

NAVAL AVIATION

NEWS



41st Year of Publication

JUNE 1960

NavWeps No. 00-75R-3





WELCOME FOR AN 'INTRUDER'

In ceremonies at Calverton, New York (right), the Navy's newest attack bomber, the Grumman A2F-1 Intruder, was unveiled on 29 April. Shown in flight (above), it is the first Naval jet to employ tilting tailpipes which give it unusual carrier and short field performance capabilities. It also features an integrated display system to permit a pilot to "see" targets under all conditions.



NAVAL AVIATION NEWS

FORTY-FIRST YEAR OF PUBLICATION, JUNE 1960

■ IN THIS ISSUE

- Navy in Space** 6 *Part Three tells of the work of the Navy in aero-medicine; how Navy scientists work to guard the safety of future space voyagers.*
- Squadron VA-12 Report** 12 *A run-down by Flying Ubangis concerning their pre-deployment training.*
- Helos in Mercury Role** 14 *Marine helicopters' participation in recovery of Mercury space capsule.*
- National War College** 16 *Another chapter in the series on schools for advanced military learning.*
- Canada's Air Navy** 20 *ASW role as played by Canadian Argus and Neptune patrol aircraft.*
- Portable Runway** 24 *Expeditionary runway is put to use in field by U.S. Marines.*
- A2F Intruder** 28 *Introduction of new Grumman carrier jet attack aircraft.*
- Cover** *Chance-Vought F8U-2.*

■ THE STAFF

- | | |
|---|-----------------------------------|
| Cdr. E. G. Colgan | Head, Aviation Periodicals Office |
| Cdr. George F. Rodgers | Editor |
| Izetta Winter Robb | Managing Editor |
| Lt. B. T. Sullivan, Joseph E. Oglesby, JOCS | Associate Editors |
| Cdr. Oliver Ortman, Cdr. G. L. Knight
Harold Andrews | Contributing Editors |
| Ardis Pitman | Secretary |
| James M. Springer | Art Director |

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



Published monthly by Chief of Naval Operations and Bureau of Naval Weapons to disseminate safety, training, maintenance, and technical data. Send mail to Naval Aviation News, Op 05A5, Navy Department, Washington 25, D. C. Office is located in 3413 Munitions Bldg.; Telephone Oxford 61755 or 61880. Annual subscription rate is \$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 copy, \$.25.

NAVAL AVIATION NEWS

Medic Given Top Award Navy League Honors Graybiel

In May the Navy League presented the William S. Parsons' Award for Scientific and Technical Progress for 1960 to Capt. Ashton Graybiel, Director of Research of the U.S. Naval School of Aviation Medicine, Pensacola, Fla. The award presented each year to a Naval Medical Officer as one of the Navy League's annual Awards of Merit was received by Dr. Graybiel at Anahiem, California.

Dr. Graybiel, internationally famous for his work in the fields of Cardiology and Aviation Medicine, was nominated for the award by Capt. Langdon C. Newman, C.O., U.S. Naval School of Aviation Medicine. The nomination was initiated by Capt. Newman in recognition of Dr. Graybiel's participation in recent bio-space flights, especially his efforts as medical officer in charge of the now famous Able/Baker monkey flight which has

gained world renown for the Naval School of Aviation Medicine.

In 1950 he was honored with the Theodore C. Lyster Award, presented by the Aero Medical Association for general research in aviation medicine, and in 1952 was awarded the Legion of Merit by the Navy Department for his contributions to aviation medicine. In addition, he has found time to write and have published more than 140 articles and two books.

Wins National Recognition Ens. Mierau Outstanding NavCad

Ens. Robert Dean Mierau, USNR, received the award given to "NavCad of Year" by the National Society of the Daughters of American Colonists at the Society's 39th annual meeting at the Mayflower Hotel, Washington, D.C., 12 April 1960.

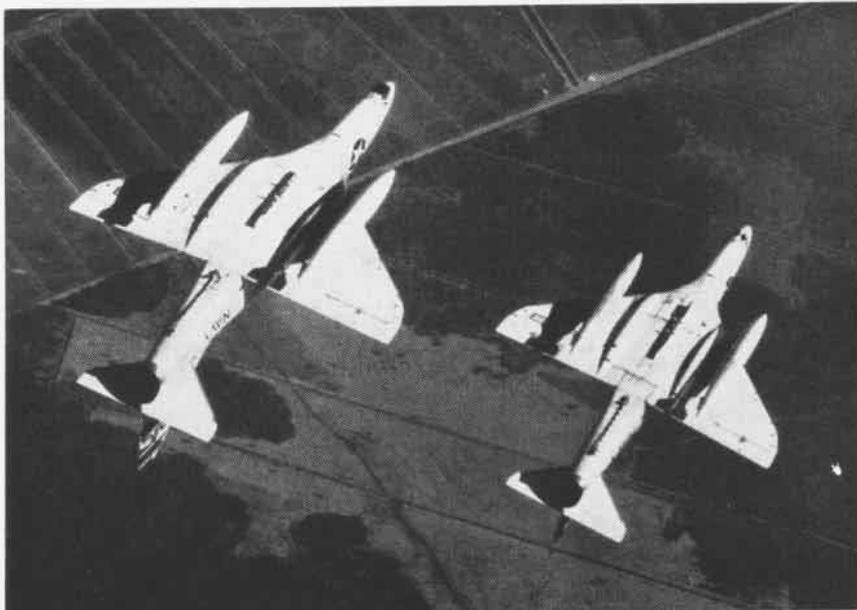
Mierau received the highest final over-all standard score of all cadets graduated from Pensacola. The selec-

tion of the recipient was based on grades in three areas—flight proficiency, academic instruction and officer-like qualities.

He was graduated from Immanuel Academy, Reedley, Calif., in 1956 and attended Reedley Junior College. He also studied aeronautical engineering at the Northrop Aeronautical Institute, Englewood, California.

Ens. Mierau entered Naval Aviation Cadet Flight Training on 3 April 1958 and trained at "the Annapolis of the Air," Pensacola. He was "student of the week" three times during his basic training and, at Corpus Christi, Texas, while taking advanced training in the Douglas *Skyraider* he was "student of the month."

Ens. Mierau was designated a Naval



FANCY FIRST in change-of-command routines was recorded by VA-43 over the Virginia countryside as Capt. J. E. LaCouture was relieved by Cdr. J. K. Beling, executive officer of the squadron. The actual change was executed while the A4D Skyhawks were inverted during the highest point of a high angle loft maneuver. The unusual ceremony dramatized the training mission.



VADM. PIRIE CONGRATULATES MIERAU

Aviator and commissioned an Ensign in the U.S. Navy on 25 September 1959. He finished his flight training with the highest grade ever attained.

Currently attached to Carrier Airborne Early Warning Squadron Eleven at North Island, San Diego, Mierau will soon be flying from an aircraft carrier attached to the Pacific Fleet.

Shown in the picture are VAdm. Robert B. Pirie, Deputy Chief of Naval Operations (Air), Mrs. Loretta G. Thomas, National Awards Chairwoman, Daughters of the American Colonists; Mrs. William M. Carrigan, National President, Daughters of the American Colonists and Ens. Mierau, "Naval Aviation Cadet of the Year."

Woman Scientist Honored Led Navy Weather Control Study

Dr. Florence W. van Straten of the Naval Weather Service has received the Alumni Achievement Award from New York University's Washington Square College of Arts and Science.

Her studies and formulations in weather control enabled the Navy to begin experiments two years ago in creating and dissipating cloud formations under a new process (see NANews, October 1958, p. 20).

She is a Naval Reserve Commander.

AvMed Scientists Cited Named Honorary Flight Surgeons

Doctors Dietrich E. Beischer and H. J. Schaefer, research scientists at the Naval School of Aviation Medicine, Pensacola, have been designated Honorary Naval Flight Surgeons.

Their "wings" were presented by



DECORATED SCIENTISTS WEAR NEW 'WINGS'

VAdm. Robert Goldthwaite, Chief of Naval Air Training. RAdm. J. L. Holland, Commanding Officer of the Naval Aviation Medical Center, was present for the ceremony, along with Capt. L. C. Newman, Capt. Ashton Graybiel, and Capt. P. B. Phillips, all from the AvMed School.

Dr. Beischer is head of the Biochemistry Department at the AvMed School and Dr. Schaefer is head of the Biophysics Department.

Both were active in the Monkey Baker project which led to the United States having possession of the only living primate to have been in space.

VAW-12 Pilot Not Hexed Increases Odds for Safe Landing

It appeared to casual observers that LCdr. Robert Bollenbacher was taking no chances when he made his 400th carrier landing. With him in the



THE IMPOSING STATUE of Christ the Redeemer in Rio de Janeiro, Brazil, looms above the heavy clouds as a Sikorsky HUS-1 belonging to Marine Helicopter Squadron One flies by. The statue stands on a 2100-foot peak towering over the city. The unusual photograph was taken from another HUS-1 by Marine Acting Gunnery Sergeant Charles G. Ross of Marine Corps Schools, Quantico. Completed in 1931, the 130-foot statue dominates the city of Rio and is visible at sea.

AD-5W were a flight surgeon and a candidate for the ministry.

LCdr. Bollenbacher is officer in charge of the VAW-12 detachment on the *Randolph*. He explained that more than superstition was involved in the selection of his passengers.

Ltjg. Elton Hendricks at the radar scope, who will soon enter the ministry, is a regular radar controller. The flight surgeon was aboard as an observer.

LCdr. Bollenbacher has been flying off carriers for 17 years. He has logged 4000 hours in TBM's, F2H's and AD's without an accident. Recently he recorded his 100th night landing.

Hays Named to High Post Appointed to Academy of Sciences

Edward L. Hays, a scientist at the Naval Air Material Center's Air Crew Equipment Laboratory, has been appointed to the National Academy of

Sciences. He will be a member of the Academy's panel which deals with mutual relations between organisms and their environment.

Mr. Hays is superintendent of the Safety and Survival Equipment Research and Development Division.

VAdm. Combs is Decorated Gets DSM on Retirement from Navy

VAdm. Thomas S. Combs was presented his second Distinguished Service Medal as he retired from the Navy after 44 years of service.

The senior Naval Aviator on active duty turned over five commands to his relief, VAdm. Charles Wellborn, Jr. Before his retirement, VAdm. Combs was Commander, Eastern Sea Frontier; Commandant, Third Naval District; Commander, Atlantic Reserve Fleet; Commander, Naval Base, New York, and United States Naval Representative to the Military Staff Committee of the United Nations.



GRAMPAW PETTIBONE

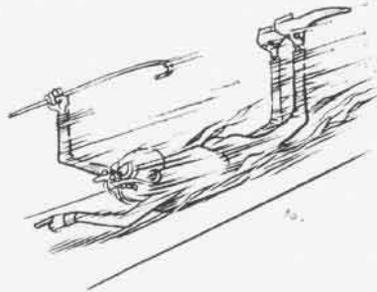
Big Hunk of Iron

It was one of those pitch black dark nights, with the visibility 15 miles and the sky clear, but the pilots of the big P5M seaplane were flying on the gauges. It was impossible to tell the dark sky from the black ocean below. They had just completed a searchlight run on a practice target located in a large bay in WestPac and were climbing back up to 1500 feet for another run.

The PPC was flying as copilot and instructor on this training flight, running a prospective plane commander through this phase of the syllabus, and of course, performing the normal duties of a copilot, which includes fuel transfer.

He was intent on keeping a good lookout for other aircraft, at the same time transferring fuel from the hull tanks to the service tanks. He remembered looking at the fuel panel and securing the fuel transfer switches when the service tanks indicated FULL.

Shortly thereafter, while climbing through 700 feet, both engines quit! The copilot pushed mixtures to RICH, props to FULL INCREASE, emergency



boost fuel pumps ON. The pilot dropped the nose of the P5M, set up a 125-knot glide and stayed on instruments, concentrating primarily on the airspeed indicator and radio altimeter, cross-checking with the gyro horizon to maintain a wings level attitude.

At 100 feet on the radio altimeter, he began to level off and immediately thereafter the P5M touched down in a level attitude at 110 knots with a BOOM and bounced back into the air! By this time both pilots were on the controls, and, holding the nose attitude constant, they flew it back onto the water for a safe landing.

After trying to restart the engines as they floated in the bay, the copilot discovered that he had turned both

main fuel switches OFF instead of closing the fuel transfer switches as was his intention.

They had been lucky, for the bay is dotted with small islands and rock pinnacles and is normally cluttered with fishing boats and small ships.



Grampaw Pettibone says:

Crikey! The silence when those engines quit must have been deafening! Every man in the crew scrambled to his ditching station in time for the first boom as this big iron bird hit, but none of 'em got their seat belts fastened in time or their hard hats on either. We've had enough scrambled heads in patrol planes by now that the VP men ought to have the word. The carrier pilots don't wear 'em ALL THE TIME for glamour!

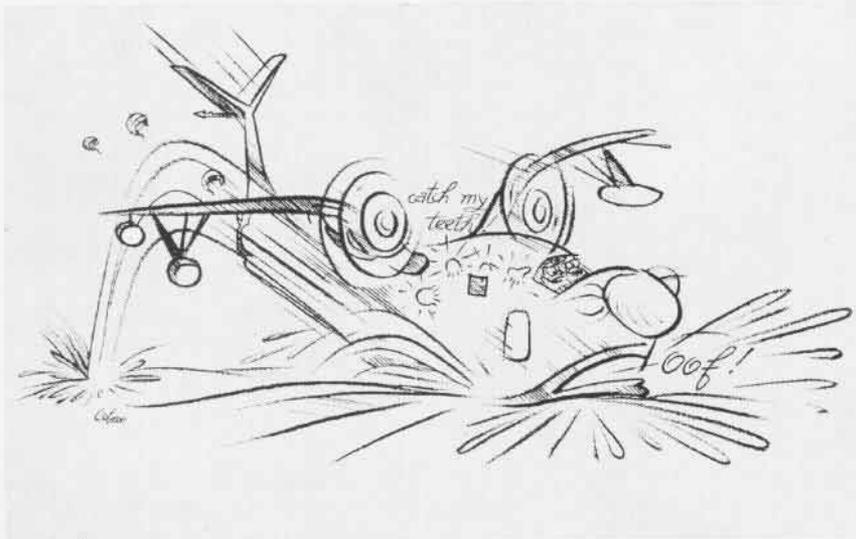
The P5M fuel control panel has a fine diagram of the fuel system with all switches and fuel selectors in the proper places on the diagram. But you gotta LOOK at it before you move anything! After pulling such a prize stunt, they salvaged a sad situation very skillfully. I'll bet they'll have no extra passengers for quite a while.

Fouled Deck

An S2F had been launched on an ASW mission from a CVS at 0330 one cold morning this past winter. Shortly after the launch, loss of a generator rendered their antisubmarine equipment unusable, so they were ordered to return to the ship and prepare to land.

The pilot was given wave-offs on the first two passes. During the third approach, he was told he would be given a cut, because an AD in the Dog pattern with a stuck throttle and low fuel state made it urgent that all other aircraft be recovered quickly.

The S2F was high at the cut signal and the pilot nosed over, dove for the deck, flared, and landed hard with the left wing down, catching No. 4 wire. At this point, the port main landing gear collapsed, the broken wheel skidding over the side of the angled deck



and the s2F swerved to the left, coming to rest abeam the mirror with the port engine nacelle resting on the deck. There were no injuries to any of the crew members.



Grampaw Pettibone says:

Holy Molokus! This accident was completely unnecessary, and no one knows it better than the pilot himself! He had plenty of fuel and could have taken a bolter or even binged if necessary. Because of his poor technique, he really clobbered up the deck for the AD driver. This LSO better get his eyes examined. To give a pilot a mandatory cut when there's doubt as to his ability to put it on safely and when he's in poor position for a safe landing, is not the type of performance expected of a professional on the platform. To tell the pilot beforehand that this has to be a cut is a real good way to insure a clutched pass.

This s2F had only been airborne 45 minutes. He could have hung in the Dog pattern for hours. What was the big hurry, anyway?

Busted Warrior

An A3D-2 *Skywarrior* was returning to its home base after successful completion of an exercise at sea, cruising on an IFR flight plan, but actually VFR on top.

The No. 2 auxiliary drive unit, which is responsible for power to the rudder and elevator control boost pumps, had failed. Since repeated attempts to recycle the unit were unsuccessful, the No. 2 ADU and No. 2 AC generator were secured, and the rudder and elevator boost were disconnected.

Controls on the A3D are pretty stiff without the boost available, but the pilot had plenty of time in the A3D and felt capable of handling the air-

craft using the elevator trim tab to control the nose position.

Arriving over his destination, he cancelled a TACAN penetration and his IFR flight plan and made a VFR letdown to the field. He called the tower, requested a straight-in to the duty runway, and was cleared to continue, the tower would advise.

An R4D was ahead of the A3D on final, cleared for a touch-and-go; and after it touched down, another A3D was cleared to take the runway for takeoff.

The A3D on final was now only a mile and a half out as the plane on the runway commenced its take-off roll.

The pilot now decided to take a wave-off because of the possible effect of jet blast with his limited elevator control. *At this time* he told the tower of his control difficulties and received a clear airfield for his second approach!

The landing touch-down was solid, and the pilot retracted flaps to keep the A3D's weight hard on the landing

2000 feet to a screeching halt on its belly, its crew abandoning the aircraft after it stopped.



Grampaw Pettibone says:

Jumpin' Jehosaphat! This here story is a pretty good example of the message Ol' Gramps keeps tryin' to get over to you guys. It takes a lot of cogs all fitting into their proper slots to make an accident, 'specially this kind.

