC will be thoroughly and uniformly prepared for his introduction to a current flying machine.

Like his forebear, he can appreciate the fact that advancing the throttle will make the "fan" go around faster. Beyond that, he will be capable of explaining "why" in considerable detail.

He will be conversant with theories and functions attending propellers, superchargers, ignition and electrical systems. And since the paperwork propensity of Naval Aviation is not to be overlooked, he will be capable of executing the Naval Aircraft Flight Record (the yellow sheet) long before he makes his first flight.

The extraordinary mission of Pre-Flight's staff of 110 instructors is to mold not only a firm foundation for future man-machine relationship; but to produce a competent Naval officer in the four-month period of initial training. In the opinion of Cdr. W. L. Pack, the School's executive officer, the 720-hour NavCad/AOC syllabus designed to do this equals "two tough years" at a university.

From the moment a NavCad or AOC enters Pre-Flight, his life is an intensely busy affair. He may be an engineering undergraduate, a pre-med student or a major in animal hus-



bandry. If he is an AOC, he may be married. If he is, his wife will be given some pre-flight schooling.

Despite wide variance of educational backgrounds, all candidates have, upon entering, a number of things in common. All are in top physical condition, highly motivated, possess excellent flight aptitude ratings and are above average in intelligence.

Aside from these general screening factors established prior to entering Pensacola, a class of 35 candidates will represent an equal number of varying personalities, skills and backgrounds. For example, some swim well, others a little, and a few may even fear the water. The Pre-Flight curriculum is geared to impart a life-saving swimming ability to each of the aviation candidates.

A NavCad from a western state will find his life-long hobbies of hunting, fishing and camping will pay off in the survival phase of training. His roommate from downtown Manhattan will have a few problems in this area, but at the end of the course, each will have a thorough, useful knowledge of factors involved in survival on land.

In a matter of weeks a prodigious amount of necessary skills and information will have been developed so that each member of the class is on equal footing for his role as flight student and Naval officer.

How this footing is engineered in a relatively short period of time is best explained by a broad look at the Pre-Flight curriculum. Based on many years of experience, it is revised repeatedly as new techniques or equipment are adopted for operational use. The 11 phases of the course touch on or cover all of the information pertinent to a candidate's future status as a combat aviator and officer.

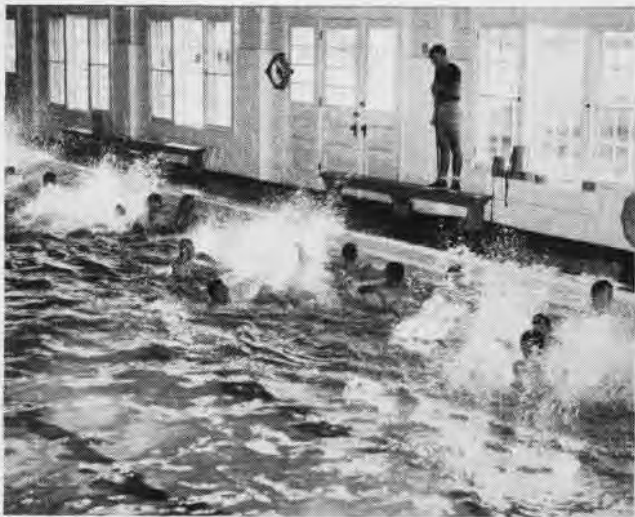
The school regards officer training as its primary mission. To this end some 277 hours are committed to a thorough outlay of the principles and practice of leadership, and military training, and to an extensive coverage of Naval Orientation. These include Navy Department Organization, Foundations of National Power, Introduction to Naval Aviation, Military Courtesy and Etiquette, Naval History, Personal Finance management, and the Uniform Code of Military Justice.

While most of the aviation-minded students reportedly consider these as "unnecessary," no successful graduate of Pre-Flight training has ever been observed to salute with his left hand or to call a "Charley Noble" a galley smokestack.

Preparation for flight training and its related aspects, such as survival and navigation, are given heavy treat-







SWIM PROGRAM IS DESIGNED TO MAKE CADETS AT HOME AT SEA



MUSCLES ARE STRENGTHENED IN 'UP AND OVER' OBSTACLE COURSE



PARACHUTE TRAINING: TRAMPOLINE TEACHES COORDINATION



STUDENTS GET THE WORD ON HOW TO RIDE THE DILBERT DUNKER



LOW PRESSURE CHAMBER TIME SHOWS LACK OF OXYGEN EFFECT



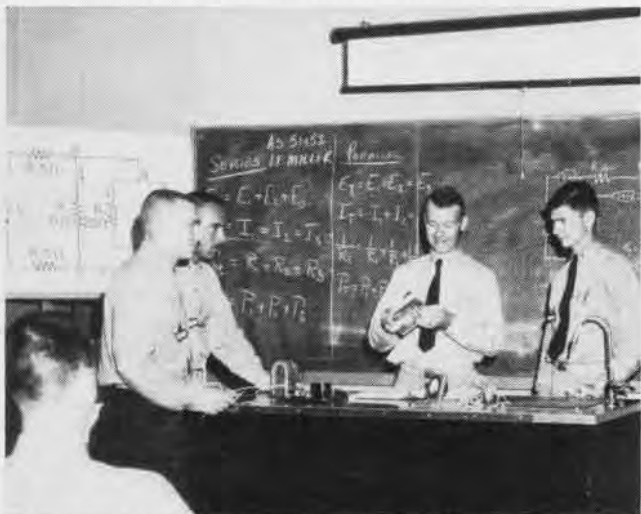
SURVIVAL TRAINING INCLUDES LEARNING TO PREPARE CAMP SITE



VISUAL AIDS PLAY A BIG PART IN NAVY PRE-FLIGHT TRAINING



TAPE RECORDERS ARE ONE DEVICE USED TO BRIEF INSTRUCTORS



ELECTRICAL CIRCUITS TAUGHT BY USE OF CHARTS AND MODELS



YAW, PITCH AND ROLL ARE EXPLAINED IN PRINCIPLES OF FLIGHT



READING WAS SPEEDED UP TO ENABLE STUDENTS TO COVER GROUND



SIMULATED PERSONNEL PROBLEMS SHOW LEADERSHIP PRINCIPLES

ment for obvious reasons. All students derive a sound, useful understanding of piston and jet power plants, aerodynamics, aviation terminology, and principles of flight.

The aviation science course contains elementary and practical aviation physiology. The mathematics section of this course surveys basic arithmetic, algebra, slide rule, trigonometric function through graphs and vectors and an introduction to calculus. About one-fourth of the students entering Pre-Flight have had little training in math but few fail this course. Practical aviation physiology, which covers night vision and oxygen indoctrination, includes a 20,000-foot low pressure chamber run.

In 31 hours of engineering taught by Naval Aviators and enlisted specialists, students run the gamut from "verbal building" of lubrication and fuel systems to the proper execution of yellow sheets. Other portions of the vital phase deal with major aircraft systems. Besides theory of operation of propellers, superchargers and electrical systems, students operate engines in test stands and gain further knowledge by "trouble shooting" engines and systems.

Concurrent with classroom endeavours, the Pre-Flight candidate flexes his muscles daily in an unusual series of exercises created to prepare him for emergency situations. Parachute techniques require a student to develop muscular coordination and balance—both necessary in making a safe landing in a chute. Head and hand stands, the trampoline and rope climbs are some of the exercises devised to enhance these capabilities. Each student is also given two side and six front falls on a parachute swing landing trainer, a device which simulates most conditions of sharp contact with the ground.

The possible aftermath of emergency escape—survival on sea or land—is carefully treated and fully explored. Skill and confidence is imparted by subjecting each student to rigorous conditioning. Each student is required to qualify in exacting swimming tests. The use of sea survival equipment is explained and practiced.

Land survival incorporates classroom demonstration of problems followed by a three-day field trip in which the students employ techniques of land navigation, basic survival, food procurement and first aid.

A necessary adjunct to this phase is personal defense. Some 50 hours are devoted to wrestling and hand-to-hand combat instruction. Students are taught to cope with club, knife or revolver attacks.

Inasmuch as air navigation is an absolute necessity, considerably more than a foundation is laid with regard to this science at Pre-Flight. The uses of charts, maps, computers and various types of compasses, in addition to vector analysis, are examples of instruction methods and devices in the course.



A modern planetarium is used in the celestial phase. Here students are taught to transfer celestial triangles to simulated heavens. At the conclusion of the 33-hour course, a student who may have had difficulty pinpointing himself in the big city, by use of hour angles, true azimuth, sight reduction tables and the Air Almanac, can navigate unerringly to the ends of the earth and back.

The volume and nature of the pressure curriculum at one time presented a perplexing problem. Its solution is still regarded by educators as a brilliant feat in the training field.

Faced with a rising percentage of cadet failures in Pre-Flight, school officials learned that 80% of the failing cadets claimed the number and complexity of the academic subjects were too great in relation to the meager study time allotted. Certainly this posed a problem. A longer period of Pre-Flight could not be the answer because there was a lack of facilities and, of course, funds. Nor was it wise to reduce the curriculum in terms of subject matter, for nothing has been included that was not vital to a Naval Aviator and officer. Downgrading the requirements was unacceptable, for partial learning is a dangerous thing, and never more so than in the field of aviation.

Thus the course, "Study Skills," came into being. Called "speedy reading" by cadets, it takes them back to school in terms of reading, shedding bad habits and learning new ones to enable them to read faster and understand better.

The course requires only 23 hours of attendance but it doubles the comprehension rate of the poor or fair reader. Developed with the help of Professor Samuel Renshaw of Ohio State University, it has decreased the number of failing students. The present reading comprehension rate record is an incredible 5,777 words per minute with 70% comprehension. As a means of comparison, an average reader without such special training has a reading rate of about 288 words per minute.

One of the most pleasant lecture/demonstration features of Pre-Flight is scheduled periodically for the wives of students who have come to Pensacola. Inaugurated in 1956, the "Wives Indoctrination Cruise" offers an inside look at the school's facilities and teaching methods. This serves to dispel any fears or doubts associated with aviation training and military life.

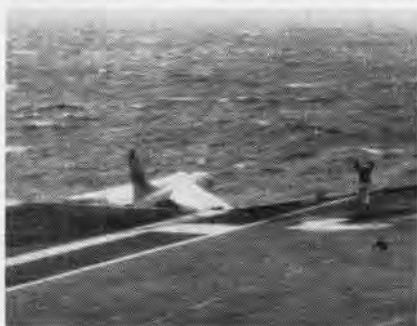
Untold in this article are the separate stories of hundreds of Naval Aviators whose lives have been saved and professional abilities immeasurably advanced by the "two tough years" of instruction they received at the U.S. Naval School, Pre-Flight. Each week a new class reports and the four month process begins anew. Plank's Formula, Fleming's Left Hand Rule and the celestial triangle—each becomes a vital block in Naval Aviation's building of a firm foundation for flight.



# EASY DOES IT!

## E-E-E-EASY DOES IT!

### DEASY DID IT!



VF-142 submits this film sequence of an accident that didn't happen. Aboard the USS *Ranger*, LCdr. Charles J. Deasy, in an F8U-1 *Crusader*, makes a normal approach and landing but picks up two wires. In short order, his tailhook point parts from its shank and the aircraft, with very little deck left and 85 knots of airspeed, continues run. Pilot "hits the burner" which lights off as F8U falls off angle deck and settles out of sight. Successful bolter came within inches of water, kicking up spray seen in last view.



## Ejection Seat Described

### VMT-1 Gets Martin Baker Seats

First Lt. Albert L. Sanders was describing the operation of the Martin-Baker Mark A-5 ejection seat to student pilots of Marine Training Squadron One, the first unit of the Second Marine Aircraft Wing to receive aircraft equipped with the new seat.

"The pilot pulls the overhead handle, bringing a curtain down in front of his face . . .

"Suddenly there's a small explosion.

"The pilot shoots from the jet and catapults in a zooming arc more than 100 feet in the air. As he rises, he is separated from his seat.

"Two small umbrella-size parachutes billow forth and fill with air, a larger parachute blossoms, and the pilot floats safely to earth.

"Another life is saved by the Martin-Baker Mark A-5 ejection seat."

VMT-1 now has four F9F-8T *Cougar* jets, each equipped with two of the devices that literally "think" for themselves. Since January, Lt. Sanders has given classroom instruction on the new seat to all unit instructors and most of the students prior to check-outs.

## First Talos Fired at Sea

### Shot Runs 'Hot, True and Normal'

The first *Talos* supersonic surface-to-air missile ever shot at sea has been launched from USS *Galveston*.

The *Talos* booster was reported to have sent its pay load aloft trailing a bright orange flame; the ramjet engine took over on schedule, and the shot was "hot, straight and normal."

*Talos* was made by Bendix under a BuOrd contract at the Naval Industrial Reserve Ordnance Plant, Mishawaka, Ind., and the ramjet fuel system at Bendix Products Division, South Bend.

# RESERVES PLAY DUAL ROLE



**FIRE CAPTAIN** James Hawkins at NAS Anacostia, right, instructs NARTU stationkeepers in the technique of backing up a nozzleman.



**LAST OF** the famed World War II K-ships, the K-43, made its final flight from NAS Lakehurst before retirement from active service.

**P**UBLIC RELATIONS is an art. Most members of the Naval Air Reserve are keenly aware of the importance of practicing it. Aboard and ashore, stationkeepers and Weekend Warriors seek ways of putting their best foot forward, thereby bringing credit to the whole Naval Service. Here's how:

## Anacostia Men Wear Two Hats

Five ship's company men at NARTU ANACOSTIA are volunteer members of fire and rescue squads in their local communities, which are scattered throughout the Washington, D. C., area. When the alarm sounds at home in their off-duty time, they don running coats, boots and firemen's helmets.

Capt. James A. Masterson, Commanding Officer, commended the men,

and arranged for them to get pointers from the Fire Chief at the air station. In the picture, above, left to right are seen J. C. Fletcher, J. F. Morrissey, both AD3; P. E. Canole, PN1; K. E. Downs, RM3; and T. J. Phillips, SK3.

## Actress Given Wings of Gold

Miss Janet Leigh became a member of NAS NEW ORLEANS' HS-821. LCdr. D. L. Whittaker, skipper, gave her Navy wings and a "commission." She then inspected the squadron, on training duty at Key West. After the ceremonies she took a ride in an HSS.

## Good Citizen, Good Warrior

Treasurer of the local Navy League, and member of the Birmingham Exchange Club, Cdr. T. H. Moriarty has also been designated the "bravest" war-

rior at NAS ATLANTA, by Capt. R. E. Steiler, the commanding officer.

Cdr. Moriarty is the administrative officer of VP-673. He is the only one of 1500 Reservists who has not missed a weekend drill or an annual two-weeks training cruise in 10 years.