When you lose boost, you got an emergency, brother, whether you think so or not, and you better tell people about it! The tower would have given you a clear shot at the runway on the first approach if you'd let 'em know your troubles. They've got problems too, you know, with a big fuel hog sittin' there on the end just waitin' to blast off, hollerin' for clearance.

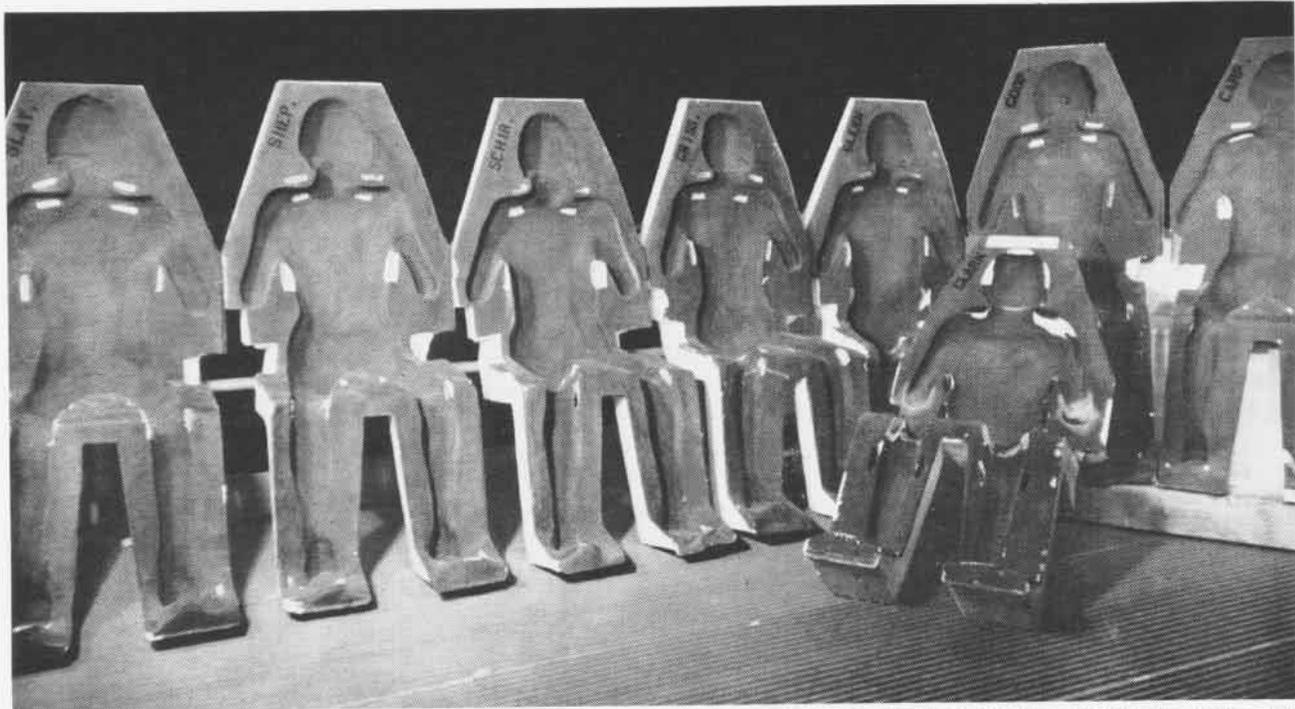
The landing gear down-lock solenoid didn't work, or he wouldn't have been able to raise the gear in the first place. Tests made *after* the accident proved it defective.

There are two dangerous periods



gear. The roll-out was proceeding normally in spite of a 13-knot crosswind 78° to the runway. The pilot glanced at the pedestal, saw what he thought was the flap handle still down, and retracted the gear handle! The A3D's gear retracted, and it slid about

in a pilot's life: ONE, when he's a young cub just learnin' to be a tiger, and TWO, when he's a battle-scarred tiger with PLENTY of time in model under his belt and maybe gettin' a few too many "automatic" reactions and becoming a little TOO RELAXED!



SPACE COUCH QUORUM AT NAVY'S AMAL SUGGESTS EGYPTIAN SCENE. EACH WAS MOLDED TO FIT INDIVIDUAL ASTRONAUT

PART III, AEROSPACE MEDICINE

NAVY'S SPACE ROLE

WE FREQUENTLY hear the phrase, "Conquest of Space." To each of us it holds distinct and frequently different meanings. To the mechanical engineer, it means the development of a booster system capable of placing required payloads into spatial travel for successful completion of the payload's purpose. To the payload engineer, it means the successful performance of the payload equipment during space flight and the successful return of information or the payload itself back to earth. To the astrophysicist, it means the successful gathering and read-out of data by the payload, thereby increasing man's knowledge of his universe. To the military it means the placing of controllable defensive and offensive warfare systems into space or upon neighboring planets for the ultimate protection of this country, to the disadvantage of an un-

By Capt. Frank B. Voris, MC, USN
Liaison to CNO for Bio-Astronautics

friendly aggressor nation. However, to the majority of Americans and, of course, to the scientific medical community, it means the placing of man into space, his useful employment while there, his successful return to earth, and ultimate recovery.

Each group is faced by technical



problems which never before required solution. Problems that face the space engineers of today are generated by requirements for small engines to produce vast amounts of controllable power and equipment that will function precisely under conditions of prolonged acceleration forces and severe vibration just as well as during periods of weightlessness and without atmospheric pressures. The miniaturization of payloads and auxiliary power sources to meet restrictive boost capabilities and development of successful recovery systems and techniques are among the many problems still to be solved.

In time, however, technical skills and "know-how" will enable man to design and build vehicles and instruments of sufficient capacity, strength, and reliability to overcome most, if not all, difficulties in placing a functioning, inanimate object in space.

"The Navy has developed over the years technical inhouse competence and practical experience in meteorology, electronics, rocket propulsion, cosmology, human engineering, medicine, and a host of other areas which are contributing very significantly to our Nation's accomplishments in space."

—Admiral Arleigh Burke, CNO

THIS also holds true for the conquest of space by man himself. The objective is identical, but the approach is markedly different. The "black box" itself can be strengthened, reshaped, miniaturized, and rearranged to meet physical stresses. This is not so for the human. Basically, no alterations to the body can be undertaken to adapt man to space flight stresses and environment. The only avenue of adaptation is to build a protective system of earthly environment about the astronaut that will permit him to function much as he does on the earth.

Thus, the vehicle and its performance must, to a great extent, be made to "fit" the man, and not the reverse. Herein lies the prime reason for man's delay in following inanimate satellites into orbit. Non-man-bearing vehicles, though expensive, are expendable. Many are placed into orbit with no provisions for re-entry and recovery. Man is not expendable. When finally embarked on space flight, he must be

provided with (1) protection against prolonged boost phase accelerations, (2) highly reliable life support systems, (3) survivable re-entry conditions, and (4) unfailing recovery equipment. The safety of the spaceman cannot be compromised in any manner. He must be returned to earth and recovered without harm.

Although automaticity of the flight and life support systems for manned space vehicles have been developed to a high degree, successful manned air vehicle system operation rests considerably on the quality of the subsystems concerned with preserving useful efficiency of the human component. As progress is achieved in sophistication and range of performance of manned space vehicle systems, the potential dangers and demands of the astronaut are increased.

In recent years, the complexities of the man-machine dependency have dictated the need for biological science specialists at more and earlier stages

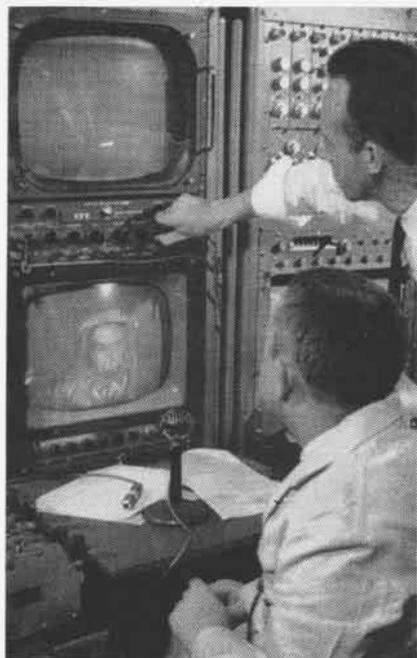
of weapons system development. This has enabled the biotechnologists to coordinate more successfully their skills and knowledge to the engineering effort with the result that closer matches between human and hardware requirements are being realized.

Of all the numerous projects under the cognizance of the National Aeronautics and Space Administration, none has captured the public imagination as man's first orbital flight, Project *Mercury*. National in scope, *Mercury* demands the contribution of many military and civilian agencies. This article attempts to point out the Navy's portion.

The first spatial flights will be relatively close orbital voyages from a single terrestrial orbit to not more than 4½ hours of continuous orbital flight. These flights will be the first steps in a program to institute orbital laboratories, lunar landings, and other long-term, interplanetary flights. Although many problems in the support of man



GIANT NAVY HUMAN CENTRIFUGE PERMITS STUDY OF MAN UNDER HIGH G STRESS FORCES



SCIENTISTS USE TV TO OBSERVE SUBJECT

for both the short and the prolonged space flights are identical, there are some that are peculiar to prolonged periods of orbital and outer space flights. These problems can be identified and solved only by placing the man in shorter orbital flights and studying the mass of psycho-physiological information that will be available from such a flight. The limiting psycho-physiological parameters of a short-term orbital flight are reasonably well defined, and only the engineering and production of reliable life support subsystems are needed to place man into space.

Part of the responsibility for the research in the defining of these parameters and for the development and

the astronaut to remain usefully conscious during the prolonged boost and re-entry phases of space flights. During centrifuge runs simulating these conditions, the occupant's physiological responses are being monitored through the telemetering of electrocardiograms, electroencephalograms, and respiratory measurements as well as by television observation.

A significant development for the testing of equipment and the training of astronauts is the combining of the AMAL centrifuge with the large analog computer from the Aeronautical Computer Laboratory to form a dynamic flight simulator. By this combination the centrifuge can be controlled to simulate all phases of stress

characteristics have been determined by design and wind tunnel testing can be "flown" before being built.

The future of centrifuge dynamic control simulation is especially significant in developing and testing control systems and techniques, instruments, retention and restraint systems, and other aspects of space vehicle cockpit design for stresses caused by accelerations expected in actual flight. This device has been and will be extensively used in the testing and training of the Project Mercury astronauts.

Studies at AMAL of low-grade, prolonged acceleration forces have resulted in a subject spending 24 hours under 2 G acceleration force while carrying out functional procedures.



NASA'S MERCURY ASTRONAUTS LEARN COORDINATION IN HIGH PRESSURE CABIN ALOFT



ACEL CREW TESTS ASTRONAUT'S ABILITY

testing of the life support systems has been assigned to the aerospace medical scientists of Navy by the National Aeronautics and Space Administration.

When considering the stresses that future astronauts will be required to endure, the first thought is of the severe and prolonged acceleration and deceleration forces anticipated during boost and re-entry phases. To study the human tolerance limits and to develop and test systems for man's protection against these forces, the Navy has utilized its large human centrifuge at the Aviation Medical Acceleration Laboratory, Johnsville, Pennsylvania. Joint NASA/Navy Development and testing programs of the Mercury supine couch and restraint systems have resulted in equipment that will allow

through a preprogrammed automatic control system. In addition, the astronaut can actually "fly" the gondola by his action upon the control system within his simulated capsule. In this radically new system, pilot control signals go to the computer, which in turn computes the accelerations that the pilot would receive if he had made the same control motions while in spatial flight. These computed accelerations are then converted into drive signals for the centrifuge so that the pilot then receives acceleration reactions to his control maneuver. Simultaneously, the computer drives the capsule flight instruments to show the changing conditions of flight. With centrifuge dynamic flight control simulation, a space craft whose charac-

If this time and acceleration force had been experienced in actual flight, this 24-hour period would have resulted in a 45,000,000-mile space jaunt.

Other studies in full-body water immersion protection against high acceleration forces have resulted in a subject withstanding a maximum of 32 G forces for a period of five seconds without injury, during which time the subject was able to manipulate finger controls purposefully.

In contradistinction to the known parameters and tolerances of acceleration forces expected are the unknown problems of the weightlessness state. Other than the effects of weightlessness for periods of less than one minute, nothing is known of human reactions expected during longer pe-

riods of 0-G states. Upon several occasions, about 15 minutes of physiological response information have been obtained from small animals during weightless flight within high altitude probe and long range trajectory space shots.

The Aviation Medical Acceleration Laboratory in conjunction with the Franklin Institute has developed varying sizes of biopacks designed as payload vehicles for the orbiting of one or two rats for as long as two weeks' duration. These animals, trained to respond to certain stimuli, can be maintained at terrestrial environment except for weightlessness. Response to stimuli and physiological conditions of the rats while orbiting in a 0-G state will be telemetered to ground stations for read-out and study.

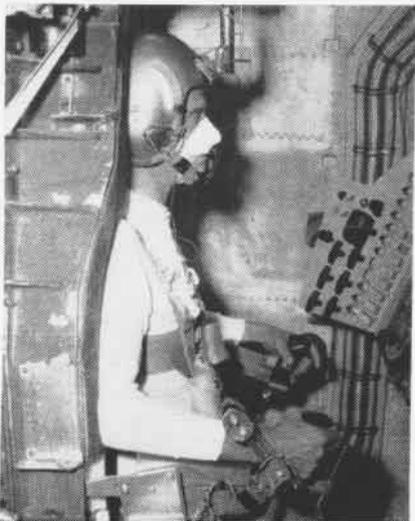
Low grade, prolonged acceleration forces and weightlessness combined with vehicle rotation may be the cause of severe physiological reactions resulting in motion sickness symptoms and disorientation. Studies of these problems are well advanced at the Naval School of Aviation Medicine, Pensacola, Florida. For this, a new and unique Human Disorientation Device capable of applying acceleration forces to a subject in more than one plane simultaneously is being utilized in controlled studies of spatial disorientation, vertigo, and the effects of tumbling.

In addition to the disorientation device, the medical scientists of the School of Aviation Medicine have constructed on the hub of a centrifuge a 15-foot square room designed to study the effects of low-grade, prolonged rotational forces on occupants required to move about and perform tasks involving head movements while being deprived of outside ocular references. The room is rotated from one to ten times per minute, and subjects have been studied under these conditions for periods of up to 48 hours or more.

A complete sound laboratory for the study of the effects of sound and vibration to be experienced by the astronaut is producing excellent results. The studies of physiological effects of satellite environment on small animals, primates, and hibernating mammals have resulted in the development of two *Jupiter* missile biopacks that successfully carried the monkeys, Gordo, Able and Baker, through space flights of 1500 miles at an



BIG 'MIXMASTER' AIDS CONFUSION RESEARCH



ACCEL SIMULATES SPACE FLIGHT CONDITIONS



RESPIRATORY REACTION IS CHECKED AT AMAL

altitude of 300 miles. The study of cosmic radiation and heavy nuclear particles occupies the efforts of a highly competent research staff, and much has been learned as to the effects of ionization of space craft atmosphere.

The psychology division of the School's research department has been working on studies of the effects of monotony, suggestibility, isolation, and prolonged interrelationship of satellite crewman. Effects of extreme quietness, terror of loneliness, and the restriction of physical activity are also being investigated.

The School is assisting NASA Space Task Group personnel in the training of the *Mercury* astronauts in problems of spatial disorientation, flight illusion, survival and post-flight recovery from the capsule at sea.

As the astronaut leaves his earthly surroundings, he must take with him his terrestrial environment or perish. Developing and maintaining such an environmental protection is another area of endeavor in which the Navy has long maintained the highest proficiency. With over 50 years of studies in life support systems for submarines well documented, the development of closed systems for manned space vehicles becomes a natural sequel for the Navy bioscientists.

At the Navy's Air Crew Equipment Laboratory, Philadelphia, Pennsylvania, a staff of military and civilian scientists and engineers is busy developing and testing improved versions of the Navy's operational Mark IV full pressure suit for long term intra- and extra-space capsule requirements. The Project *Mercury* astronauts will be fitted and trained in the use of their modified Navy full pressure suits. These suits will be completely ventilated; and, should the vehicle atmospheric pressure drop below five pounds per square inch, the suit will be inflated under pressure to maintain an effective pressure of oxygen about the astronaut. This pressure will prevent massive aero-embolism ["bends"] and enable him to function in comparative comfort even though the atmosphere in the cabin, for all expressed purposes, is a vacuum.

The durations of manned orbital space ventures are limited to the capability of the booster system to place life support systems into orbit with the man. The first spatial flight will

carry oxygen in gaseous form under high pressure or in the liquid state. As flights become longer in time, the weight penalty for required quantities of oxygen so contained will be prohibitive. In order to produce the oxygen required, methods of producing oxygen from bodily waste materials appear to be most feasible economically.

The Air Crew Equipment Laboratory is realizing progress in studies to utilize the carbon dioxide produced by the man himself for the production of oxygen. This is done by electrolytic means that unfortunately require rather large sources of power and produce undesirable heat within the capsule. These problems are slowly being overcome. During recent months, a crew of six men was maintained in comfort on a chemical oxygen source for a period of eight days while completely isolated within a small bio-astronautic multi-man space flight simulator. Each man was assigned work tasks for performance testing. During this period the oxygen source for the simulator was from potassium superoxide (KO_2). Three ounces of KO_2 and $\frac{1}{3}$ ounce of lithium hydroxide per man per hour kept the cabin atmosphere at approximately sea level conditions and free of noxious odors.