## Yeoman Teaches Water Safety

During liberty hours, Bob Hunsberger, YN2, of Willow Grove is a volunteer Life Saving Instructor for the Lower Bucks County Red Cross Chapter. He has been teaching water safety since 1945.

On a continuing basis, Bob helps handicapped children, using swimming as a form of physical therapy. His sympathetic guidance has often enabled them to gain the use of a limb.



**JANET LEIGH** dons bard hat as honorary member of HS-821 during cruise at NAS Key West.



**BRAVEST** Warrior of them all, Cdr. Moriarty, is congratulated by Capt. Steiler, the C.O.



**WILLOW GROVE** stationkeeper, Bob Hunsberger, YN2, teaches water safety on time off.

# KALEIDOSCOPE OF OAKLAND RESERVES



**READY TO LOAD** oxygen on a VF-879 Banshee are: Cuebas, Amsbaugh, Chief Williams, Schommer, Chief Bedard. Kibbe checks the cockpit.



**LT. ROBERT MUNN, LCdr. Dean Thomas, Cdr. Friedenbach, LCdr. Jack Smith, LCdr. Ted Martin, Lt. Peter Hall** are set for training hop.

**N**ews from NAS OAKLAND is varied this month. The composite picture gives a good sampling of the training activities of the entire Naval Air Reserve. Today, more than ever before, it is essential that the Weekend Warriors be ready for active duty at a moment's notice.

Fighter Squadron 879, the jet plank-owners of Oakland, completed two weeks active duty aboard the home station. Flying F2H-3 *Banshees* and TV-2 trainers, the 21 pilots, led by Cdr. Ken Friedenbach, amassed about 600 flight

hours. Sorties were made, often under IFR conditions, to bases all over the western half of the country. The exceptional job done by the maintenance crews kept the planes flying.

For the second consecutive year, electronics personnel spent two days at the Naval Air Reserve Electronics Training Unit, Los Alamitos. The 30 officers and chiefs observed the latest electronic equipment used in ASW in order to train their crewmen.

HS-871's third cruise at NAAS REAM FIELD was distinctly different

this year; it was the first since redesignation as an ASW unit. HS-8 went all out to help the Reservists. Pilots and sonarmen alternated with them in all phases of the maneuvers which included operations with submarines. Between flights, members of HS-871 attended ground school courses.

Stationkeepers came in for their share of training, too. LCdr. G. H. Goldstein, Asst. Supply Officer, arranged a tour of USS *Ticonderoga* for 10 AK's and SK's. It aided them in their jobs and in their training duties.



**ELECTRONICS** Officers representing each Reserve Squadron at NAS Oakland pose for group photograph at the Naval Air Reserve Elec-

tronics Training Unit at NAS Los Alamitos. For two days they boned up on latest ASW gear and techniques used to train crewmen.



**EFFORTS** of men like Ivan L. Reese, AD2, provide HS-871 with 98% aircraft availability.



**RADM. C. W. KING**, ASW-87, is piped ashore after retirement rites ending 41-year career.



**SKIPPER** computes fuel load with HS-871 exec, LCdr. Hal Beals and Connelly Baker, left.



**BEFORE MANEUVERS**, pilots and crewmen of HS-871 check operating area. The Reservists flew HSS-1 copters and trained with HS-8.



**NEWEST TECHNIQUES** of ASW radar interpretation are demonstrated for Oakland electronics personnel during tour of NARETU LosAl.



**HS-871 COMMANDING** Officer, LCdr. J. L. Henry (center) goes over flight operations after ASW exercises at sea, while at Ream Field.



**AIR CREWMAN'S** wings are pinned on Dick Pederson, Chief Jim Miller and Harold Daybuff of VP-876 by their CO, Cdr. F. E. Evans.

# VA-44 HORNETS BUZZ JAX SKIES



ENS. PATRICK (R) CONFERS WITH INSTRUCTOR BEFORE MAKING PRACTICE BOMB DROP

**Y**OUR SPEED is 400 mph at treetop level. The plane demands your constant attention. You must keep it straight and level at all times. In addition, you have to check the map on your knee at regular intervals.

If that isn't enough to keep you busy, you have the important task of watching the ground for check points which guide you on a large loop back to your starting point. They may be a clump of trees, a crossroads or a filling station. As each check point clicks quickly by, you begin wondering if you can ever find your way back to the base by way of the fiendishly planned route you are taking.

Sound difficult? Then obviously you don't belong to Cdr. C. A. McDougal's Attack Squadron 44 at NAS JACKSONVILLE. For to the officers and men of that outfit, "sand blower" missions are routine affairs and only a small part of the training program run by the outfit for the fleet.

Until January 1958 VA-44 was just another jet attack squadron in the Atlantic Fleet. Its mission was to be ready to board ship and provide Naval air striking power whenever the need should arise.

But in January 1958 VA-44 became part of Carrier Air Group Four. Many changes have been made at the hangar which houses the *Hornets'* aircraft.

By Bob Obl, JOC

Now instead of flying one type of plane the blue-star-studded tail markings of 44 can be seen on five types of aircraft; the A4D *Skyhawk*, the AD *Skyraider*, the TV *Shooting Star*, the T-28 *Trojan* and the F9F-8T *Cougar*.

Ensign Meredith Patrick came to VA-44 fresh out of flight school. He had his wings, but he hadn't been near a combat aircraft. Now he is about ready to depart VA-44 and join another jet attack squadron with approximately 80 hours of flying time in the A4D under his belt, long missions behind him, and a thorough knowledge of what he can do in the A4D.

For Ens. Patrick, the first few flights in the *Skyhawk* were uncomplicated;



ANOTHER COMPLETED FLIGHT CHECKED OFF

take-off, fly around a little, and get used to the flight characteristics of the aircraft. The next step was formation flying with other students and an instructor.

Up to a point it was all preparation, but then came the time to get down to the business at hand for an aviator in attack planes—the deadly, serious business of delivering a weapon to the target.

The A4D was designed with a special purpose in mind, and it fills the bill. The purpose is low-level bombing attacks and with that goes the problem of how to deliver the bomb. Conventional weapons cause no worry, but the tremendous blast caused by nuclear weapons occasioned the birth of a special method of delivery.

Over-the-shoulder bombing is the Navy's answer to the problem of getting the bomb to the target and the plane safely away. The pilot brings his plane in low and fast, then at a certain point he stands it on its tailpipe and climbs straight up. At the peak of his climb the weapon is released and the pilot slips his plane over and out, heading for home as fast as the jet will carry him and leaving the bomb behind.



HE BOARDS A4D SKYHAWK TO FLY MISSION

The bomb continues up for a short period, then settles to the target.

Proof of VA-44's effectiveness can be found in letters coming back from fleet outfits, commenting on the well-trained pilots. A look at the record, showing the number of hours flown is sure to convince even the most skeptical that the *Hornets* are really buzzing.





**VADM. F. N. KIVETTE**, Commander U. S. Seventh Fleet, was presented a painting of the Grumman TF he uses on flights to task groups at sea. The presentation was made aboard USS *Roebester* by the aircraft's flight crew.

### Additional T2J-1 Contract Service Ceiling of 40,000+ Feet

A new \$19.3-million production contract has been made with North American Aviation, Inc., Columbus, Ohio, for T2J-1 airplanes.

This basic jet trainer will provide the training command with an aircraft capable of training students in instrument work, gunnery, formation and tactics, carrier pilot qualifications and other diversified operations.