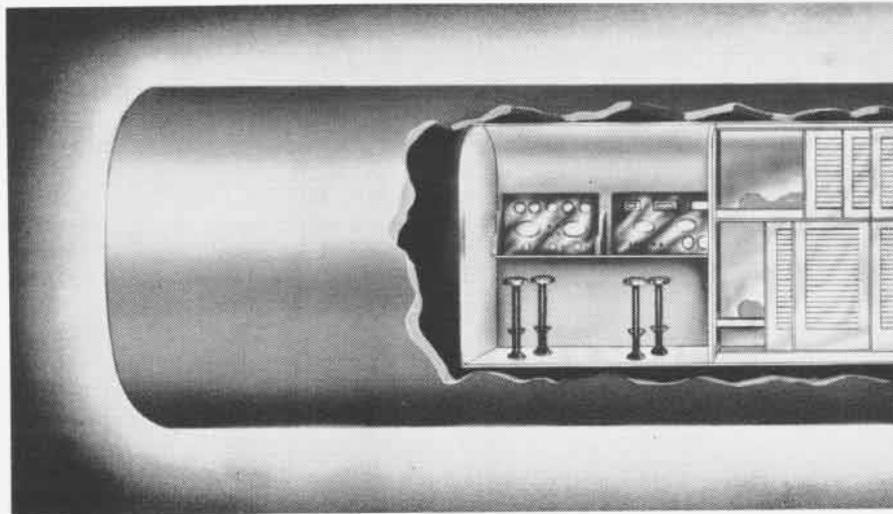
The production of oxygen from algae sources appears to be of greatest value for flights of great duration or for lunar or planetary bases where the extreme penalty of the system is compensated by the long-term requirement of oxygen.

During certain phases of space flight, severe extremes of temperature will be encountered. At the Air Crew Equipment Laboratory, heat profiles are studied. Subjects in full pressure suits are exposed to programmed heat profiles that will be experienced by the returning astronaut; and body temperatures, fluid loss, blood chemistry, oxygen requirements, and many other individual physiological observations and laboratory tests are recorded and studied.

Within their large low pressure chamber, technicians of the Air Crew Equipment Laboratory, under direction of NASA engineers, will place a complete replica of the Project Mercury capsule. With the astronaut in a full pressure suit within the capsule, the atmosphere of the low pressure

chamber will be removed so that conditions about the capsule will approximate that of space. Control systems and instruments will simulate true flight display and will react to pilot initiated control. Programmed static flight simulation of many hours duration will be endured by each astronaut during which time simulated emergencies will be effected and will be evi-

loss rates, evaporation cycles, and requirements for energy fuels as oxygen and food are studied. Here, a large low pressure chamber with an adjacent hot room can simulate the hot side of a space vehicle cabin wherein carbon dioxide, oxygen, and humidity concentrations can be regulated. Mercury astronauts were subjected to as much as 5 per cent carbon dioxide concen-



LIFE SUPPORT SYSTEMS AND MAN'S REACTION TO ISOLATED CONDITIONS ARE STUDIED

denced by instruments and actual automatic activation of emergency life support systems.

Simulated leakage of capsule atmosphere will pressurize the full pressure suit. Failure of the oxygen or carbon dioxide scrubbing systems will result in emergency instrument display activation, and the astronaut will actually experience physiological reaction. This will require automatic or manual activation of the standby systems. Simulated fire aboard will require the pilot to dump his capsule pressure and later reinstitute pressure after the fire is out. The programmed flight will require navigation, orientation, timing, and other normal piloting functions of the astronaut during which time these emergencies must be met and countered in order to prevent a simulated catastrophe.

Basic research in gaseous physiology and the effects of heat on the body as related to space flight has been done at the Naval Medical Research Institute, Bethesda, Maryland. The astronauts have been placed in a full-body human gradient calorimeter to determine their heat tolerance, while heat

trations for testing and demonstrating systemic effects of that and other noxious gases.

Unique among the Institute's equipment is a mechanical vibration table upon which animal and human subjects are subjected to various rates and magnitudes of accelerations and vibrations in studying physiological, psychological, and work efficiency patterns as well as the injurious effects of mechanical vibrations.

At the Institute for more than 12 years, the Navy has pioneered and led in the field of human response telemetry. This electronic system of radiating of physiological information from man in flight was conceived and developed by Navy Medical Department personnel under Project RAM and has been demonstrated over the entire world. By these very principles, the physiological responses and well being of Project Mercury astronauts and others to follow will be monitored here on earth while they travel through space. Already used in space biopack animal studies, it is tailored to transmit physiological data about the respiratory, circulatory, digestive, ex-

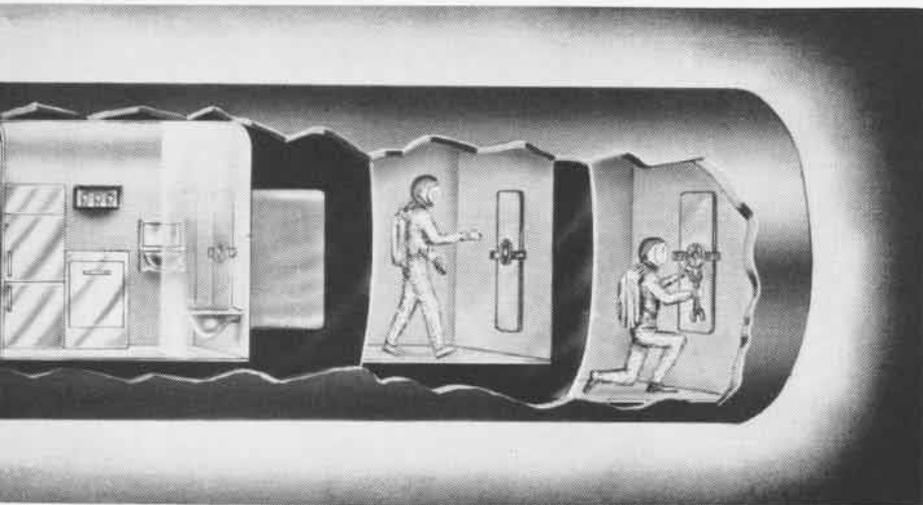
cretory, cortical, and temperature regulating systems.

At the Naval Medical Research Institute, the Naval School of Aviation Medicine, and the Aviation Medical Acceleration Laboratory large, well equipped and staffed animal colonies are maintained for the raising and training of animals to be used as subjects in space study experimentation

The Navy has active programs in nutrition and waste disposal problems of space flight. For the short term flight, the nutritional requirements of man are rather simple. However, on longer flights, the bulk of weight of required food and water becomes formidable. Studies for the development of dehydrated, precooked, and concentrated foods are being pursued

in Space" program.

Newly completed environmental test facilities added to the already vast capability of development and testing of all phases of flight equipment are readily adaptable to the advancement of bio-astronautic information. The Naval Flight Surgeon finds an unparalleled combination of laboratory and "in-flight" facilities to carry out his concepts of bioscientific support for spatial flights from conception, through development, into operational systems. Here the Navy for the first time is able to assemble life support sub-systems developed by distant Navy activities and "marry" them into a total system for evaluation and possible modification. The establishment of this activity with its capability fulfills a bioscientific requirement heretofore lacking in this country. With the development of sea launch capabilities of space vehicles, the biomedical problems entailed will undoubtedly be solved by the Pacific Missile Range biotechnicians.



IN THE MULTI-MAN CAPSULE WHICH IS LOCATED IN ACEL'S LOW PRESSURE CHAMBER

and space flight.

The role of the Office of Naval Research in pioneering the initial approaches to manned space flight is a matter of record. Having no laboratory facilities for such research, the ONR contracts with laboratories of the services, industry, and universities for basic research and development of required solutions to the biological problems of space. Studies in stress physiology, oxygen generation, and thermal and radiological hazards of space flight are being funded and monitored.

The well-known Project *Strato-Lab*, using massive balloons, supplies ONR's Navy and contract bioscientists with a test bed for long term, sealed cabin environmental stress studies on humans. This is considered a "total situation" condition that combines biological stress with emotional stress of actual exposure to stratospheric heights equivalent to the "isolation phenomena" of space flight. While studying atmospheres of other planets, long term stratospheric radiological phenomena are being recorded and studied for future space flight use.

by the Bureau of Weapons at its laboratories and by contract.

Water requirements for the average individual is approximately 2½ liters or about five pounds in weight per day. For long term space flight, it is extremely important that the occupant's exhaled water from the cabin atmosphere and the water from the astronaut's urine be reclaimed for drinking purposes. Scientists of the Naval Medical Research Institute have successfully reclaimed 97 per cent of water from urine and transformed it into pure palatable drinking water.

The Navy's latest move to support the national "Man in Space" program is to recognize the value of the many scientific and testing facilities available to bioscientists at the Naval Missile Test Center specifically and the Pacific Missile Range in general. The newly staffed Life Sciences Department of the Missiles and Astronautics Division of the Center has been assigned the mission of conducting research and development in the areas of bio- and behavioral sciences, environmental protection, training methods, and human engineering as related to the "Man

The Navy Department and the National Aeronautics and Space Administration are developing jointly a recovery program for Project *Mercury*. Planning and preparations for the world-wide recovery operations are progressing with Naval Medical officers and other medical department personnel jointly contributing. Selected Naval flight surgeons are being especially trained. These flight surgeons are expected to "man" important space tracking stations peculiar to Naval operations beneath the orbital path of the Project *Mercury* capsule during the approaching NASA man-in-space shots.

Thus, the Navy's traditionally unique ability to support man in confined and isolated spaces against strange and hostile environments is one of the greatest single factors in this nation's progress to "conquer" space.

Man has already entered the Space Age. Not only do missiles and rockets speed to unbelievable heights and inanimate vehicles orbit our world, but manned vehicles will soon penetrate the unknown of space. The international race for dominance of deep space demands the full utilization of the Navy's bio-astronautics ability, and this demand is being met with enthusiasm and confidence by the entire Navy bioscientific community.

We will "conquer space."

SQUADRON REPORT VA-12



A SESSION OF 'ERROR ANALYSIS' AND COFFEE FOLLOWS EACH FLIGHT

'MAKES HAY WHERE THE SUN SHINES'



PREFLIGHT BOMBING MISSION BRIEFING IS GIVEN BY LT. MALEC



LT. McCARTHY, LTJG. FLOYD SYKES ON THEIR WAY TO THE LINE



McCARTHY TAKES A GOOD LOOK AT INTAKE OF HIS A4D SKYHAWK



LTJG. JOHN SLOAN CHECKS BOMB LOAD FOR SECURING AND ARMING



A 'FLYING UBANGI,' RARIN' TO GO, TAKES OFF FROM NAS CECIL FIELD TO JOIN HIS FLIGHT IN A LOCAL BOMBING EXERCISE

WITH A FULL year of concentrated weapons delivery training completed, Attack Squadron Twelve is now at peak readiness as it rejoins CVG-10 for deployment aboard USS *Sbangri-La*.

Taking advantage of the fate that based them at Cecil Field, Florida, the *Flying Ubangis* have "rewritten" the competitive bombing record books for squadrons of the Naval Air Force, Atlantic Fleet.

The outstanding target complex in the Jacksonville area and the predominantly perfect flying weather at Florida's Gateway City have given VA-12 ample opportunity to conduct intensive weapons delivery training.

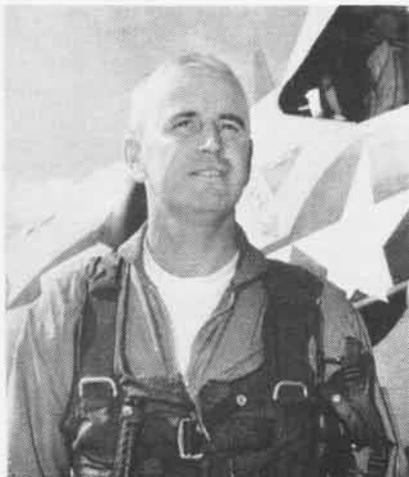
Such training has given VA-12 a definite edge on less fortunately located squadrons. Because the Atlantic Fleet competitions and the "Top Gun" meet at Yuma were tremendous motivations, VA-12 never relaxed its drive to perfect the art of bomb delivery.

During the 1959 AirLant annual competitive exercises, the *Flying Ubangis* set records in over-the-shoulder loft delivery, night dive bombing and the profile mission exercise. The 13 pilots who participated in these exercises won a total of 59 Navy E's. Squadron skipper, Cdr. Bill Barrow, won an unprecedented eight for eight.

After winning the AirLant Weap-

ons Meet last fall, the five-man weapons team from VA-12 represented the East Coast in the Navy-wide Weapons Meet in Yuma and finished second. In this meet, Lt. Joseph Malec, VA-12 weapons training officer, won top individual A4D honors and was awarded the Herman Trophy.

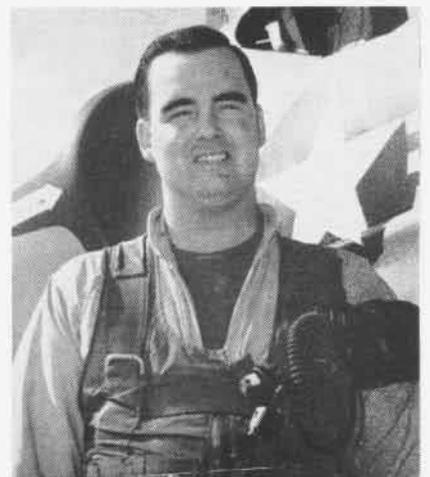
Since the Yuma meet, the *Flying Ubangis* have enhanced their record-breaking spree by establishing the minimum altitude "skip-bombing" record, re-setting their own over-the-shoulder record, and breaking previously established records in medium angle loft, low angle loft, dive bombing and rocketry. In short, VA-12 "makes hay where the sun shines."



CDR. BARROW HOLDS 'EIGHT E'S FOR EIGHT'



'TOP GUN' MALEC IS TRAINING OFFICER



DALY WAS DIVISION RUNNER-UP AT YUMA

COPTERS PLAY MERCURY ROLE

By ActGySgt Dan Roulston

A MARINE CORPS HR2S-1 helicopter hovers over a unique launching pad of mattresses, lowers a modified cargo hook, lifts a strange 7½x5-foot brightly painted orange and white object from the pad and heads for the Salton Sea.

This has become a familiar sight at El Centro, Calif., during the past five months. It is part of the important role the Marines are playing in NASA's Project Mercury. The copter belongs to the Third Marine Aircraft Wing's MAG-36. The operation is the testing of the landing and recovery



MARINE HR2S-1 LIFTS MERCURY CAPSULE FROM ITS PAD AND HEADS OUT TO DROP AREA

operation failed at any time during the take-off and pre-orbital aspect of the project.

In such an event, the paramount issue would be the removal of the astronaut from the immediate vicinity of the malfunctioning missile system.

After the capsule has been placed on top of the huge *Atlas* missile, an escape-rocket system will be installed on the front end of the man-carrying vehicle. If the booster malfunctions at any time from the pad to the staging, an escape rocket can be triggered. It will carry the capsule and its occupant away from the booster. The escape-rocket system then will separate

from the capsule and the capsule will descend.

Marines have assisted the Radioplane division of Northrup Corporation in 21 low altitude drops of the test capsule since October 8, 1959. The tests, conducted at El Centro, consist of dropping the capsule from an altitude of 2000 to 5000 feet and photographing its fall to earth. All tests have resulted in water landings in the Salton Sea.

Under the abort phase, the capsule reaches a level of approximately 2500 feet. At that point the landing system is initiated by a barometric switch which closes, firing an explosive charge in a mortar. This in turn propels a six-foot conical ribbon stabilization parachute into the airstream. (In the actual launching a radar chaff package will be ejected at the same time to provide a 600-sq. ft. radar locating pattern. Radar sites, including ships at sea, will be located throughout the world to monitor this phase of the operation.)

The ribbon 'chute stabilizes the capsule. Here another baroswitch closes, firing an explosive charge which releases the antenna fairing to which the Ringsail parachute is attached. This stabilizing chute and the antenna fairing then extract the 62-foot Radioplane landing chute which slows the capsule's descent to 30 feet per second.

Extensive testing of this phase was completed at the Salton Sea site of the



'CHUTE LOWERS CAPSULE GENTLY TO SEA

system during a simulated early launch abort case, which is being developed and tested to insure the safety of the first U.S. astronaut to be projected into orbit around the earth in the Mercury capsule.

Project Mercury, which is the nation's program for projecting a human being into orbit, effecting his re-entry into the earth's atmosphere, and the subsequent pick-up of the pilot, is under direction of the National Aeronautics and Space Administration. One of the most important facets of the program, and the one now undergoing test, is the series of events that would materialize if the



ON IMPACT WITH SEA, CHUTE IS RELEASED

Sandia Corporation. In low altitude drops from the Marine helicopter, a suspension system was used to release the capsule in a climbing situation, with the helicopter pulling up and away.

After the basic lift cables were released, the capsule was held by a single cable which placed the unit for the final drop. When a 1500-pound pull was placed against the front-mounted

cable, the capsule pulled clear. This arrangement permitted the helicopter to move clear of the capsule, the mortared antenna fairing, and the Ringsail parachute.

Numerous built-in safety devices also were tested. They included a second or supplementary chute and the automatic sequencing of the main landing system and the independent manually-operated reserve landing

system. Several recovery aids also were initiated and tested. They included high intensity flashing light and a Radioplane dye marker.

A Marine HUS-1 helicopter also has followed the falling capsule, providing a flying platform for still and motion picture photographers. Because of the unique flying characteristics of the helicopter, the photographers were then able to descend with the capsule.

* * *



PROJECT MERCURY astronaut, LCdr. Walter M. Schirra, prepares to leave a model of the Mercury space capsule in cut at left. At right, he has cleared the capsule and is relaxed in his life raft. Six of the seven astronauts completed a week of training at NAS Pensacola which included escape and recovery from the capsule,

and lectures on sea survival. The "egress" training was held in the Gulf of Mexico off Santa Rosa, Fla., to familiarize the Astronauts with the emergency procedure involved in leaving the space capsule after it lands in the ocean. A crash boat from Pensacola and a group of Navy frogmen took part in the recovery training.

* * *

Marines Honored at Taipei Thanks Expressed for Relief Aid

Thirty-seven pilots of Marine Helicopter Transport Squadron (Light)—261 have been made honorary members of the Chinese Air Force.

BGen. Louis B. Robertshaw, Assistant Commander of the 1st Marine Aircraft Wing, BGen. William G. Lee, USAF Chief of Staff, Taiwan Defense Command and Col. Edward V. Finn, C.O. of Marine Aircraft Group 16, were present for the occasion at Chinese AF headquarters at Taipei, Taiwan.

The helicopter men are believed to be the first group of Marines to wear Chinese Wings since Marine Corps Reserve pilots such as Congressional Medal of Honor winner Gregory "Pappy" Boyington flew with the "Flying Tigers."

In appreciation of relief and rescue

work done on Taiwan last fall, Gen. Chen Chia-Shang, Commander in Chief of the Chinese Air Force, pinned wings on 26 pilots gathered in Taipei for the ceremony.

Eleven others were not present due to earlier transfers from HMR(L)-261.

Each set of wings presented the Marine pilots has been logged by serial number and name into the rolls of Free China's Air Force.

Along with the insigne, all the HMR(L)-261 pilots were given scrolls.

Unit Designations Changed BTG's, ATU's Become Squadrons

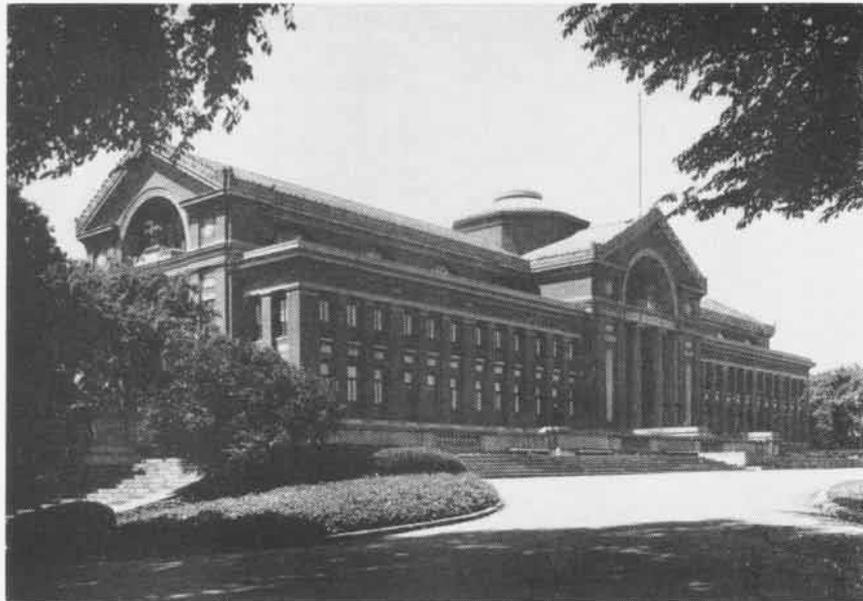
On May 1, six Naval Air Basic Training Groups in northwest Florida became Training Squadrons. The units are now separate administrative commands, but their mission is the same.

In the Pensacola area, Training Groups One and Five at NAAS SAUFLEY FIELD, and Group Nine at Sherman Field, NAS PENSACOLA, became Training Squadrons One, Five and Four in that order.

In the Milton area, Training Groups Two and Three, and the Multi-Engine Group, all at NAAS WHITING FIELD, became Training Squadrons Two, Three and Six respectively.

Besides the groups in the Naval Air Basic Training Command, ten Training Units within the Advanced Training Command were also redesignated. At NAAS KINGSVILLE ATU-202, 212, 222 became VT-21, 22, and 23; ATU-203, 213 and 223, based at Chase Field are now VT-24, 25, and 26; and, finally, at NAS CORPUS CHRISTI ATU-611, 501, 301 and 601 were changed at the very same time to Training Squadrons 28, 29, 30, and 31.

NATIONAL WAR COLLEGE



IMPOSING NATIONAL WAR COLLEGE BUILDING IS LOCATED AT FORT LESLEY J. MCNAIR

WHEN THE government started buying land in 1791 on the banks of the Potomac for the federal city that was to become the District of Columbia, it pegged a 28½ acre isthmus for an arsenal site. Three years later with one gun battery mounted on it, it was picturesquely called the Fort at Turkey Buzzard. Today, doubled in area, Fort Lesley J. McNair is located on this spot, bounded on the West by the Washington Channel and on the East by the Anacostia River.

In the intervening years, the post has been used for such diverse activ-

ities as a penitentiary, a hospital, a commissary warehouse, and the U.S. Engineers School. Here, in 1865, were held the trials of President Lincoln's assassins, and for four years the body of John Wilkes Booth was interred under the floor of the prison until it was buried in Baltimore.

President Theodore Roosevelt and Secretary of War Elihu Root participated in laying the cornerstone of the Army War College in 1903. This imposing building, dominating the tip of the isthmus, houses the National War College today.

Next month the College starts its fifteenth year of operation. It was established in 1946 by order of the Joint Chiefs of Staff, with the cooperation of the State Department, for advancing the preparation of selected senior military officers and civilian government officials for roles of greater responsibility in national affairs. The pressures of WW II re-emphasized the already recognized need for increased understanding between civilian and military components in their respective areas of operation, and for improved knowledge among the services themselves of the capabilities and limitations of each branch.

Through the efforts of Gen. Henry

H. Arnold, Gen. George Marshall and Adm. Ernest J. King, an Army-Navy Staff College was set up in Washington in July 1943. This successful venture served to broaden the horizon of thinking on the postwar structure of a higher educational system. Its wartime function at an end, the Army-Navy Staff College closed in late 1945.

General of the Army Dwight D. Eisenhower, then Chief of Staff of the Army, selected "National War College" as the official name and designated the Army War College building as the location of a new, more advanced school, in February 1946. Five months later the first students reported. VAdm. Harry J. Hill was the Commandant; his deputies were MGen. Alfred M. Gruenther, USA; BGen. Truman H. Landon, USAAF; and Mr. George F. Kennan of the State Department. The top billets are rotated among the armed forces, and there is always a civilian member of the directing staff who is of ambassador rank from the State Department. Today, LGen. Thomas L. Harrold, USA, is the Commandant; MGen. Jarred V. Crabb, USAF, is the Deputy for Military Affairs; RAdm. Richard H. Phillips, USN, is the Deputy for Academic Affairs and the Hon. William S. B. Lacy, Dept. of State, is the Deputy for Foreign Affairs.

Since its founding, the college has uninterruptedly made an annual contribution to the roll of government officials of men well-qualified to engage in the formulation of national



ADM. JERAULD WRIGHT ADDRESSED STUDENTS



RADM. PHILLIPS DEPLANES AFTER 52F HOP



ADMIRAL ARLEIGH BURKE MEETS WITH ONE OF THE COMMITTEES



BISHOP FULTON SHEEN LECTURED AT NIGHT TO MIXED AUDIENCE

security policy, particularly in the politico-military field in the world today.

To date, more than 1700 men have graduated from the National War College. The class of 133 that left this month consisted of 34 officers from each of the services, 18 from the State Department, and 13 officials from such diverse government activities as Central Intelligence Agency, Bureau of the Budget, Department of Defense, and National Security Agency. The Navy quota included seven Marines, one Coast Guardsman and a total of 11 Naval Aviators. The average age of the students is 42, with about 20 years of commissioned service.

Enrollment presents to each carefully screened individual the immediate and certain challenge of ten months of rugged study. His required reading starts long before he reports to the school. Once the College gets the selection lists from each service for the next class, letters are dispatched with lengthy bibliographies

and some material enclosed. From the opening of classes late in August until graduation early in June, hundreds of additional hours must be spent poring over books, reports and documents.

The College strives to stimulate the desire for serious reading as a leisure-time pursuit, because a continued appreciation of the underlying factors in politico-military affairs cannot be gleaned from newspapers alone. The well-equipped library contains some 300,000 publications in open stacks, and 65,000 classified documents which are kept in a special area with vaults, issuing desk and reading room. The competent library staff of 25 plays an active role in the academic life by assisting with research and securing reference material to support the syllabus.

The academic atmosphere is that of an advanced graduate educational institution for mature men. Throughout the curriculum, intellectual freedom is encouraged. Teaching is subordinate to learning. The 18 members of the faculty are not instructors as such. Rather, they serve as advisors, moderators and administrators. The class may draw upon the experience of the faculty; the latter, in turn, frequently benefit from the varied backgrounds of the students. Gen. Harrold also notes that the school is under no obligation to grade its students. "We don't need that kind of motivation," he explains. "The hardest test we have is the self-examination each man gives himself."

Ten courses comprise the academic program of the National War College. The year's work is designed to culminate logically in the development of national security policy based on U.S.

national objectives, which stem from the nature of American life, society and government and the relation of these to world conditions. Studies, therefore, are planned to provide sufficient background material and up-to-date information for the students to formulate policy, after thorough examination and careful analysis. Course topics include: Elements of national power and their application to the United States, strategy and warfare, the American Government and the formulation of national security policy, the communist states, the western hemisphere and free Europe, Africa and free Asia. All this learning is synthesized in a national estimate of the situation from which suitable national security policy is evolved.

Academic procedures are designed to broaden the general knowledge of the class, to provide the opportunity for expansion of individual interests and to exploit the cross-educational values of group efforts. The lecture program is the basic method used to



GEN. HARROLD GREETES SECDEF T. S. GATES



MRS. DOUGLAS, GEN. HARROLD, THE JUSTICE



STUDENTS AND FACULTY TAKE ASW INDOCTRINATION CRUISE ON A SUPPORT CARRIER

develop "Daily Topics" which comprise each of the above courses. Great stress is placed on the selection of guest speakers, who are authorities in the specific fields under discussion. The roster is always illustrious. Harry S. Truman, Dean Acheson, Allen Dulles, the secretaries and military heads of the services; Associate Justice William O. Douglas; Walter H. Judd, Chairman of the House of Representatives Foreign Affairs Committee; and Charles Malik, UN Representative from Lebanon, all have appeared.

There are an average of four lectures a week, which run about 50 minutes and are followed by a brief question and answer period. In addition to scheduled talks on assigned topics, the college invites eminent visitors to Washington and high government officials to address the students on subjects of their own choosing. In the course of the year, there are also several evening sessions to which wives and guests are invited.

Discussion groups normally meet for an hour at the conclusion of the lecture and question period. For this purpose, the class is divided into sections of about 12 students, representing all the armed services and civilian agencies. New groups are organized every two weeks and are so arranged that by the end of the year every member of the class will have participated with all other classmates.

The great value of this academic procedure, which has been used since the start of the college, is derived

from the informal exchange of ideas, experiences and specialized knowledge of the members. The men also become acquainted with the organization of thought, clarity of expression and tact that are necessary at a conference.

All is not reading, listening and talking, however. There are also written projects. Committee problems are doled out to groups of six or eight, again representing a cross section of views and backgrounds. Representing the type that might well be under consideration in various agencies of the government, the problems are correlated with the subject matter of each course and require specific conclusions and recommendations. There are no "school solutions," and while faculty guidance is provided, the groups are left to their devices in approach, scope, format and presentation. All papers are reviewed by a faculty panel which selects, on the basis of appropriateness and interest, solutions for presentation to the entire class. Other committees are given the opportunity to challenge the recommendations.

As a regular part of the work at the college, each member of the class is required to make a systematic and analytical study of a subject related to national security and to record the findings and conclusions of his research in an individual thesis, which must measure up to the standards of graduate work. Toward the end of the year, the students are divided into groups of 24, with each allotted about

a half-hour to give a summary and to answer questions on his study.

Field trips have been regular and important supplements to the instructional program. A week is spent touring military installations in the U. S. during high-level briefings and for operational demonstrations.

A full day is spent at the United Nations in New York City. Class members are afforded full ambassadorial privileges, thereby gaining an invaluable insight into the behind-the-scenes workings of this renowned organization dedicated to world peace.

In the spring of each year the class is divided into task groups to journey to five different parts of the world: Europe, the Middle East, the Far East, Africa and Latin America. Three weeks are devoted to acquiring first-hand knowledge of conditions that exist in these areas that relate to the security of the United States. Recent trips saw National War College students meeting informally with Prime Minister Nehru of India for more than two hours, chatting with President Bourguiba of Tunisia, discussing local problems with scores of U.S. Ambassadors and their staffs, and conferring with such military leader as Gen. Lauris Norstad at SHAPE Headquarters.

The mission of the National War College, "To conduct a course of study of those agencies of government and those military, economic, scientific, political, psychological and social factors of power potential, which are essential parts of national security," has remained fundamentally unchanged throughout the years. In the effort to keep abreast of national needs and developments, and of the changing international scene, there has been revision of the emphasis accorded specific subjects. Each year sees added weight being given to evaluation of guided missiles in military strategy, to the implications of the control of space, and to the effects of armament reduction.

Whatever the conclusions of the individual and group studies, whatever the recommendations for individual problems areas, Gen. Harrold insists that what counts highest at the National War College is that "we learn from each other—students, faculty and lecturers." The strengthening of our security policy inevitably results.

GV-1 Makes First Flight Marine Tanker Serves Many Roles

A GV-1 turboprop aerial tanker has completed its first flight successfully. A Navy modification of the advanced C-130 transport, the GV-1 weighs 67 tons gross, and is equipped with a huge fuel tank in the cargo compartment. Under-the-wing drogues feed fuel to airborne fighter and attack aircraft at high altitudes.

On the first flight, the GV-1 simulated preparations for refueling a jet fighter. The plane took off from Dobbins AFB, climbed to an altitude of 27,500 feet, and extended the drogues from pods under the wings.

An F9F fighter followed the tanker and approached the extended drogues. While actual connection was not made on the first flight, it will be done at a later phase of the test program. The GV-1 flew at speeds up to 250 knots on the first flight.

It can transfer 28,000 pounds of fuel during a multiple refueling of jet aircraft 1000 nautical miles from take-off point.

The GV-1 can be converted quickly to a high performance combat transport for personnel and material, carrying up to 92 Marines or 35,000 pounds of cargo for 1850 nautical miles. Range depends on loading for a specific mission—maximum range is in excess of 4000 nautical miles.

The Lockheed turboprop plane can evacuate 74 litter patients from forward areas. It has short take-off and landing capabilities and can airdrop personnel and heavy equipment items.

Bullpup B is Authorized Martin Gets \$2.5-million Contract

The Navy has awarded Martin a \$2,561,000 contract for development of a modified version of the *Bullpup* air to surface guided missile.

Tentatively designated *Bullpup B*, it will not replace *Bullpups* in production, but will be additional.

Work on the new missile will be performed at Martin's guided missiles and electronics facility at Orlando.

Night Landings Run High Three in VF-31 Set Century Score

Gold Medal Winners in the Exalted Order of One Hundred Black Knights, three *Tomcatters* from VF-31—Lt. Jesse McKnight, Lt. Jack Wildman, and Lt. Tim Grier—joined one of Navy's exclusive clubs when they compiled 100 night landings in the *Demon* aboard USS *Saratoga*.

VF-31 performed its air defense mission for the big carrier with the *Sparrow III* during its deployment as part of the Sixth Fleet.

Tomcatters logged more than 300 night landings among them during two developments aboard the *Saratoga*.



QUARTERLY AVIATION safety pennant is presented to Cdr. F. C. Hearrell, BTG-2, NAAS Whiting Field, by RAdm. Clifford H. Duerfeldt, Chief of Naval Air Basic Training. BTG-2 flew 24,809 accident-free hours.

Defense Plans Explained Reservists Get Two-Day Briefing

A frequent fear of the Ready Reservist today is that if war should begin with a nuclear attack upon the United States, he might have no home to report from and quite a time even finding somebody to take his "blue card orders" for mobilization.

To get a better idea of United States plans for avoiding such a dilemma, 45 Air Intelligence officers from the NAS GROSSE ILE went to the operational headquarters of the Office of Civil and Defense Mobilization, Battle Creek, Michigan.

There they received a two-day extended "briefing" on U.S. plans for warning and defense of the civilian population against a nuclear attack and on the immense problems faced by the nation in staging a recovery from such an attack.

The briefings by recognized experts in OCDM included sessions on potential enemy capabilities, nuclear weapons effects, attack warning and communications systems, OCDM's radiation monitoring and fall-out shelter programs, and several related subjects.

The reserve units involved were Air Intelligence Reserve Training Units 731, commanded by Cdr. C. R. Humphrey; 732, whose skipper is Cdr. R. C. Rasmussen, and 733, commanded by Cdr. P. W. Hargrove; as well as guests from AIRTU-721 and AIRTU-722 at NAS GLENVIEW, Ill.