Top speed is about 500 miles per hour (429 knots). Its landing speed is only 71 knots. It is equipped with a rocket propelled emergency escape system by which pilots can safely eject at ground level or at altitude.

A feature of the T2J-1 is its equipment bays which are outside the basic fuselage structure. Major system components are mounted on shelves in these bays. Large, quick-opening doors provide waist level access for inspection and servicing, and permit complete exposure of the engine for ease of maintenance or replacement.

Six T2J-1's have been delivered to the Navy and are undergoing extensive tests at NATC PATUXENT RIVER, Md. prior to quantity delivery to Naval Air Basic Training Command this summer.

### ASO Reps Attend School Get HSS Weapons Familiarization

Twenty employees from the operations divisions of the Aviation Supply Office in Philadelphia have completed a training course at Sikorsky. The course on Weapons Familiarization was conducted on the new HSS-2.

ASO personnel who took the course will be responsible for provisioning the HSS-2, which is the first helicopter to be produced under the Navy's new

weapons system concept now in force.

In addition to designing and fabricating the airframe, Sikorsky was given responsibility for developing, procuring, and testing major installations in the aircraft such as sonar, electronic devices, navigational aids and support equipment.

Under previous practice, the Navy developed and tested much of this equipment, then furnished it to the airframe manufacturer for incorporation.

### Vought Tests Nose Cones Re-entry Temperatures Hit 3500°

New types of space vehicle nose cones, designed to withstand terrific heat generated by re-entry into the earth's atmosphere, are being tested by Chance Vought.

Located beside the high speed wind tunnel just south of the Dallas plant, the ram jet test facility uses the searing 3500-degree heat in certain tests.

Nose cones made of ceramics or coated metals are mounted on a water-cooled stinger and moved into the flaming exhaust of the engine. They can be put as close as three inches from its orifice.

Operators watch the white-hot specimens through shatterproof windows and over closed-circuit television.

Effects of extreme temperature and oxidation on the nose cones are studied during the test run. Afterwards temperatures and pressures compiled by automatic recording machines are analyzed to see how the material withstood its bath of fire.

The burner uses 20 pounds of air a second from huge storage tanks of the high speed wind tunnel. Oxygen is injected into the engine along with JP-4 jet fuel and then ignited for the tests.



**BGEN. R. C. MANGRUM**, Asst. Commanding General of MAW-1 visits with two of his former flight students at NAF Oppama, Col. John F. Kinney, and LCol. Robert P. Keller, who lead Marine Helicopter Transport Group 16.

### NROTC Men Visit Corpus Get Three-Day Air Indoctrination

More than 200 NROTC midshipmen from six of the nation's leading universities received first-hand knowledge of advanced training during three-day Naval Aviation Indoctrination field trips at Corpus Christi.

The tours were intended to provide orientation for contract midshipmen who missed the opportunity for a formalized summer cruise at a Naval Aviation activity. The Chief of Naval Operations urged NROTC unit commanders to encourage their students to visit NAS CORPUS CHRISTI and other stations as a means of stimulating interest in Naval Aviation as well as enhancing their professional knowledge.

Students received lectures in flight physiology and aerodynamics; checked out in the ejection trainer; observed tower operations and FCLP's. At NAAS KINGSVILLE they were introduced to jet training and actually used the simulator. Highlight of the trip for many was a visit to USS *Antietam*.



**J-71 JET ENGINE** with afterburner is fired on a portable testing unit at NAF Oppama, Japan. Test was held before new engine was installed in jet plane sent to Oppama for repairs. Enlisted men from VF-64, aboard the *Midway*, came ashore to assist in the engine's test firing.

## Flight Gloves Hazardous ASO Announces Disposition Plans

Brown summer leather flight gloves are considered a hazard to flight safety and are not to be issued to pilots, according to the Naval Aviation Safety Center. Accordingly, the Aviation Supply Office, Philadelphia, Pa., has ruled that brown gloves will be issued to ground personnel and to non-pilot aircrewmembers.

Unsafe flight conditions have arisen from snagging, inadvertent actuation of switches or levers, and poor feel leading to improper or incomplete operation of a control. The practice of wearing the gloves inside out to minimize the stain problems increases the snag hazard by exposing untrimmed seams of the gloves.

The following stock numbers of brown colored gloves apply: RF8415-268-7848 (through 7854)-LF50, sizes 6½-11. Only cream colored gloves are to be issued to pilots. These stock numbers apply: RF8415-579-2853 (through 2859)-LF50, sizes 6½ through 11.

## HU-1 Has Saved Hundreds Total Men Rescued now over 800

Helicopter Utility Squadron One recently boosted its total rescues to 809 when Unit 19, aboard the USS *Bon Homme Richard*, saved three men.

The successful rescues were completed within nine minutes after an AD-5N crashed into rough seas while landing. Utilizing two HUP-2 helicopters, Ltjg. Jack C. Thorpe and Jack Wheat, AM3, plucked the pilot, Ltjg. J. L. Jolin, and one of the crewmen, G. M. Newman, AT3, from the choppy seas.

The second helicopter, flown by Ltjg. David R. Murphy with Bruce E. Lewin, AN, crewman, picked up Delos H. Jacobs, AO3, AD's third crewman.

## Missile Sub to be Launched Scheduled for Operation in 1960

The Navy's first fleet ballistic missile submarine, the *George Washington*, SSB(N)-598, is scheduled for launching 9 June at the Electric Boat Company, Groton, Conn.

The nuclear-powered submarine is 380 feet long, about 5400 tons light and 6700 tons submerged. It has vertical tubes for firing the solid-fueled *Polaris* missiles from the ocean depths or on the surface. It will be complemented by a torpedo-firing system for attacking surface ships or enemy submarines. The huge missile sub will be equipped with SINS (Ships Inertial Navigation System).

The *George Washington* is scheduled to be operational in 1960 when the *Polaris* will also become operational.

## Scouts Visit Brunswick Air Station is Site of Camporee

Hundreds of Boy Scouts, including 50 from Canada, held a three-day camporee aboard NAS BRUNSWICK, Maine. A complete schedule was arranged by Lt. John Wagner, Down East District Camping and Activities Chairman. He was assisted by Mr. William Lockwood, scout field executive; Ltjg. Joseph S. Bouchard and John Eachus, TDC.

The Scouts toured the air station, witnessed helicopter-rescue and fire-fighting demonstrations, and visited the survival training unit. The camporee ended with the traditional competitive games between the Canadians and the Down East District Boy Scouts.

## Bay Area Safety Increases Fatal Accidents Down 33 Percent

Navy air units based in the Bay area are piling up an enviable safety record for the current fiscal year which began July 1958. The number of fatal aircraft accidents was reduced from 15 to 10, a drop of 33 percent. The total number of accidents was cut 54 percent.

The record is being made by units operating out of Alameda, Moffett Field and aboard aircraft carriers under the direction of RAdm. M. E. Arnold, Commander Fleet Air Alameda.



FROM WIND TUNNEL to actual flight at NAS Moffett Field is case of Ryan's experimental VTOL-STOL Vertiplane, which has made its first flight. The unusual aircraft, developed under joint Army-Navy program, was piloted by Ryan test pilot, Peter F. Girard. Wind tunnel view in Ames Research Center, National Aeronautics and Space Admin-



stration, shows flaps in fully deflected position. Prop slipstream is bent downward by flaps to provide lifting force which allows Vertiplane to take off vertically or hover in flight. The aircraft, which flew at altitudes in excess of 5500 feet and speeds up to 100 knots, is powered by a single Lycoming T-53 gas turbine engine.