THIS SUPERSONIC F8U-1P Photo Crusader burtles skyward on another reconnaissance mission. Pilots of the 1st Marine Air Wings VMCJ-1 carry their cameras at more than 1000 mph. Located at MCAF Iwakuni, VMCJ-1 is ready to carry out its photo mission for any unit or commander on request. Besides planes that move in a hurry, VMCJ-1 has a laboratory that can have finished photographs ready within 45 minutes after the photo plane lands. LCol. A. E. James is skipper.



THE ROYAL CANADIAN AIR FORCE'S NEWEST AND LARGEST AIRCRAFT FLIES ABOVE A SUB OVER THE ATLANTIC OFF THE EAST COAST OF CANADA

FRONT VIEW STRESSES 'NOSEY' CHARACTERISTICS SOME OF THE ANTISUBMARINE ARMAMENT OF THE RCAF P2V NEPTUNE IS SHOWN IN LINE



CANADA'S MARITIME AIR COMMAND

An important role in the defense of this hemisphere is played by Canada's Maritime Air Command (MAC). Headquarters of this land-based maritime defense force of the RCAF are located at Halifax, N.S.

In 1958, the Argus antisubmarine aircraft began to take its place alongside the P2V-7 Neptunes on the East Coast.

The giant Argus, largest antisubmarine aircraft in the world, is one of the most formidable search, strike and kill weapons known to maritime warfare. It can carry a complete offensive armament load of approximately 8000 pounds to a patrol area up to 1000 miles from base, remain in the operational area for eight hours, and then return to base with an additional 575-mile diversion allowance. Its sophisticated gear can detect, localize and shadow submerged submarines and surface ships.

The Air Officer Commanding, MAC, is Air Commodore W. I. Clements, O.B.E., C.D. ASW matters are coordinated with the Flag Officer, Atlantic Coast, of the Royal Canadian Navy. The latter is Canadian Commander, Maritime Atlantic, and his forces operate with SACLant in the defense of the North Atlantic.

Joint projects of MAC and the U.S. Navy include evaluation of antisubmarine warfare equipment and techniques, making of training films, and regular exchange visits.

JUNE 1960



ARGUS PATROLLER DIPS ITS WING TO GREET A MERCHANT VESSEL

A P2V ON PATROL FLIES OVER RADAR DOMES ON STEEP CLIFF



SKY, SUB AND SEA ASW SKILL

OPERATION MINUTEMAN



In the first anti-submarine drill for selected Naval Reservists in the air, on the sea, under the sea, 1500 men from the Third Naval District gave up civilian pursuits for a weekend to man a Hunter-Killer Force. Five squadrons from NAS NEW YORK participated with two New London submarines, four destroyer escorts and one destroyer. Capt. R. C. Coburn, ComNavResDE Div 3ND, directed the exercise. Plans call for similar maneuvers to be held every three months.

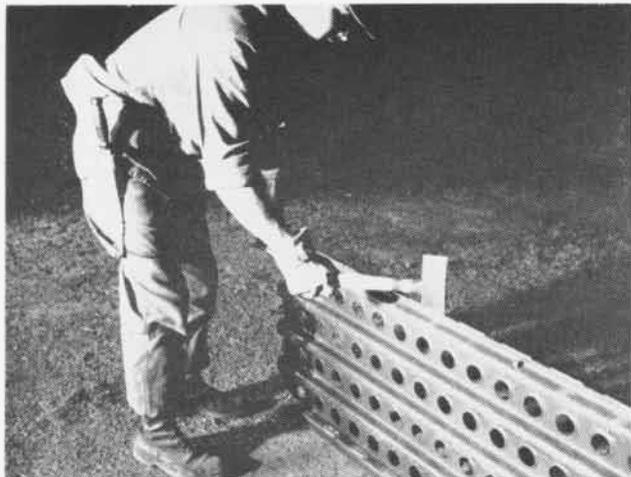


Air operations were conducted from Floyd Bennett Field, under the supervision of Cdr. A. D. Christopher. VS-832, VS-836, with S2F Trackers; VP-834, VP-837, flying P2V Neptunes; and HS-831 in HSS helicopters, led the air search of the area which extended sixty to ninety miles southeast of New York City. AIRTU personnel also played an important role. The extensive ASW exercise demonstrated the combat readiness of the Weekend Warriors and provided an excellent opportunity for a maximum teamwork effort among air, sea and submarine forces.

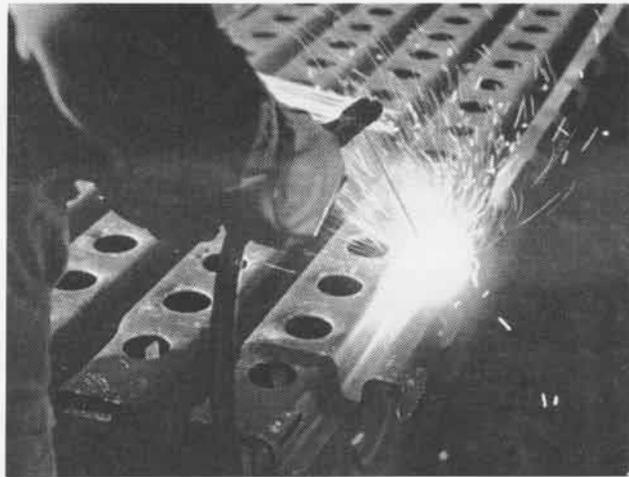


USS Sea Robin (SS-407), at left, and USS Sablefish (SS-303) played the part of elusive enemy submarines lurking off the East Coast of the United States. Both were manned by Third Naval District Reservists with a core of regular crewmen. RAdm. D. T. Eller, Chief of Naval Reserve Training, Omaha, Nebraska, observed the maneuvers from a TF aircraft. At the conclusion, he commended all hands when he said, "It convinces me that our reserve air, surface and submarine component is now a significant part of the Navy seapower team."

MARINES PROVE 'SELF' IN FIELD



7TH MARINES ENGINEER BENDS HOOKS ON MATS FOR PROPER FIT



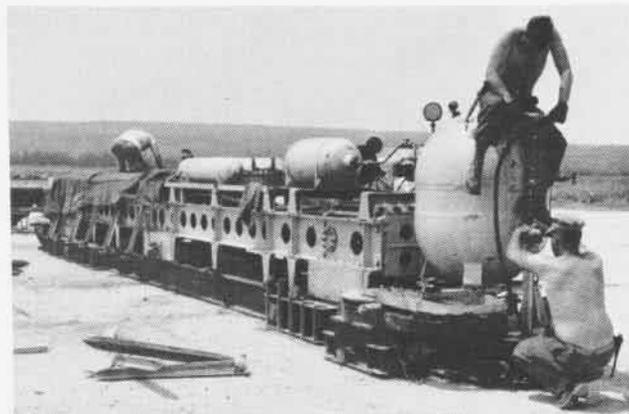
THE LAST PIECE OF MATTING IS CUT TO SIZE FOR LANDING FIELD



STRIP, 3400 FEET LONG, 60 FT. WIDE, IS BUILT OF ALUMINUM PLANKS, EACH 2 FT. WIDE, 12 FT. LONG, AND WEIGHING 161 POUNDS



LANDING SIGNAL OFFICER ADJUSTS THE LANDING MIRROR LIGHTS



TWENTY-TWO STAKES ARE DRIVEN IN TO ANCHOR MOREST IN PLACE

THE MARINE Corps has developed an "expeditionary carrier deck" from which it operates modern high speed jet aircraft from fields within the amphibious objective area soon after "D" day. The system was given a thorough testing when units of the Marines Third Division and 1st Wing pooled their talents during Exercise *Blue Star* on Taiwan.

SELF—Short Expeditionary Landing Field—is comprised of a portable aluminum landing strip (which can be constructed by field engineers in about two days during combat operations), as well as other associated airfield operating equipment. Used in conjunction with after-burner and JATO, a SELF allows jets to take off from extremely short runways.

Speed in getting the field into operation, rather than building something permanent, is the goal. The idea is to get one or two of these fields into operation in the combat zone as soon as possible to support fast-moving ground forces in seizing permanent airfields. It is not intended for a SELF to be used for more than 30 days.

In *Blue Star*, members of the Seventh Engineers followed the first wave of infantry troops across the beaches of the island and immediately went to work on the runway.

Working around the clock in three shifts, the engineers bolted together 9,852 aluminum planks to form the 3400-foot runway in about 50 hours. Each of the planks measured 12 feet long, 2 feet wide, 3 inches in depth, and weighed 160 pounds.

The first plane to land, an A4D *Skyhawk*, was piloted by Col. George C.



AN F4D SKYRAY, BELONGING TO VMF(AW)-531, MAKES RUN-UP PRIOR TO STARTING TAKE-OFF

Axtell, Commanding Officer of Marine Aircraft Group 12, who had supervised the project. The *Skyhawk* normally requires 8000 feet of reinforced concrete runway. He was followed seconds later by LCol. John B. Maas, Jr. in another *Skyhawk*.

The second type of aircraft to hit the newly completed field was an F4D *Skyray*, landed by LCol. Henry W. Hise, C.O., VMF(AW)-531.

In a final test, a 10-ton supersonic F8U *Crusader* was the first "heavy" to prove the runway's capabilities as it grabbed the arresting wire in a perfect landing, and after refueling, thundered off over the mountains.

Supplementing the matting and

MOREST, an aircraft control and guidance system makes the SELF flight strip operational under conditions of low visibility.

This was the first time in history that this type of aluminum matting has been used in field exercise. A strip was previously tested at Iwakuni, Japan, headquarters of the 1st Marine Aircraft Wing, and at Beaufort, S. C.

In using the portable strip, Marine engineers can now make it possible for aviation units to operate within a few miles of the infantry. Since the distance over which aircraft must travel to reach their objective will be lessened, the fuel that is saved will allow aviators more time in target areas.



DURING OPERATION 'BLUE STAR,' AN A4D MAKES A JATO TAKE-OFF



THE A4D IS SAFELY LANDED WITH ASSIST OF CABLE ON MOREST

Weekend Warrior NEWS



JAX PILOTS were taken to the middle of the St. John's River in a crash boat, leaped over the side at about 40-second intervals and were hoisted aboard one of three HU-701 helicopters.

HU-701 Goes Hoist-Happy

When Dallas-based Helicopter Utility Squadron 701 arrived at NAS JACKSONVILLE for a two-week training stint, the men were greeted with a very unusual cruise schedule. The word had been passed that all Nav-AirLant pilots must be hoisted out of the drink in a simulated rescue every two years.

LCdr. A. A. Klotz, skipper of HU-701, learned that many of the Jax aviators were due for a dunking and his outfit was given the job of saving them. In one week about 500

wet and cold men were hoisted by the 14 officers and 17 enlisted from Texasway. It was excellent practice for their primary mission of carrier rescue.

Elk Head Goes First Class

Lt. Jim White of NAS ATLANTA's VA-672 caught up with an itinerant taxidermist during a drill weekend when his unit went to Florida to fire rockets and drop bombs. He picked up the mounted head of an 1100-pound elk, he shot two years ago in Montana.

His commanding officer, Cdr. J. E. Anderson, gave permission to fly the



SECURED SAFELY in a horse-collar type harness, a rescuee emerges sopping but smiling.

trophy home. Said White, "The hardest part of the trip for me was loading that head into an AD with a lot of people watching the operation."

VF-879 Trains at Miramar

The *Banshee* pilots and men of Fighter Squadron 879 from NAS Oakland had a highly successful 1960 cruise at NAS MIRAMAR. A total of 820.8 pilot hours and 736.3 aircraft hours were flown and 4,000 rounds of ammunition were expended on 12 target banners.

Cdr. Richard Carter became skipper just before the AcTraDu period.



LT. WHITE finds 12-point elk head awkwardly configured for the cockpit of AD-5 Skyraider.



ONLY RESERVIST still jumping, Capt. James R. Smith is C.O. of BARTU-776, Los Alamitos.

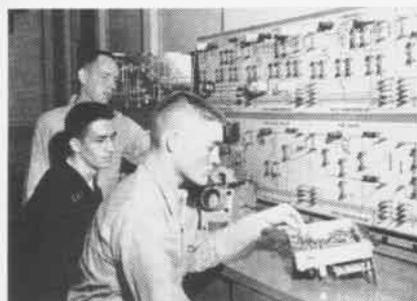


GUNNERY RANGE checked by Lts. W. N. Blaseck, E. B. Madsen, D. Powell, VF-879 pilots.

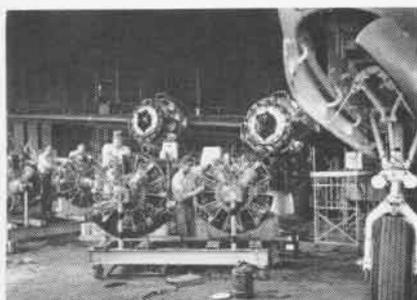
NAVAL AIR RESERVE TRAINING UNIT MEMPHIS READY TODAY FOR TOMORROW



RAW MATERIAL from whence technicians are made. Memphis will train AirCat recruits.



MODERN ELECTRONICS lab serves as classroom for Reserves. M. G. Dooley, AT2, instructs.



MOTTO OF Maintenance Department is "fix 'em up and fly 'em out." Unit has 30 aircraft.



PROCEDURES for submarine search and tracking by radar are taught by F. L. Arthur, AT2.

NAVAL Air Reserve Training Unit, Memphis, with its nine squadrons, consists of about 250 officers and 600 enlisted men. Of these, 25 officers and 228 men make up the active duty complement. The balance are Weekend Warriors, representing 13 states, who are trained to a high degree of combat readiness for immediate recall in event of national emergency.

With a secondary mission of lending fighter support to the mid-South Air Defense Command, NARTU MEMPHIS is commanded by Capt. David R. Flynn and includes: Air Wing Staff 79; VF(jet)-791 and 792; VP-791, 792, 793 and VR-791, 792 and 793. During the past 12 months the unit has received seven letters of commendation from the Chief of Naval Operations for its safety record.

Much credit for this achievement goes to the aircraft maintenance department which services more than 30 planes assigned in six different types. A total of 1300 hours is flown each month.

The flight training division is responsible for the annual requirements for Memphis Reservists. Training is conducted by type and simulates as far as possible actual combat conditions. Each drill weekend, enlisted personnel get a ration of both classroom theory and in-service practice commensurate with their rate and rating. Aviation ground officers work under the supervision of active duty officers in the department that matches their specialty.

All the paperwork for the activity is handled by the administrative department which also provides guidance for squadron personnel. Keeping the on-board count adequate to do the job falls to the recruiting officer, LCdr. W. J. Johnston. Officer Procurement processes NavCad/AOC applicants and furnishes teams for visits to 73 colleges and universities.

In July the already busy pace will be stepped up further. NARTU MEMPHIS has been selected to conduct the four-week recruit training phase of the six-month Accelerated Program.



PATROL SQUADRONS use the rugged and reliable P2V Neptune for anti-sub missions.



TV-2 TRAINER keeps pilots jet qualified. Air Defense Command gets help from VF squadrons.



R5D IS FLEET Tactical Support aircraft. For syllabus flying, there are RAD's and SNB's.



NARTU MEMPHIS was one of first Reserve activities to be assigned versatile F4U Fury.

'INTRUDER' HAS MANY FEATURES

TILTING TAILPIPES, extended range and an integrated display system are a few of the features built into the Navy's newest attack bomber, the Grumman A2F-1.

Named the *Intruder*, the two-place, twin-jet, carrier-based aircraft was unveiled on 29 April at the Grumman plant. Witnessing the ceremony were VAdm. Robert B. Pirie, USN, Deputy Chief of Naval Operations (Air), and RAdm. Paul D. Stroop, USN, Chief of the Bureau of Naval Weapons.

The A2F-1 is the first Navy low level attack bomber to possess the ability to accurately deliver nuclear or conventional weapons on targets completely obscured by weather or darkness. Described as a versatile subsonic attack plane, the *Intruder's* extended range capabilities and sensitive radar and detection equipment make it a valuable weapons system for either a limited brush fire war or a retaliatory nuclear war.

Developed under this dual purpose philosophy, the two-place (pilot and radar operator) *Intruder* is an aircraft which can select small targets for close-support missions, regardless of night or weather, or travel long distances to deliver a nuclear haymaker. Added to this versatility is the plane's exceptional loitering ability and a capability of carrying greater and more varied amounts of stores than any other naval attack aircraft in existence today.

The pilot of the *Intruder* is able to "see" targets and geographical features under all conditions by means of two viewing screens which provide a visual representation of the ground and air



A2F-1 WAS FIRST NAVY PLANE BUILT UNDER A 'COST-PLUS' INCENTIVE FEE CONTRACT

below and in front of the aircraft. Called an "integrated display system," this visual representation is created by the electronic transformation of information supplied by the *Intruder's* modern sensory equipment.

The A2F-1 also employs "DIANE," a Digital Integrated Attack Navigation Equipment which frees the pilot from the consideration of details which can be performed automatically, thus allowing him to focus attention on immediate tactical decisions. Acting upon information provided by his integrated display system, the pilot can pre-select an automatic course of action for his *Intruder* which would then approach its target, discharge its weapon, and leave the target area. A change in plans is easily effected by the pilot should the tactical situation require it.

Another engineering first for the A2F-1 *Intruder* is its hydraulically actuated tilting tailpipe. Dropped into the tilt position, the pipes direct the air-

craft's high thrust partially downward providing the plane with additional lift and facilitating an ease of take-off. This innovation gives the plane excellent short field capabilities.

The A2F is being developed under the first "cost-plus" incentive fee contract to be administered by the Navy. The contract, totaling \$101,701,000, was awarded to Grumman in March 1959. A subsequent production contract for \$54,300,000 was announced on 28 March 1960. The "cost plus incentive fee" system increases or decreases the contractor's profit, using as criteria the ability of the contractor (1) to meet or surpass performance requirements, (2) to provide accurate and reliable electronic systems and (3) to cut costs.

The sweptwing aircraft is powered by two J-52P-6 Pratt and Whitney turbojet engines, each delivering 8500 pounds of thrust. Engines are located on either side of the A2F's fuselage and are fitted so as to be interchangeable, providing maintenance flexibility.

In hailing the new attack aircraft for the Navy, Admiral Pirie stated "The *Intruder* will provide Navy carrier squadrons with a greatly improved capability to evade early detection by enemy radar by flying at low altitudes, thus augmenting effectiveness in destroying targets."

"With the continued development and sophistication of anti-aircraft and anti-missile missiles," he added, "it is perhaps true that in a few years the only successful approach to an enemy target is one which has as its primary consideration the avoidance of early radar detection."



A2F HAS TILTING PIPES FOR SHORT FIELD TAKEOFFS, CAN ATTACK IN ANY WEATHER



THE SEA HAWKS, Lts. Davis, D. W. Tomlinson, A. P. Storrs III posed beside F2B-1. Pioneer demonstration team thrilled nation in 1920's.



LTJG. DAVIS (L) shared tribute, first prize money with Arthur Goebel, Woolaroc owner, after 1927 Dole Air Race from San Francisco to Hawaii.

OLD BOLD 'SEA HAWK' RETIRES

A FEW months after Lindbergh hopped across the Atlantic, a young Naval Aviator, fresh out of Pensacola, achieved international fame in a similar non-stop flight venture across the Pacific from San Francisco to Honolulu. Twenty two years later as a Navy four-striper, he was still embellishing aviation history as he piloted the rocket-powered Douglas D-558 to a speed of Mach 1.14 at Muroc and became one of the first Navy pilots to crack the sound barrier.

Such events typify the career of VAdm. William V. Davis, Jr., former DCNO(Air), who was retired recently in ceremonies held aboard the USS *Independence* (CVA-62). At the time of his retirement, Adm. Davis was serving as Deputy Commander in Chief, Atlantic Fleet, and Chief of Staff and Aide, Commander in Chief, Atlantic Fleet.

A 1924 graduate of the U.S. Naval Academy, Adm. Davis earned his Navy wings at Pensacola in 1926. After a tour in VF-6 and VB-2 aboard the USS *Langley*, he was selected to navigate the *Woolaroc*, a civilian entrant in the 1927 Dole Air Race from San Francisco to Honolulu.

The *Woolaroc*, piloted by its owner, Arthur Goebel, won the race and \$25,000 prize money. In addition to his share of the prize, Ltjg. Davis received the Distinguished Flying Cross and achieved the distinction of being



NATC DIRECTOR of Flight Test in 1949, Capt. Davis flew supersonic D-558-2 at Muroc.

the first Naval Officer to reach Hawaii from the mainland by air.

With the creation of the Navy's first flight demonstration team, the *Sea Hawks*, Ltjg. Davis was chosen to fly the right wing position. The trio—granddaddy of today's *Blue Angels*—introduced low-level precision flight to the nation in the twenties; and scored spectacularly in the 1928 National Air Races at Los Angeles.

Adm. Davis' carrier career brackets historically the entire span of the flat-tops beginning with the USS *Langley* (CV-1) and ending on the USS *Independence* (CVA-62). His 34 years of service in aviation include such assignments as landing signal officer on the USS *Saratoga*, squadron

C.O. (VT-5) on the USS *Yorktown*, and C.O. of the USS *Tulagi* (CVE-72). As skipper of the latter, he participated in the Okinawa landings.

For his service in WWII as Deputy Chief of Staff of Operations to Commander Shore Based Air Force, Forward Area, Central Pacific and as Chief of Staff, Headquarters Strategic Air Force, Pacific Ocean Areas, he was awarded the Legion of Merit.

His post war duties included an assignment as Director of Flight Test at the Naval Air Test Center, Patuxent River. It was during this tour in 1949 that the "old man" became the second Naval Aviator to break the sound barrier in the D-558. For his NATC work on high altitude jet flight and development of helicopters he received the National Air Council Research Award.

Subsequently he served as Commanding Officer of the USS *Franklin D. Roosevelt* and Commanding Officer of NATC. In April 1952 he became Navy Deputy Commander, Armed Forces Special Weapons Project at Albuquerque, New Mexico and later commanded CarDiv-5. After serving as Assistant Chief of Naval Operations (Fleet Readiness) in July 1956 he became Deputy Chief of Naval Operations for Air.

Admiral Davis undertook his final assignment as Deputy Commander in Chief, Atlantic Fleet, in May 1958.

NEW 'READY ROOM' FEATURES P3V

LOCKHEED Aircraft Corporation has resumed publication of *Ready Room*, a pilot-to-pilot account of what a new airplane is like. The subject, of course, is the anti-submarine P3V-1 which is being wrung out by company test pilots.

Volume One of *Ready Room* was published when PV-1's and PV-2's were first reaching the fleet.

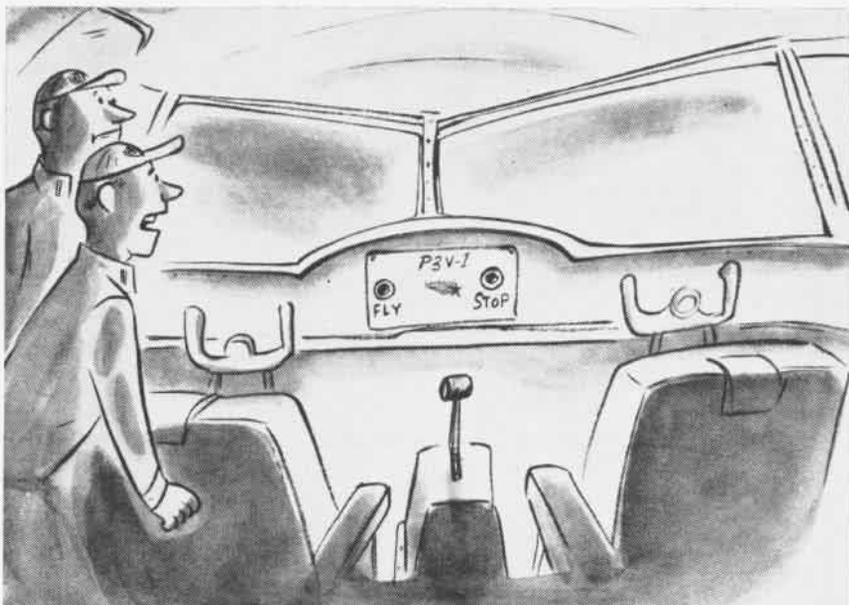
Wayne Pryor, Lockheed Aircraft Corp., Burbank, edits Volume Two. In Issue One he outlines the aims.

"The idea is to pass on all good dope that our flight test people pick up in handling the bird at the factory. Test pilots happen onto many useful little gimmicks that never find their way into the flight manual.

"As you know, the more you know about a plane in advance, the better you do when you sit down in the left-hand seat. And, while the test pilot gimmicks we pass on may not save a plane sometime, they might, or they just might reduce tensions."

He cites an example. A few weeks ago in the flight testing area off San Diego an oil seal popped and the "prop oil low" light came on. "So," he writes, "we feathered the fan on No. 1 engine. On the way back to Burbank we noticed that the feathered prop gave an annoying little buffet.

"It was in the 'X' position to the wing. (The P3V has four-bladed props.) By a little touch on the feathering button, we cranked the



'SOMEHOW I THINK THESE LOCKHEED ENGINEERS HAVE OVERDONE IT!'

prop around to the 'plus' sign position so that two blades were parallel with the wing. Buffet ceased and the bird came on in good as gold and you never noticed the shut-down engine."

The P3V-1 has a shorter forward fuselage section than the commercial *Electra*, a bomb bay, re-designed cockpit for better visibility, more powerful engines, higher gross weight, tons of electronic gear for sub-hunting, and increased crew comfort.

Pilots can safely look out the window for other traffic without worrying

about nudging the mixture control or cracking a cowl flap. There are no mixture controls and no cowl flaps. The pilot has only two major engine instruments and one major engine control for each fan.

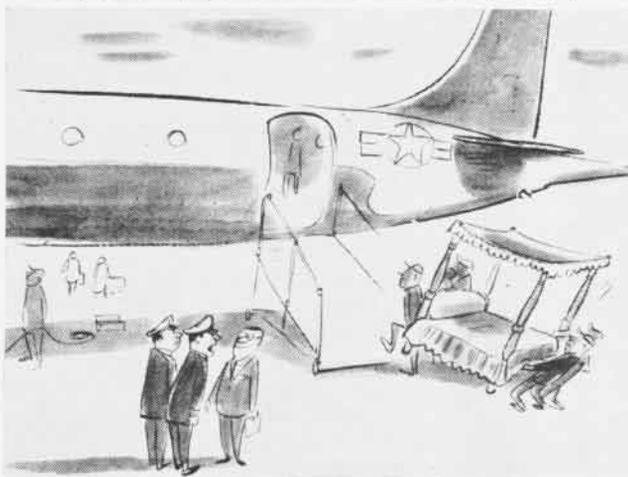
Movement of four levers on the console directs signals to the engine control system calling for fuel flow turbine inlet temperature and consequently a prop blade angle that will absorb the power developed.

"It's automatic with one movement; no fuss," says *Ready Room*.

'BELAY THAT, SQUILGE, WE USE THE FEATHERING BUTTON!'



'OH, COME NOW, THE QUARTERS CAN'T BE THAT GOOD!'





RESCUE CREW DASHES TO READY HRS AT FIRST WORD OF TROUBLE



ANGEL HOVERS OVER RUNWAY AS F8U-1 CRUSADER MAKES LANDING

INSTANT RESCUE AT MCAS BEAUFORT

TWO MARINE HRS helicopters which guard the runways and pilots of airplanes at MCAS BEAUFORT answer to the call sign "Angel One" and "Angel Two." They are appropriately named, say pilots of F8U *Crusader* and A4D *Skyhawk* jets who fly from Beaufort.

The station is inhabited by one jet attack and four fighter squadrons. Helicopter units have been organized to provide fast rescue or search whenever an emergency arises.

At Beaufort the effectiveness of such rescue units is carried several steps further than at some stations, according to the Marines. Rather than wait for an accident, the Beaufort

helicopter is in the air immediately whenever an emergency of any nature is declared.

Fighters or transports returning to the field with any one of a hundred minor problems land with confidence.

While one helicopter is in the air, the other is standing by and ready for back-up duty. In case of overwater searches, both helicopters go into service—one as the primary search and rescue craft and the other to assure the safety of the first. Overwater missions often take them a hundred miles out to sea.

When the horn sounds outside the ready room the duty crew breaks, runs for the HRS, cranks it up and takes

off. Waiting for oil and cylinder head temperature is unheard of at Beaufort. The duty copter is warmed up every hour and radios are left on to conserve even the few seconds warmup they would require.

An auxiliary power unit is attached to the aircraft to prevent battery drain and provide a positive source of power for immediate starts.

Capt. Paul W. Niesen justifies the elaborate preparations made by the rescue unit:

"Seconds count when there's an emergency and a man's life is at stake. We can't afford the luxury of a full check-off list if we're to do the sort of job that is always expected of us."

HELO STANDS BY TO ESCORT CRIPPLED JET



PILOTS LEARN TO USE RESCUE EQUIPMENT



FLIGHT COMPLETED, RESCUE CREW RETURNS





JERRY JONES, ADJ3, and *Larry Goldsmith, AD3,* repair J-48 jet engine in FASRon-4 shop.



DANNY R. WATTS, AO2, instructs *Franklin M. Culligan, AN,* in 20-mm loading procedures.



CHARLES R. WARMACK, AQ2, repairs an ARC-1 transmitter in squadron electronics shop.

CAN-DO SQUADRON CLOSES BOOKS

FLEET AIRCRAFT Service Squadron Four will finish eight years of service to the Fleet when it is decommissioned the end of this month.

The squadron's maintenance personnel are slated to become the Aircraft Maintenance Department of NAS NORTH ISLAND and will continue to work under the motto of "Service is Our Business." Other squadron personnel will be transferred to various North Island activities.

FASRon-4 has been described as a "Jack of All Trades" organization. Its two large hangars house nine shops where maintenance is performed, while the 20 jet and prop aircraft of the squadron are used to carry out such missions as syllabus flying and air logistic missions along the west coast and to carriers at sea.

The squadron maintains a complete

supply department of aircraft items which range from assembled engines to tiny components of electronic equipment, and it renders Class "C" maintenance to other squadrons.

The syllabus flying program sponsored by FASRon-4 enables 275 pilots from 38 Navy commands to keep their qualification status current.

FASRon-4 pilots often fly special missions such as aerial photography, gunfire spotting, airborne tactical air control, and live parachute drops in support of exercises at Camp Pendleton and NAAS EL CENTRO.

Guided Missile Augmenting Unit 0506 which tests and assembles all the missiles at NAS NORTH ISLAND is part of FASRon-4. Missiles are supplied to VFAW-3, the only Navy fighter squadron assigned to the Continental Air Defense Command.

Nine non-flying, obsolete aircraft are maintained by FASRon-4 for training purposes. Flight deck crews from carriers learn stowage and the handling procedure of aircraft by attending schools at North Island. The crews exercise the same gentle care with these obsolete training aircraft as they would with the costly prop and jet planes on a carrier.

Parachutes also come in for their share of FASRon-4's attention. The squadron operates the Fleet parachute loft where riggers from other squadrons stow and pack their chutes.

The squadron's daily routine also

includes flight line duties, such as fueling aircraft, performing engine changes and maintenance, and aircraft towing service.

"Service with Safety is Our Business" might be a better slogan for FASRon-4. The squadron has not had an accident in the past 14 months. Pilots have flown its planes an average of more than 1200 hours per month in that time.

FASRon-4 was established as a unit of NavAirPac February 4, 1953, by redesignation of FASRon-691 at North Island. However, since FASRon Four Detachment Alfa was established at NAS LOS ALAMITOS April 19, 1952, the squadron claims that date as its anniversary.

The squadron is commanded by Cdr. Jaquelin C. Davison. LCdr. C. I. Nettleton is its executive officer.



GEORGE L. MONTGOMERY, AD3, inspects timing mechanism for firing parachute in F9F-ST.



FLIGHT PLAN for AD is discussed by *Marine Capt. J. C. Rhodes* and *M. A. Cortez, AD3.*

DAMAGED P2V FLIES AGAIN

ENROUTE from Brunswick, Maine to NAS MINNEAPOLIS last December, a P2V-7 landed in ceiling zero weather at an isolated, small airfield near Rochester, Minn. The *Neptune* bounced hard on the frozen strip, and flipped its tail upward. Stringers and longerons in the primary section were twisted and broken and the center section of front spar web was damaged.

The plane was sitting damaged in an isolated, frozen area, completely out of service. Temperatures ranged from 18 above to 30 below zero. No hangar was large enough to accommodate a P2V. Road clearance to NAS MINNEAPOLIS was not high enough to permit transporting the plane by land and the nearby Mississippi River was expected momentarily to freeze over.

On the basis of preliminary examination, the Bureau of Weapons requested a field team from NAS ALAMEDA to make necessary temporary repairs at the site, so the plane could be flown to an overhaul and repair facility for permanent repairs.

A repair team left Alameda's O&R department February 4 for Minneapolis. At Lobb Field in Rochester, the field team found 10-below-zero weather with strong, changing winds.

The Central District Bureau of Weapons and NAS MINNEAPOLIS had leased part of the only hangar on the field. A crew from Minneapolis had

removed wings, engines, and secured all classified components of the P2V. They had put as much of the plane into a hangar as they could.

After a careful study of the damaged plane, Bruce Blyth of the repair team recommended that permanent repairs be made on the spot and that the next major inspection be carried out on the work site.

Earl Babcock of the repair team made note of the material requirements and returned to Alameda to have parts manufactured. Five additional men were sent from NAS ALAMEDA to work with the O&R repair team.

Original plans for temporary repairs would have required eight men to work eight weeks at a cost of more than \$30,000 to get the airplane in condition to fly to an O&R facility. From there, additional money and man hours would be spent making permanent repairs.

But in six weeks, the field team made permanent repairs at the site and completed the next major inspection, all at a total cost of less than \$27,000. The P2V was ferried back to an operating squadron in March.

LCdr. F. M. Lacey, the ferry pilot who accepted the plane, described the flight from Rochester.

"All four engines operated in near-perfect order," he said. "The aircraft rigging was absolutely perfect in all respects, as the aircraft was in perfect

trim in level flight at 0 degrees trim controls. Considering the work performed in a major repair such as this, the repair crew from NAS MINNEAPOLIS and O&R, NAS ALAMEDA, are to be commended for a job well done. The repaired aircraft performed as if it had just come from the factory."

Student Pilots Fly in F11F Are Members of Chase Field's ATU

Two Marine lieutenants became the first student pilots to fly the F11F *Tiger* at Chase Field's new Advanced Training Unit 223 on 8 April.

First Lt. James A. Lane, Jr., was the first to solo the *Tiger*. Shortly after, the second student, 1st Lt. Edward D. Dunn made his successful flight.