## T-28 'Trojan' Becomes 'Zero' Used for 'Battle of Coral Sea'

Capt. E. V. Wedell, skipper of All Weather Attack Squadron 35, had a new mission recently: strafe and bomb an American submarine. It was simulated, of course.

During the filming of "The Battle of the Coral Sea," the producers needed to show a Japanese plane in action. Since the T-28 *Trojan* has lines not wholly unlike those of the WW II *Zero*, "meatballs" were water-colored on the wings and fuselage by Columbia's technicians and all was ready for camera action.

Capt. Wedell found that piloting the made-up aircraft brought back some not-too-pleasant memories. He was attached to the USS *Wasp* when she was sunk by a Japanese submarine during the Battle of the Coral Sea.



## New Contract to Grumman Twin-Jet Attack Plane Ordered

A cost-plus-incentive-fee contract totaling \$101,701,000 has been awarded to Grumman Aircraft Engineering Corporation for a new carrier-based Navy jet attack plane. The Navy contract includes the development and production of the A2F-1.

The A2F-1 contract has been negotiated with incentive provisions which increase or decrease the contractor's profit on the basis of the aircraft's actual over-all performance and the contractor's control of costs.

Assistant Secretary of the Navy for Materiel Fred A. Bantz said, "These incentive arrangements will encourage contractors to improve aircraft performance and make early deliveries, while still controlling costs, because these contracts give manufacturers an opportunity to increase their profits.



**THE BIG STEP** from prop to jet is taken by Capt. George Fritschi of Marine Attack Squadron 324 as the unit trades its piston-driven AD-6 Skyraiders for new jet-powered A4D Skyhawks at MCAS Cherry Point, N. C. Commanded by LCol. P. F. Avant, Jr., VMA-324 is the last squadron in the Marine Corps' tactical air arm in the United States to make this transition. The remaining "prop" attack squadron in the Marine Corps is VMA-331, now based in the Far East.

"Both the Navy and Grumman stand to gain," he said. "If specific performance objectives are exceeded and costs are well controlled, the Navy will receive an advanced aircraft more quickly than in the past, and at a lower price. Grumman in turn receives additional profit dollars for its concentrated engineering and management effort."

The yet unnamed A2F-1 will be powered by two turbojet engines and manned by a crew of two. It has been designed for high and low altitudes.

## Firm Enters Polaris Field Contracted to Develop Standards

Chance Vought Aircraft has been awarded a contract to develop a system of standards in the fields of quality control and reliability for the *Polaris* Fleet Ballistic Missile program.

CVA was one of three firms asked to submit bids after BUORD made an extensive survey of quality control and reliability systems in use at numerous major aircraft firms.

BUORD officials said the Chance Vought program is necessary because of the diversity of the *Polaris* missile weapon system and the need for ob-

taining maximum reliability as rapidly as possible.

The standards will establish minimum quality control and reliability system requirements for each of the contractors concerned with the *Polaris*.

## Talos Money is Obligated Contracts Amount to \$41-million

*Talos* guided missile contracts totaling more than \$41-million have been awarded Bendix Aviation Corporation by the Navy. One contract, for approximately \$28.3-million, is for production of *Talos* missiles at the Naval Industrial Reserve Ordnance Plant at Mishawaka, Indiana.

Two other contracts, amounting to more than \$12.9-million, are for *Talos* missile engineering and procurement of prototype missiles.

*Talos* is the Navy's longest ranged sea-to-air weapon. It is guided by an electronic brain. When it gets within lethal range, a proximity fuse detonates the warhead.

*Talos* can destroy supersonic and subsonic targets. It will be effective against enemy planes armed with air-to-surface missiles and it can be used against sea or shore targets.

# F8U-2 SIMULATOR UNVEILED

**S**IMULATORS get bigger, better, and costlier—but save more dollars than they cost in reduced training expenses, in crashes which won't happen and are priceless in terms of pilots who won't get killed.

This appraisal, made by Capt. G. S. James, Director, Aviation Training Division, CNO, referred to the Navy's \$850,000 F8U-2 Aircraft Weapons Sys-



MOBILITY, ECONOMY IN 30-TON PACKAGE

tem Trainer displayed recently in the Pentagon.

The trainer, developed under direction of the Naval Training Device Center, was manufactured by Link Aviation, Inc.

Two of the F8U-2 trainers have been procured by the Navy. They will be located at NAS MOFFETT FIELD, California, and NAS CECIL FIELD, Jacksonville, Florida. Each trainer is housed in two 40 foot trailers, one containing the trainee and instructor compartments and the other housing the electronic computing and simulation equipment. This complete trailerizing affords maximum mobility and economy.

Besides realistic presentation of such environmental effects as lightning, static and clouds, the new simulator will give the trainee pilot the sensation of actual aircraft motion. A suspension type mounting allows rotation of the cockpit in both pitch and roll. Each physical motion of the cockpit is coordinated with instrumentation, and cockpit motion response from movement of the stick allows the pilot to correct for rough air. Buffet simulation is also felt through cockpit motion and is introduced as the simulation conditions of flight reach stall, or from "G" effects at high Mach.

In addition to flight simulation for



CAPT. JAMES GETS F8U SIMULATOR CHECK

transition training, the pilot can fly a complete tactical mission. The radar scope can be activated to present one or more targets for his evaluation and attack.

Provisions have been made for pilot use of a full pressure suit with trainer equipment furnishing all of the "realistic sensations" a pilot may experience when the suit is activated during high altitude operations.

Cost of operating the F8U simulator is approximately \$3.50 per hour compared to an estimated hourly operating cost of \$125 for the actual aircraft. From a safety standpoint, savings in lives and dollars are inestimable.

Other obvious advantages are the effectiveness (and realism) of pilot indoctrination prior to first flight in a new type, and the round-the-clock availability of the trainer.

A new feature of the F8U simulator records pilot errors resulting in no-risk "crashes" which may be reviewed by pilot and instructor.

Fleet use of the F8U-2 aircraft is now expected to begin late in 1959.

## Off a Little Spanish Town Raiders Rue Randolph Recovery

War—even practice versions of it—leads to sad plights and misadventures. Take the case of three "enemy" pilots who felt the slings and arrows and outraged paint brushes of the mighty *Randolph* recently.

The big attack carrier was patrolling her area somewhere off the Spanish coast hunting "enemy" ships and aircraft.

It was two hours until sunset and activity was at a minimum. On the flight deck, the only discernible sounds

were the roaring howl of the sea, and the creaking of the ship as it lumbered from side to side.

Suddenly, three "enemy" planes were spotted coming in at 2000 feet off the port quarter. Immediately, the word was given to prepare for their arrival, and in a few moments, the first of the planes came hurtling down the flight deck. In a moment, two Marine sentries raced across the deck and "captured" the pilot. Subsequently, the other aircraft landed, and their pilots were apprehended also.

This combat scene occurred recently while the *Randolph* was engaged in *Operation Big Deal*, a fleet tactical operation involving the major vessels of the Sixth Fleet. The *Randolph* and the USS *Intrepid* (CVA-11) were listed as opponents, each using her battle prowess attempting to outdo the other.

In the course of an aircraft reconnaissance mission, three A4D *Skyhawks* of the *Intrepid* found themselves far from their home base and running low on fuel. The only alternative was to land on the *Randolph* which was in the area.

In suffering the consequences of "prisoner of war," the three pilots had their planes subjected to an "old Naval Aviation" custom. Because they landed on the "wrong" ship, the A4D's were smeared with *Randolph* slogans and satirical phrases—all with the compliments of the flight deck crew.

After dinner in the wardroom, the VA-66 contingent was quartered for the night; they departed at 0930 the next morning for the *Intrepid* where they were given a warmer welcome, and their planes reverted back to their original condition.

The *Randolph* has returned to the United States after a six-month tour of duty with the Sixth Fleet.

## Three Students Fly Tiger Record Made at NAAS Kingsville

Pilot training took an important step forward in March as three Navy men became the first student pilots to pilot an afterburner-equipped jet.

The students were 2nd Lt. Jim Ellis, Ltjgs. Gunnar Jenson and Gene Conner, NAAS KINGSVILLE. Each pilot was accompanied by another plane flown by an experienced instructor.

Aircraft used were high performance F11F *Tigers* belonging to ATU-222.

## VF-124 Adopts 2 Orphans Officers and Men Become 'Parents'

Two orphaned children, a boy and a girl, one in Europe and the other in the Far East, are about to receive the surprise of their lives when they discover that they have been "adopted" by the 650 officers and men of Fighter Squadron 124, Moffett Field's "Crusader College."

Through the Foster Parents' Plan, a non-profit, non-sectarian, government approved relief organization, the squadron has agreed to provide food, clothing and a small cash grant for each child monthly.

The squadron indicated its overwhelming support for the idea. Every division indicated its approval, and the money is coming in for the children.



**TARGET DRONE** recovered from sea by helicopter of HU-2 is returned to deck of USS Leyte. Crewman was lowered into water from copter to cut away parachute and attach hoist cable directly to the drone's parachute harness.

## VMF-232 Gets Crusaders Squadron Formerly Flew FJ Furies

VMF-232, based at MCAS KANEHOE BAY, has received FSU-1 Crusaders to replace the FJ-4 Furies the squadron has flown for the past two years.

The first three of 14 arrived in Hawaii by ship early in March. Eleven others arrived later in the month.

In the past two years, the *Red Devils* of VMF-232 have flown more than 20,000 hours in *Furies*. The squadron was the first element of Marine Aircraft Group 13 to be moved to Japan last fall for temporary duty at NAS ATSUGI. It returned to Kaneohe Bay aboard the carrier *Ticonderoga*.

More than 60 pilots and crewmen attended Chance Vought and Marine Corps schools on FSU since December.

# REPEL THE AGGRESSORS!



**THESE HUS-1** helicopters, operating with other HOK's and HR2S-1's from USS Thetis Bay, took part in *Pbiblex* at Camp Pendleton. They lifted troops, flew observation, and delivered cargo.

**A** DEVASTATING nuclear blast, coupled with a 75-helicopter troop air movement, overcame all aggressor opposition and ended *Pbiblex 12-59*, the 9th Marine Brigade's war games at Camp Pendleton.

The exercise reached a successful culmination when First Division Leathernecks bottled up the enemy in hills near Cleveland National Forest. Seven hundred helicopter-carried Marines linked up with a mechanized force of 800 more and sealed off the enemy's escape routes. The "pincer" tactic pushed aggressors into a three-deep, last ditch stand in the mock war.

The aggressor concentration set the stage for the sudden vertical envelopment and simulated nuclear blast—the only special weapon used by Brigade in the problem.

Brigade's decision to "shoot the works" came in anticipation of bad weather, which may have given the demoralized aggressors time to recoup their forces.

Reconnaissance men, experts in the art of patrolling, kept the enemy off-balance the night before. The "raiders" were heli-lifted into enemy lines and disrupted communications. They inflicted casualties with their hit and run operations.

In the air war, Brigade planes ruled

the skies throughout the exercise. Through full use of the HR2S helicopters, with their three-ton payloads, and airdrops from R5D transports, resupply problems were lessened.

USS *Thetis Bay* was base of operations for the helicopters.

"Vertical envelopment" is the moving of combat troops from ship to shore by helicopter. In the nuclear age, the practice is thought to have advantages over beach landings in that troops attacking a beach are more exposed to heavy fire and beach defenses.

The Brigade, commanded by BGen. Thomas F. Riley, was made up of the Fifth Marine Regiment and Marine Aircraft Group 15, Reinforced, which included squadrons, units and detachments from every Group in the Third Marine Aircraft Wing at El Toro.

Col. R. M. Huizenga commanded the Provisional Aircraft Group. Col. Benjamin B. Manchester of AirFMFPac was Chief of Staff of the Brigade.

Ships from the Amphibious Task Force were commanded by RAdm. Charles K. Duncan.

An evaluation of the operation will be held by First Marine Division staff officers and lessons learned will be incorporated into new training plans.

There were no serious casualties throughout the five-day exercise.

# INSPECTOR DONS HARD HAT



RADM. AILES PREPARES TO MAN A TV-2

THE NEXT time a Navy TV-2 with Anacostia markings eases onto your ramp, don't neglect the man in the rear seat—he may be the Naval Inspector General, Rear Admiral John W. Ailes, III.

On a recent jet flight, RAdm. Ailes is believed to have logged a "first" in IG annals. The flight in a TV-2 was made from Washington to Charleston, S. C., for a visit to the Commandant, Sixth Naval District.

By virtue of his mission, the Inspector General has always been regarded as one of the most travelled representatives of the Naval Establishment. His mission is "to conduct periodic surveys of the Naval Shore Establishment and certain Fleet-based units." Fulfillment of this mission by a long line of IG's—there have been ten—has involved use of almost all of the known means of transportation. Travel to the Navy's widely dispersed installations has been accomplished by commercial and military air, train, ship, bus, foot and, it is rumored, dog sled.

Faced with an even more extensive travel schedule than his predecessors, RAdm. Ailes, who assumed his duties last October, decided additional time at activities, especially valuable aboard those in "problem areas," could be gained if travel time could be reduced. The most feasible means seemed to be in the use of jet aircraft whenever practicable.

In short order the billet of Personal Aide to the Inspector General was

filled by LCdr. B. W. Robertson, an experienced jet pilot, and the stage was set for the first use of jets in IG history. LCdr. Robertson, whose last assignment was in the Instrument Division of VA-44 at NAS JAX, has logged 1000 hours in jet aircraft.

Although he doesn't wear wings, RAdm. Ailes' career includes a preliminary flight training course at San Diego which he completed in 1931. His plans for frequent use of the TV-2 in his schedule should make him the fastest moving Inspector General on record. So watch for that TV-2!

## Iwakuni Mystery Trophy 1st MAW Seeks Help on Plaque

What is it? Who won it? Where? When? Why was it made in Norway? How did it get thousands of miles to Japan?

These are a few of the many unanswered questions about the trophy held here by Sgt. Maj. James G. Law of the 1st Marine Aircraft Wing.

The sterling silver plaque with a Marine emblem in the center and four jet planes etched on the border is inscribed, "The United States Marine Corps—Most Distinguished Squadron of Aerial Marksmen."

Also inscribed in small letters at the bottom of the plaque are the words, "David-Anderson, Norway."

Anyone who can help solve the great "Iwakuni Silver Plaque Mystery" is urged to address the Informational Service Office, 1st Marine Aircraft Wing, located at Iwakuni, Japan.



IS ANYBODY READY WITH THE ANSWER?



U. S. NAVY'S Certificate of Merit was presented to Mr. Robert Lewine (R) for his "contributions in presenting the Navy Seapower story." Capt. W. S. Guest made the presentation in Adm. Arleigh Burke's behalf.