These were the first flights in Chase Field's new system of training pilots for the Fleet. After completion of training in the F9F-8 in ATU 203 and 213, the students are assigned to ATU-223 to gain proficiency in the Grumman F11F *Tiger* airplane.

F8U-2 Squadron at Yuma VMF-451 First There with All -2's

Marine Fighter Squadron 451 arrived at MCAAS YUMA completely equipped with F8U-2's to undergo training.

Some Navy fighter units with both F8U-1's and F8U-2's had deployed previously to Yuma but no other squadron had reported with all F8U-2's.

VMF-451 is commanded by LCol. Jack R. Sloan. The squadron has been stationed at El Toro since returning from the Far East in November 1959.



FOURTH, FIRST AND FATTENING! On the fourth anniversary of the commissioning of the USS Saratoga (CVA-60), a "first" in the fine old business of cake-making is claimed with the production of this

prodigious (4,115 pounds) piece of pastry. It's against our pie-laws to print (cheese) cake art, but we couldn't ignore one 18 feet long and eight feet wide—all of which batters a world record.



Tilton is Named Winner Rated Top Instructor in TechTra

Donald A. Tilton, ABC, was picked from a field of eight finalists as winner of the first "Schoolmaster Competition" to be held in the Naval Air Technical Training Command.

He is an instructor in NATTU PHILADELPHIA.

Each of the eight finalists previously had been designated Instructor of the



TILTON GETS PLAQUE FROM RADM. WELSH

Year in the commands they represented.

Judges for the Schoolmaster Competition were prominent educators, public relations men, and military leaders from the Memphis area.

Other finalists and semi-finalists were Marine ActMSgt. Thomas J. Lee, Thomas D. Ostertag, ACC, Donald F. Gohman, AD1, John W. Bloomquist, AD1, C. D. Ray, AOCS, Marine SSgt. R. T. White, and T. S. Geddes, ACC.

Helicopter Gives Warning Leads Japanese to Scene of Fire

Marine Lt. Robert G. Mitchell and MSgt. Leroy E. Catron were flying an HO4 helicopter on a training mission when they spotted a column of smoke on the northern tip of Miyajima Island in Japan. The smoke was coming from a forest fire which had not been observed by residents of Itsukushima, less than a mile away.

The First Marine Aircraft Wing pilots began buzzing the city to attract attention, then returned to the fire and made a pass over it. By then, the flames were 75 feet high.

Noticing another small village only a quarter mile from the fire, they buzzed it also, and fire-fighters to the scene of the fire.

As the search and rescue helicopter headed back to MCAF IWAKUNI, the citizens had the fire under control.



DR. JAMES P. WAKELIN (C), Asst. SecNav for Research and Development, and RADM. W. D. Irvin (R), Commander Operational Test and Evaluation Force, recently visited VX-1. Here they are shown HSS-2 equipment.

New Data Computer in Use Marine Personnel System Speeded

A new electronic personnel data processing system linking Marine Corps headquarters in Washington with Marine bases on the East and West coasts is now in operation.

Developed by the National Cash Register Company and leased by the Marine Corps, the system was installed to streamline, speed up, and increase the efficiency of Marine Corps personnel management procedures.

In less than 24 hours, the new data processing equipment can determine electronically the manpower levels of hundreds of Marine Corps commands throughout the world, specifying the exact number and type of military skills of Marines needed to bring each unit up to combat strength.

The system will maintain "electronic service records" on about 475,000 Marines, regular and reserve, recording 151 separate items of information about each man on less than two inches of magnetic tape. A total of 23,000,000 facts will be stored on only 20 reels of tape. A similar mass of data recorded on the punched cards now in use would require a stack of cards higher than the Empire State Building.

The new data processing system consists of three high-speed "NCR 304" computers. One is located at Marine headquarters in the Navy Annex. The other two have been installed at Camp Lejeune, North Carolina, and Camp Pendleton, California. The three computers are linked by leased wire.

Each of the three machines in the system is capable of turning out re-

ports at a speed equal to the output of 290 clerk-typists. The computers can make 20,000 "decisions" per second and can add 15,000 numbers in less time than it takes the average person to write a single word.

Data processing equipment makes possible a faster, more efficient mobilization of the Marine Corps Reserve in event of war or national emergency.

VMR-253 Sets New Record Establishes High Transport Total

Marine Transport Squadron 253, based at MCAF IWAKUNI, set during March an all-time monthly flight record for a Marine Transport Squadron in the Far East.

Operating with 16 R4Q and R5D type aircraft, the group shattered all existing records, logging an amazing 1,913 flight hours. Twenty-nine pilots flew 653 flights carrying 3,608 passengers; 118,746 pounds of mail; 1,082,093 pounds of cargo and 143,393 pounds of baggage.

According to LCol. Henry P. Huff, C.O. of VMR-253, a 100% aircraft utilization record is effected quarterly when each aircraft in the squadron logs 60 hours flight time. After tabulation of the squadron's 4,814.8 hours flight time during the month of March, its records showed that the percentage for the squadron had jumped to 199.2%.

In addition to making a new record for monthly and quarterly flight hours, the end of March marked the eighth consecutive accident-free quarter, the squadron told NANews.

Re-enlistment Rate of 100% VAP-62 at Jax Proud of Record

They come, they go, but most stay! That's the view of Heavy Photographic Squadron 62 of NAS JAX. The squadron holds its nose high and boasts a 100% re-enlistment tally for April.

In mid-April, the score was decisive when Jimmy P. Ridenour, PH1; Arnold A. Clemons, PH2; Jere F. Galloway, AO2, and Jerry W. Brumfield, ATN3, re-enlisted on terms of six years each.

With the squadron's new A3D-2P's in the air and short, interesting deployment hither and yon, 62's men prefer to stick around, according to Cdr. C. T. Frohne, VAP skipper.

FLYING BROTHERS 1960

A significant example of cooperation between the free nations of Asia and the United States is "Flying Brothers," the U.S.-Asian Fighter Weapons Conference. Hosts were the Philippines Air Forces and the 13th U.S. Air Force.

The second annual conference at Clark Air Base, Philippines, came to a close in April and was marked by enthusiasm on the part of all ranks and rates of the nations represented. Participating in the flying conference, besides the Republic of the Philippines and the United States, were the Republic of China, Republic of Korea, and Thailand. Observers were sent by Laos, Indonesia, Australia, United Kingdom (Far East Air Force), and South Vietnam.

The U.S. Navy was represented by a combined Navy-Marine Corps team from carriers of VAdm. Charles D. Griffin's Seventh Fleet. They flew Douglas A4D-2's. The pilots selected for the "Flying Brothers" exhibition shown at right (top to bottom) are: Cdr. E. W. Gendron (VA-93); Capt. G. W. Cannon (VMA-332); First Lt. L. W. Robinson (VMA-332); Ltjg. D. L. Strong (VA-93), and Capt. J. R. Greer (VMA-121). Other team members were Lt. John H. Harns (VA-94) and Capt. S. O. Newlon (VMA-125). BGen. Louis B. Robertshaw, USMC, seated in the plane, flew his own jet to observe his team.

Adm. H. G. Hopwood, Commander in Chief of the Pacific Fleet, said, "This fighter weapons conference demonstrated once again that peoples of different cultures, traditions and languages, will work in harmony in a program of mutual interest and for their mutual defense."



THESE TOP-FLIGHT Navy and Marine Aviators represented the U.S. in the meet. They praised the spirit and cooperation of all the teams.



A HELPING HAND is given Korean SSgt. Sim Bbung Chong as he loads rocket on an A4D-2.



LANCE CORPORAL Jesse J. Ananea, Jr. adjusts rocket pod as Thai Air Force men look on.

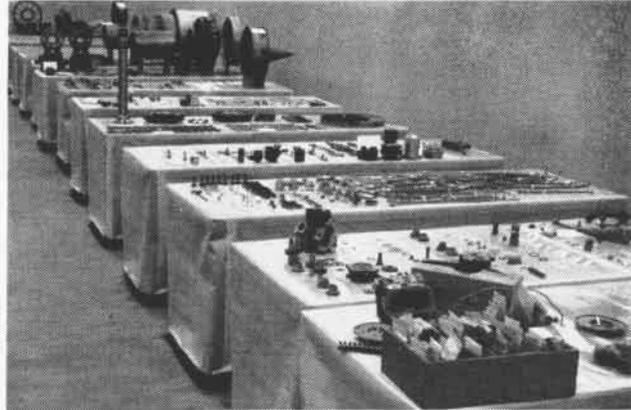


LOADING TECHNIQUES are observed by two maintenance technicians of Korea's AF team.

PROVISIONING FOR AIR SEAPOWER



NAVY, FLEET AND ACTIVITIES EXPERTS WORK ON PROVISIONING



DISPLAY OF PARTS AT AN ENGINE PROVISIONING CONFERENCE

TO CERTAIN Naval Officers and civilian experts, provisioning has nothing to do with food. To them "provisions" are spare parts, parts needed when an aircraft goes into operation. Provisioning is a vital and exciting step in the process of delivering to the Fleet the basic elements of air seapower.

New weapons are nothing if not complex, and with each advance in speed and power, the provisioning process becomes more and more complicated. For example, a Navy fighter aircraft in 1947 contained approximately 17,000 airframe items and 250 vendor components. In contrast, a Navy fighter today has approximately 50,000 airframe parts and 400 vendor components.

Provisioning must be increasingly sensitive to the state of the art in weapons development in order to render effective support to Fleet operations. Although there are many technical definitions, provisioning can well be defined as "a process by which responsible representatives of selected Naval commands and activities jointly determine by conference action the spare parts which will be required to support an aircraft, engine, etc., for an initial period of operations."

For many years, the Navy has provided initial spare parts support for aircraft, engines, etc., by requiring that contractors deliver selected spare parts at the same time they deliver the end article purchased; that is, the aircraft, engine, equipment, etc. For example, if the Navy contracts with

the Satellite Electronics Corporation to deliver 50 radar sets, funds for spare parts will normally be included in the contract. The contractor is then requested to deliver a Navy-selected range of spare parts at the same time the radar sets are being delivered. Such deliveries of spare parts will insure timely maintenance and repair.

Usually provisioning conferences are held in the United States. But only recently, a spare parts provisioning team met for the first time at a contractor's plant outside the North American continent. The team visited the Martin-Baker Aircraft Co., Ltd., plant at Denham, England, to determine the range and number of spare parts needed to support the Martin-Baker Mk. 5 series of automatic ejection seats. These seats are now standard equipment in many Naval aircraft.

The team examined 5000 drawings in order to study all the parts of nine ejection seats used in the F9F-8T, 8B; F8U-1, 1P, 2; F4H; T2V-1; F3H-2, 2N; FJ-4B; F4D-1; AND F11F-1.

Provisioning is accomplished by a team composed of both Navy representatives and contractor engineers, technicians and specialist personnel. Team action is a far cry from the early days of provisioning when one or two people would sit down in BUAER to review blueprints and make a selection of spares. Perhaps the best way to describe the process is to outline the major events in what is called the "provisioning cycle." The processes described below are those now used in

the Navy Aeronautical Organization.

The *first* operation or process in the "provisioning cycle" is the award of a contract by the Bureau of Naval Weapons for a certain number of aircraft, missiles, engines or equipment. BUWEPs includes an item for spare parts in such contracts and makes reference to a provisioning document (SAR-400) which cites in detail both the Navy and contractor responsibilities for provisioning and ordering the spare parts.

When the Aviation Supply Office (ASO) receives a copy of the contract, the *second* step is taken: issuance of a Statement of Provisioning Policy (letter) to the contractor. This letter outlines the technical documentation the contractor must furnish which will be used in the selection of spare parts. This documentation usually consists of blueprints and parts break-downs, covering the many individual assemblies and parts of the weapon or equipment purchased under the BuWeps contract.

An inspection conference, usually held at the contractor's plant, is the *third* step in the cycle. It is normally conducted by a team of personnel from ASO and one of the BUWEPs Fleet Readiness Representatives. The team examines the blueprints and parts break-down to determine their adequacy and completeness for the purpose of provisioning. If documentation is adequate, a firm date is established for a Provisioning Conference, usually held at the contractor's plant for aircraft, engines and

equipment. (For small, less complex repairable items the inspection of documentation and provisioning is accomplished at ASO).

The *fourth* step in the provisioning cycle takes place when ASO extends invitations to the various activities to participate in the provisioning conference. Invitations are, as a rule, sent to the following: the Bureau of Naval Weapons; the Bureau of Naval Weapons Fleet Readiness Representatives (formerly the Bureau of Aeronautics Maintenance Representatives); selected Overhaul and Repair activities, Test Centers and the Fleet or Training Command, depending on the type aircraft involved.

A provisioning team chairman, assigned by ASO, has administrative control over all members of the team, composed of representatives from these commands and activities and ASO. The team chairman convenes the conference at the contractor's plant and assigns specific objectives.

Most significant event—and the *fifth* step—of the provisioning cycle is the actual conference. Under the guidance of the team chairman and the assistant chairman, who is normally assigned from one of the BUWEPs Fleet Readiness Representatives Districts, the team takes the following action:

- Selects spare parts which will be required at Fleet level maintenance

operations and determines their rates of usage. Fleet representatives, contractor representatives and personnel from the ASO's Technical Division make this selection and assign a replacement rate on the basis of their personal experience and the usage information available.

- Selects spare parts and establishes quantity of each required for carrier outfittings. The same personnel who selected parts for maintenance determine the carrier outfitting requirements and establish quantities.

- Selects items required at Class A and B maintenance activities (air station with O&R departments) and assigns replacement rates. This is done by a second group of the provisioning team which consists of O&R and ASO technical representatives.

- Designates the source, maintenance and recoverability codes for the part. From the consumer point of view, this is the most important step of all. *Source codes* indicate whether the user may obtain a replacement; *maintenance codes* show the known or anticipated levels of maintenance at which the spare will be used, and *recoverability codes* denote whether the item should be repaired at the overhaul point, repaired locally or replaced as consumable.

- Establishes catalog classification and other cataloging data.

- Determines what instruction

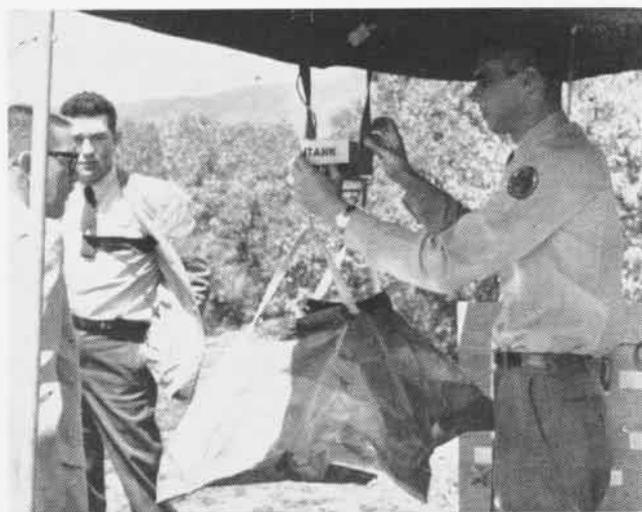
manuals are needed for operation and maintenance of the weapons or equipment purchased. Source, maintenance and recoverability codes are published in illustrated parts break-downs and manufacturers' instruction handbooks. Users of aeronautical parts find these publications essential.

At the conclusion of the provisioning conference, all technical information is returned to the Aviation Supply Office.

Data developed at the conference is the basis for computing spare parts orders which are placed with the contractor within 45 days following the conference. Recently ASO has begun to compute orders mechanically in order to save hours of manual computation on the part of ASO stock control personnel.

Paralleling the computation and placing the order, the catalog and technical divisions of ASO are identifying new items in accordance with the Federal Catalog Program and establishing a master data file record for each item.

The provisioning conference requires the counsel of the best qualified and most experienced representatives from the Fleet, Navy rework activities, the Bureau of Naval Weapons and the Aviation Supply Office. Only in this way, can the conference fulfill its mission, and insure the kind of support the Fleet expects and requires.



A LATE DEVELOPMENT in forest fire fighting was unveiled in Southern California when helicopters from Marine Aircraft Group 36 dropped more than 2400 gallons of water on a brush fire in less than five minutes. "Operation Firestop-Marine Helitack" was conducted by the California Division of Forestry and the Marines. At left, Forest Ranger R. J. Smart explains belitank release mechanism to members



of the Los Angeles County Fire Department. Above, an HUS drops 150 gallons on a brush fire. After a water drop cools off a "hot spot," ground crews move in and finish the job. Helicopters have been used for years by the Forestry Division to fight fires, but only last year were the new water bags used. Further experimentation was necessary before the technique could be given a public showing.

Survival Lectures Given Mobile Team Visits NAS Glynco

Imagine the aroma of a sizzling rattlesnake steak. Better yet, picture the suspense of matching wits with a living diamondback with a view to getting him in a skillet before he sinks his fangs in your leg. Interesting thoughts, or repulsive?

The basic difference between a hearty meal and going hungry in the event of being forced down in the swamps or desert, according to M. L. Brown, AO1, might lie in whether or not you can catch and prepare a rattlesnake for food.

Brown is an instructor in a Naval Survival Mobile Training Unit which visited NAS GLYNCO.

Knowledge and ingenuity often can mean the difference between life and death when man struggles with the elements, Brown said.

Glynco pilots and crewmen whose duties involve flying over wide expanses of water and swampy terrain learned some of these techniques of survival. More than 150 flying personnel took the two-day survival instruction being offered by the Fleet Airborne Electronics Training Unit.