## RAF's New Flying Freighter Scheduled to be Called Britannic

The Royal Air Force is to be equipped with long-range *Britannia* Mark 3 freighter aircraft, to be known as the *Britannics*. *Britannics* will be used for carrying passengers or especially heavy and bulky loads over long distances.

The Mark 3 is a development of the *Britannia* turboprop airliner now in use.

## South Pole Plane Returns Will be Held for National Museum

R4D-5 Bureau Number 12418, the plane which made the first landing at the South Pole October 31, 1956, has been returned to Norfolk where it will be held for the National Air Museum.

The plane has become popular in recent months by its starring role in Roy Crane's "Buzz Sawyer" cartoon.

Named *Que Sera Sera*, the R4D was winterized at O&R, NAS JACKSONVILLE when Operation *Deep Freeze* first began. The plane was flown to New Zealand. On its first attempt to reach Antarctica the plane encountered headwinds and was forced to return to New Zealand. Extra cabin tanks were installed for the fly-in during *Deep Freeze Two* and '418 landed the first Americans at the South Pole within two weeks of its arrival in Antarctica.

# STRIKE THE STORES BELOW!



**HIGH SEAS** wash over the deck of USS *Mississinewa* as it prepares to fuel the *Forrestal*.



**STORES** in cargo nets are transferred by high-line from provision ship to the *Forrestal*.



**IN ORDERLY** confusion, men in *Forrestal's* hangar deck receive stores from provision ship.

ONE OF THE TRULY "All Hands" evolutions aboard USS *Forrestal* is a replenishment at sea.

When the Sixth Fleet carrier striking force meets Task Force 63, the Service Force, there begins a rigorous day which often lasts from before dawn into the night. The work involves ship handling, line handling, heavy transfers over water from ship to ship, chains of men on the hangar deck, and final stowage of supplies in the storage spaces below decks.

The *Forrestal* may go alongside as many as five ships in the course of a day and night for fuel, stores, frozen goods and ammunition.

Each meeting, despite heavy seas, requires a smooth, close approach. Lines must be secured quickly between ships and hundreds of tons of supplies must be struck below to the correct

space and stowed in proper order for future use.

From the conning bridge on the eighth deck, where the Captain handles the ship during each approach and cons it at close quarters for more than four hours, to the men 14 decks below in the reefer spaces, all actions must be done in harmony.

A man's job on the hangar deck may not give him an over-all picture of the operation, but there is excitement in every step of the work. The roar of the rollers is contagious as carton after carton moves down the lines of men and tracks.

Even if a crate of fresh apples should break in the hazard of difficult transfer, there is no waste.

In all, it takes about 600 men in the working party besides the numbers who continue "routine" work in full

support of this important operation.

The storerooms are located forward and aft, which doubles the logistics problem.

The quantity of supplies taken on board depends on the type of supply ship that is alongside. For instance, one of the best records ever achieved came while the provision ship *Rigel* was alongside. Some 340 tons of food in 15,000 cases was transferred to the *Forrestal* in 3½ hours.

Three hours later, every case was stowed. The whole operation was conducted on a ready hangar deck where, throughout the working area, planes stood ready for immediate use.

Weather conditions, the time of day, the readiness of the supply or fuel ships, and the spirit of the men who take part, all figure in this unique operation — replenishment at sea.



**HUMAN LINE** of *Forrestal* crewmen send cases of food down rollers to ship's storage area.



**AT TRANSFER** point, stores are routed to the proper stowage compartment for ready access.



**MUSCLES** will never be replaced by automation when the Bo'n orders: "Strike 'em Below!"

# VOUGHT'S NEW WIND TUNNEL

**A**ERODYNAMIC problems of space vehicles re-entering the earth's atmosphere are being studied in a new hypersonic wind tunnel put into operation by Chance Vought Aircraft.

Located in a corner of the company's \$4-million, Mach 5 tunnel building, the new equipment is capable of testing aerodynamic shapes at speeds up to Mach 20. The new tunnel, one of four of its type in the United States, gives Vought capacity for testing aircraft and missiles to more than 13,000 miles an hour.

The Mach 20 tunnel operates on a different principle from its larger counterpart. Whereas the latter blows air from compressed air tanks past a model in a four-foot throat and exhausts the air out of doors through a silencing tower, the hypersonic tunnel exhausts into a vacuum tank.

This power boosts temperature of the air in the little teacup-sized chamber to 15,000° F and pressure up to 30,000 pounds per square inch. This tremendous energy bursts a quarter-inch diameter nylon disc at one end of the chamber. The pressure wave and highly-compressed air rushes out of the chamber, past the model being tested and down a long 18-foot cylindrical steel chamber.

The high mach number flow about the model lasts only for the brief period of 40/1000ths of a second. During this time the loads on the model are recorded photographically and pictures of the hypersonic wave pattern about the model are taken.

Unlike tests made in the low and high speed tunnels, which last minutes, the whole hypersonic tunnel test is over in 1/20 of a second. After the air leaves the arc chamber, where it is stored at from 500 to 2000 pounds a square inch until electrical energy is added, it passes through an eight foot long nozzle to the 12-inch test section where the blunt-nosed aerodynamic shape is mounted.

Before a test, all air is evacuated from the test chamber to create a nearly perfect vacuum. This enables the pressure wave and compressed air from the arc chamber to move swiftly to the end of the tunnel. Heat gen-



**KYSER FIXES MODEL FOR 13,000 MPH TEST**

erated when the million kilowatts of electricity is released in the arc chamber is greater than that found on the surface of the sun. The heat is so brief, however, that it does not melt the aluminum shape mounted in the test section, which would melt at 1200° F.

Because of its speed, air rushing past the model becomes luminous and tunnel operators can photograph it by using a short time-exposure on a press-type camera. The glow lasts but a fraction of a second but the shock waves and air pattern passing the blunt model can be photographed by the light generated.

J. B. Kyser is project engineer-in-charge of the tunnel which was built by Chance Vought experimental shops.



**FIRST AD PILOT** to complete Replacement Training with VA-42 in CVG-4, Ltjg. Henry A. Coons, (left) is congratulated by Cdr. Robert Linwick, Jr., squadron C.O. VA-42 uses AD-6's to train RP's for other fleet squadrons.

## HMS Victorious Visit Near Will be Escorted by Three Frigates

Britain's latest and most modern aircraft carrier, HMS *Victorious*, will visit New York and other eastern seaboard cities this summer. She will arrive in Norfolk, Virginia, about July 10 and will tie up at Boston about July 25. Her New York visit is scheduled from July 31 to August 3, after which she will return to her home port.

During her Norfolk visit she will be accompanied by three Royal Navy frigates, HMS *Scarborough*, HMS *Teuby*, and HMS *Salisbury*.

*Victorious*, a veteran of WW II, was recommissioned 14 January 1958 after a complete modernization and refit. She has a fully angled flight deck, steam catapults and mirror landing aid.

The present *Victorious* is the fourth of her name in the Royal Navy.

Commanded by Capt. C. P. Coke, R.N., she will be wearing the flag of the Flag Officer, Aircraft Carriers, VAdm. C. L. B. Evans.

## Betatron to be Delivered Will X-Ray Polaris' Propellant

Allagany Ballistics Laboratory will receive a 25,000,000 volt betatron late this summer for X-ray examination of a solid propellant being produced for the Navy's *Polaris* missile. The betatron will come from Allis-Chalmers Manufacturing Company.

Allagany Ballistics, located near Cumberland, Maryland, is a Navy installation administered and staffed by Hercules Powder Company. It has been operated for the Navy's Bureau of Ordnance since 1945.

The betatron will be used as a fast means of assuring optimum quality of fuel blocks. In operation, X-rays will pass through the propellant and fall on a film behind to create an image of the section.

Time required to conduct this inspection is negligible compared to other means. With steel, for example, exposure through an eight-inch section takes only one and a half minutes with the 25 million volt betatron. This takes 20 minutes with a two million volt X-ray machine; and nearly two days using a cobalt source of 50 curies strength. Time savings for thick sections of *Polaris* fuel will be comparable.





F9F-8P PHOTO INSTALLATION IS CHECKED

## PHOTO LAB FOR THE FLEET STARS IN READINESS



SCARBOROUGH, PHI, 'GETS ON TARGET'

ON MARCH 20, the VU-1 Photo Laboratory passed its annual inspection with flying colors. It received not only the grade of 95.40—outstanding—but also this off-the-cuff appraisal of one of the senior inspection officers, "In my 20 years of service, I've never seen a finer photo set-up."

The Photo Lab provides aerial and ground photographic services to the Pacific Fleet, NAS BARBER'S POINT, and other naval activities throughout the 14th Naval District. This includes ground, black and white and color, still and motion picture photography in the area extending from Hawaii to Kwajalein. Since it is the only

laboratory in the area with aerial photo capabilities, it gives coverage to all the armed services plus the National Geodetic Survey and the Fish and Wildlife Service.

Heading this complex, versatile organization is LCdr. W. R. Cronenwett. Under him are four assistants, a warrant officer and three petty officers: Photographer M. T. Soo Hoo, Assistant Photo Officer; R. W. Kuhn, PHC, Leading Chief; R. Doughty, PHC, Administration, and J. E. Elridge, PHC, Aerials, plus 35 men and two Waves who work as a highly skilled team.

"In the average month," LCdr. Cronenwett says, "our work load consists of processing and printing 7000

stills, 8000 photostats and ozalids, and 4500 feet of movie film. That's a sizeable job for 37 people, but it's the one we do.

"Whether it's an aerial map of the Pohakuloa Training Area of Hawaii or a photostatic copy of an official document, we supply all types of official photography in this area."

Mr. Soo Hoo, a top flight photographer, when asked where photography was headed in the next few years said, "We are continuing to go to smaller and smaller film, and, of course, this means more high precision cameras.

"But we are still a long way from complete automation. After all, we still need a man to trip the switch."



CAMERA REPAIR TECHNICIANS DISPLAY SKILL IN THEIR TRADE



KUHN, CRONWETT, SOO HOO, DOUGHTY STUDY SECTION OF HAWAII

# LETTERS

SIRS:

I am writing to you in behalf of my co-workers in the Operations Crash Crew, NAS PATUXENT RIVER, Md. We here at the Crash Crew read every issue of the *Naval Aviation News*.

This letter is in regard to the recent article in the April edition entitled "The Big Shots of the Hot Spots." You have pictures of crash vehicles in your article, and underneath one of them, you state that this is an MB-1 type crash truck and that it disperses 12,000 gallons of foam in three minutes. This statement is incorrect.

We feel that it is our duty to inform you of your honest mistake, because we cannot sit by and have someone wrongly name one of the most important pieces of equipment the Navy has.

The vehicle in the picture is not an MB-1. It is an MB-5 and the correct dispersement is 5500 gallons of foam in approximately two minutes.

CRASH CREW

NAS Patuxent River, Md.

SIRS:

We'll bet all the silver dollars in Reno, Nevada, that the Crash Fire Truck pictured is an MB-5 series and not an MB-1 as captioned in this picture taken from your April edition, any callers?

CRASH HOUSE PERSONNEL

NAAS FALLON, Nevada

P.S. Your magazine is enjoyed by all hands.

† We did it in broad daylight too! For the benefit of many careful readers who caught this one and those who didn't, a real MB-1 is shown below.



Published monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, training, maintenance, and technical data. Address communications to Naval Aviation News, Op-05A5, Navy Department, Washington 25, D. C. Office located in room 5E629 Pentagon; Telephone extensions 73685 and 73515.

SIRS:

The publishing in the March issue (p. 28) of *Naval Aviation News* of the photograph of General Babcock inspecting the first P2V-7 delivered to the French under the Military Assistance Program is appreciated. I feel I should call your attention to the fact that these aircraft are P2V-7's, not P2V-5's as indicated in the caption to the photograph. Careful inspection of the photograph discloses a jet pod under the right wing, which of course is characteristic of the P2V-7.

RALPH W. ARNDT  
CAPTAIN, USN

MAAG, France

## CORRECTION

In the April issue of NANews, page 3, it was stated erroneously that changes incorporated in the F8U2N *Crusader* permitted the carrying of *Sparrow III* missiles. Instead, the F8U-2N will carry *Sidewinder* and other new advanced air-to-air missiles.

SIRS:

Our squadron read with much interest the account of the annual training cruise of VA-672, NAS ATLANTA, published in the March issue of *Naval Aviation News* (p. 35). We know from our own experience that the 664 hours per pilot which they flew in two weeks represents tremendous effort and hard work from everyone in their squadron. We congratulate them!

In true competitive spirit, however, we feel compelled to tell you of our own accomplishments here in VS-772, NAS LOS ALAMITOS. Fifteen of us pilots, during our two-week cruise at NAS San Diego last year, flew an average of 72.9 hours, low man 65.6 (except for one who flew 51.0 in only nine days).

With a heavy schedule of 29 combined aircraft/submarine events, we missed only two—and these because of zero visibility on station.

We in VS-772 don't make any claim to a world's record either. But we do think our squadron's achievement may be singular in that during the same cruise period 12 pilots, in addition to flying, logged some 35 hours each in a week of ASW ground school at FAETUPAC.

LT. JAMES M. SINK  
C/O, VS-772

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Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, 10 Feb. 1959.

### ● COVER

Full story of the F4D Skyray which participated in the Fleet Gunnery Exercises off the West Coast is shown on pp. 12, 13. The cover shot is number three in the series entitled "Missile Magic." The Skyray, which is using a Sidewinder to blast a KDA-4 jet target out of the sky belongs to VF-141, NAS Miramar.

### ● SUBSCRIPTIONS

Naval Aviation News is now available on subscription for a \$2.50 check or money order (\$1.00 additional for foreign mailing) made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C. Single copies are 25 cents each.

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## SQUADRON INSIGNIA

As members of a component of Carrier Air Group Four, the "Mach Busters" of Fighter Squadron 21 train replacement pilots in the employment of the transonic Grumman F11F-1. Below, is a most unusual shot of a dozen Tigers with fangs bared. VF-21, skippered by Cdr. W. G. Coulter, is based at NAS Oceana, Virginia.



VF-21





NAVAL AVIATION

# NEWS

## **PRIDE AND PREJUDICE**

Every mother's son who goes to sea in carriers becomes a man apart. His is a world of vital service; his carrier, a global talisman of his country's ready presence and power—for peace. She's a living thing to him as she silently speeds from hemisphere to hemisphere, her deckload of destruction ever poised for instant retaliation. Officers and men aboard the carriers have shown their affection for them by giving them such names as 'Big E,' 'Fighting Lady,' 'Bonnie Dick'—some already legends, others in the making. If you covet a proud profession, you should investigate the advantages of Naval Aviation. Visit your nearest Naval Air Station or your Naval Recruiting Office TODAY!