The course includes survival at sea, on the desert, in the jungles or in polar regions. It is designed to provide pilots and aircrewmembers with sufficient knowledge and skills to protect themselves from as many hazards as possible until their rescue can be made.



TOWED REFLECTOR CAN BE ATTACHED FAST

Radar Reflector on Cougar Large Return on Small Investment

The famous *Grim Reapers* of VF-101, skippered by Cdr. L. R. Hardy, Jr., were assigned F9F-8T *Cougars* as low cost radar targets for F3H and F4D replacement pilot training.

It was shortly discovered that the clean little *Cougar* provided unacceptably short detection ranges for student all-weather fighter pilots.

Chief Aviation Ordnanceman R. N. Gillette, under the direction of the squadron Ordnance Officer, LCdr. C. C. O'Reilly, came up with a simple but effective solution. They attached to the wing a standard MA-1A towed banner spinner reflector, spring and swivel mounted on an angle iron frame.

The result? Detection ranges on the *Cougar* jumped 35%, and the low cost target has become an outstanding success.

For construction and installation details, write VF-101, NAS KEY WEST.

Bennington Claims Record ASW Carrier Goes Around, Around

USS *Bennington* claimed a new world's record for orbits when it completed 308 left circles within a 2000-yard area.

For 40 straight hours, the ASW carrier steamed in circles while taking part in antennae radiation tests off Seal Beach, Calif.

The tests were conducted by the Long Beach Naval Shipyard. The ship was required to remain within a one-mile circle, so that the radiation patterns could be calibrated.

There was a persistent port list when the ship finally steadied on a straight course after the tests were completed. One hundred per cent of the *Bennington's* crewmembers experienced vertigo, some of them for the first time.

Logs 10,000th. Safe Hour LCdr. Kurlak has Flown Since '38

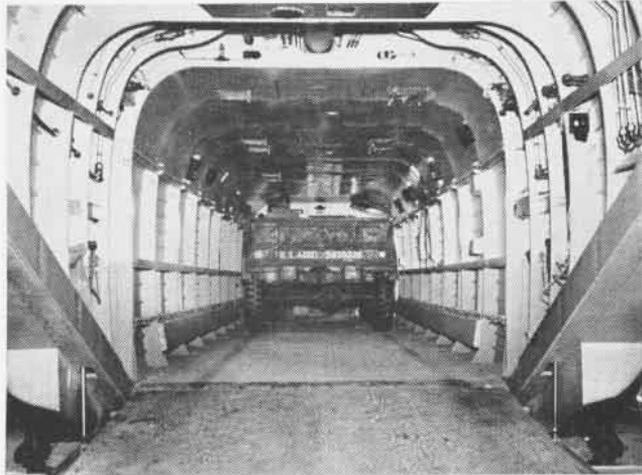
LCdr. William B. Kurlak of Airborne Early Warning Barrier Squadron Pacific has logged his 10,000th hour of accident-free flight.

The 26-year Navy veteran, who earned his wings in 1938, flies wv-2 *Super Connies* on the Pacific early warning barrier.

Before joining the barrier group he flew in Patrol Squadrons 21, 24, 22, 10; as a test pilot at Pensacola; with VR-8 he flew 101 missions in the Berlin Airlift, and flew off the *Bon Homme Richard* and *Boxer* in Korea.



FULL SCALE MOCKUP of Army YHC-1B "Chinook" is shown on ramp at Vertol's Morton, Pa., plant. For comparison in size, an H-21C takes off in background. At right, truck driven up ramp into the YHC-1B shows its interior cargo space. First YHC-1B is scheduled for roll-out next January. It is powered by two Lycoming YT55-L-5 shaft turbine engines and has been selected by Army to



replace its current fleet of piston-engine powered transport helicopters. It is a tandem-rotor craft with a normal mission carrying capacity of up to three tons, an alternate mission capability of carrying slightly less than eight tons. Cargo, including major components of Pershing missile system, was loaded into hull during Army Mock-up Board conference. Army has ordered five YHC-1B's.



DEEP FREEZE MEN check electronic "Grasshopper" used in Antarctic to gather and transmit weather reports from outlying scientific stations. Navy-designed and still in the developmental stage, units are battery-operated, and should last four weeks, broadcasting signals four times daily.

Marines Adopt Orphanage MACS-4 Men Donate Time, Labor

Rain and chilling winds could not dampen the 15th anniversary and re-naming ceremonies held 10 April at the Hiroshima War Orphanage, the home adopted by Marine Air Control Squadron Four, First Marine Aircraft Wing.

Twenty-five MACS-4 Leathernecks were on hand to take part in the ceremonies along with school and civic officials from Hiroshima and surrounding communities. The orphanage is located six miles south of Hiroshima at Itsukaichi, approximately 18 miles from the Marine Corps Air Facility, Iwakuni.

In addition to changing the name from "Hiroshima War Orphanage" to "Hiroshima City Children's Home," Mayor Shinzo Hamai and Deputy

Mayor Masao Kato donated 100 Japanese kiri trees which were planted by MACS-4 Marines.

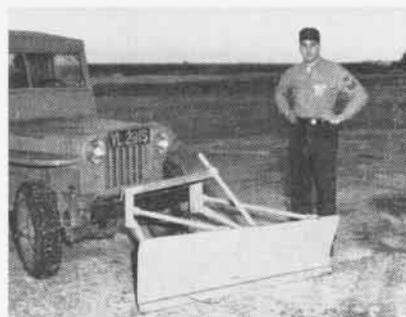
The Iwakuni-based Leathernecks unofficially adopted the orphanage last fall during "Operation Happy Face," a 1st MAW program designed to aid homeless Japanese children and needy Japanese families.

Largely due to the efforts of Acting SSgt. Richard S. Keller, an MACS-4 radar technician who originally discovered the orphanage through a local Iwakuni citizen, Marines have visited the home every week-end since last September.

They donate their off-duty time, and in many cases hard labor, to make needed improvements at the home. Roofs have been repaired, windows replaced, gutters installed, new grounds were cleared for planting shrubbery and for play areas. They



AT IWAKUNI, the last part needed to clear the ACP board is a gift for Capt. T. A. Zarkos, VMA-211 maintenance officer (right), by Capt. F. L. Vogler, MAG.12 supply officer, and Corporal D. N. Richardson.



FASRON-107 Maintenance Department personnel designed and constructed a detachable snow plow under direction of Charles Matea, AM1. It is especially useful in helping to remove snow drifts from around hangar doors.

collect toys for the children and needed clothing through families of Marine personnel living in the United States who learned of the orphans' plight through letters written home.

The orphanage houses 51 children ranging from kindergarten through primary school age. There is one large school building which is equipped with a gymnasium. Six other smaller buildings serve as dormitories for the children.

Sgt. Keller, who knows many of the Japanese customs and speaks their language almost fluently, stressed that all the efforts of MACS-4 Marines were strictly voluntary. "Many of them come here every week-end to help with various projects," Keller said, "although secretly, I believe they have fallen in love with these little ones and they just can't stay away."

Survival Technique Taught VAH-11 Stresses Parachute Use

Every Naval Aviator knows that his survival equipment could easily mean the difference between life and death if he knows how to use it.

PR2 Dirk Airhart of VAH-11 is a member of the team responsible for keeping the squadron flight crews up to date in the use of their survival equipment.

In the present training series, Airhart uses a chain hoist on the hangar deck of the *Roosevelt*. After donning their parachute harness and being hoisted into the air, the crew members were shown how to position themselves while descending in a parachute and how to prepare the raft which is packed in the chute. They were also instructed on how to release themselves before hitting the water.



CARL R. RHODES, storekeeper of the stereophonic, high fidelity shop on board USS *Independence*, takes inventory of hundreds of popular albums. The Hi-Fi shop is believed the first aboard a naval vessel.

LETTERS

SIRS:

In answer to Cdr. N. R. Berree's query (NANEWS, February, p. 40) as to whether any F4D squadron has exceeded VF-13's record of 500 hours in one month, Marine All Weather Fighter Squadron-115 says, "Yes."

Over the last seven months, VMF(AW)-115 has AVERAGED 624 hours per month with its F4D's.

February was our top month with 926 hours. During this 29-day month, 624 sorties were flown, primarily in an intensive air-to-air weapons training program. Furthermore, 142 targets were launched for live 2.75-inch FFAR and *Sidewinder* firings. Results were rewarding, thanks largely to an 87% radar availability.

Most sorties were ended in the FCLP pattern, thus utilizing all systems of the aircraft.

R. S. HEMSTEAD
Commanding

SIRS:

Recent letters to NANEWS have discussed relative monthly flying time by single engine jet squadrons afloat. Marine Attack Squadron 225 flew 424 sorties for 737 hours in January 1960 off the USS *Essex* in the Mediterranean during 17 cumulative days at sea. This was accomplished with 12 A4D's and 17 pilots.

We would be interested to know if the above monthly flying time has been exceeded by other carrier-based squadrons flying single engine jet aircraft.

J. P. FLYNN, MAJ., USMC
Executive Officer

SIRS:

I am enclosing [a photograph] taken on the occasion of the presentation by D. S. Kennedy & Co., our client, of a model of the 84-foot radio telescope operated by the Naval Research Laboratory at Riverside, Maryland.

The presentation was made to Capt. George K. Williams, C.O., Boston Branch Office, Office of Naval Research. The model is to become part of a travelling exhibit showing the Navy's research activities.

On Capt. Williams' desk when we were making the presentation was a copy of the

April 1960 issue of *Naval Aviation News*, which featured on both the front and back covers photographs of this same antenna-radio telescope. [The photograph] shows Capt. Williams in front of the model of the radio telescope, holding a copy of the current edition of your publication, which I thought you might like for possible use in the magazine.

WILLIAM J. BRENNAN
Doremus & Company, Inc.
Boston, Mass.

SIRS:

Enclosed please find my money order for a subscription to the NEWS, a magazine I think is tops.

I spent two years as an aviation photographers mate (PHA) and although I am now General Service, I still have "airdale" blood. I have always found plenty of Information, Education and Entertainment in *Naval Aviation News*.

So bring back those fond memories, won't you and send my copies to:

JOSEPH F. CIKON, JO3, USN
The Caribbean Forces Network

Fort Clayton
Canal Zone

SIRS:

Having read the article, "Deep in the Heart of Kwaj" (p. 12, March), I was surprised at a statement by the writer: "No large seaplane had been ramped at Kwajalein since the end of WW-II."

In August 1958, while TransPac-ing to Sangley Point, VP-46 had an aircraft make a water landing there. A hydro flap was damaged. The P5M *Marlin* was ramped and temporary repairs were made by squadron personnel. After a day's layover the aircraft continued on to Sangley Point.

The beaching was handled by Naval Station boat house crewmen and the flight crews of two squadron aircraft.

I'm sorry, Commander, but Texas cannot have all the Firsts, and I'm in Texas now.

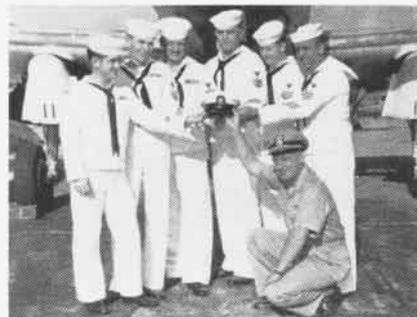
H. H. MAYO, AMC, ATU-611
NAS Corpus Christi, Texas

¶You're a brave lad! Good luck, and we hope the hombre who penned the Kwaj piece peruses this.

VW-3 Claims Engine Mark Extraordinary Usage Figures Given

VW-3, commanded by Cdr. Perry W. Ustick, offers what it believes is an all-time record for the R-3350-34 engine. It was set last January when a WV-2 (BuNo. 143229), operating on all four originally installed engines, exceeded 1535 hours, the equivalent of 13 times around the earth.

Assigned to VW-3, BuNo. 143229, has operated as a "typhoon snooper" for Fleet Weather Central, and a "radar eye" for units of the 7th Fleet.



VA-35 OF NAS Jacksonville, set a fine mark in the last fleet-wide advancement-in-rating exams, as six of 11 aspirants are authorized to don the coveted hard hat held by squadron C.O., Cdr. W. F. Bailey.

100,000th Plane Landed RATCC Celebrates Accomplishment

A quick grin of surprise raced across Cdr. L. W. Baldwin's face as he stepped into Radar Air Traffic Control Center at NAS JACKSONVILLE. There he was confronted with performing a traditional Navy task—cutting a cake for the occasion.

It was RATCC's 100,000th radar approach by Cdr. Baldwin. The VA-44 pilot flew an F9F-8T to make the historic landing while Ltjg. Bill Simmett was the instructor pilot.

W. W. Moss, AC1, was the radar controller for the approach. LCdr. G. W. Jones, RATCC watch officer, and W. B. Coates, ACC, RATCC branch chief, monitored the approach in the center. The Center began its existence in 1946 at the Fleming Island airstrip.

Pub and Forms Mart Opens North Island Gives Fast Service

An "AeroPub and Forms Mart" has been placed in service at NAS NORTH ISLAND. A "self service" feature enables authorized customers to serve themselves and obtain many publications, charts and forms immediately upon presentation of a request document.

Display sections are filled with aeronautic technical publications, charts and cognizance "I" items representing more than 45,000 items. Classified, critical and bulky items are not available in the self-service mart, but may be processed through the regular aeronautic supply system.

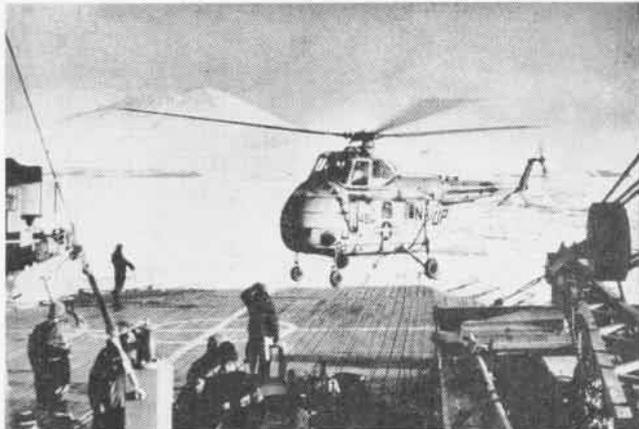
The new mart operation is in addition to regular aeronautic supply service provided by the Aeronautic Technical Publications Branch of Supply.



NANEWS 'ATTENDS' THE PRESENTATION



HU-1 LANDS ABOARD THOMASON, DD-760, DURING DASH TESTS



HO4S-3 LIGHTS ON ICEBREAKER DURING ANTARCTIC OPERATIONS



HU-1



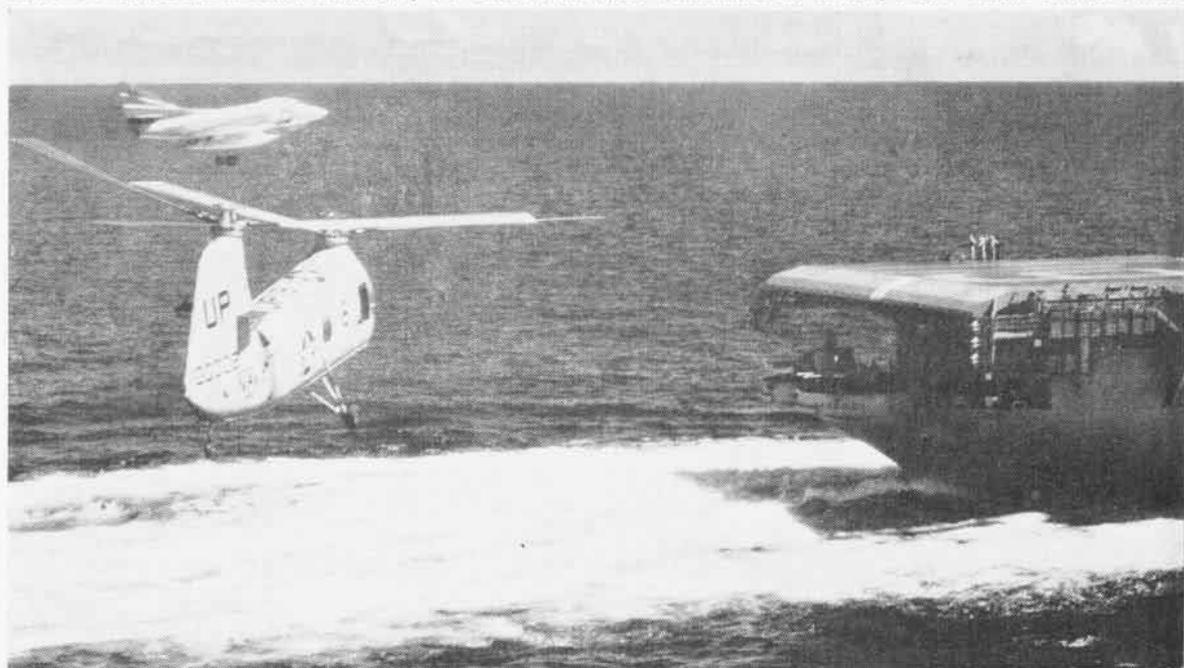
SQUADRON INSIGNIA

From Alaska to Antarctica, from San Diego to Sasebo, HU-1 detachments service every major ship in the Pacific Fleet. Based at NAAS Ream Field, the squadron is led by Cdr. W. F. Culley. Helping hands through the helo's halo tell the story of 837 rescues and other mercy work in 12 years since commissioning.

WHILE USS HANCOCK RECOVERS AIRCRAFT, HUP STANDS THE MOST FAMILIAR DUTY OF ALL, PLANE GUARD DURING AIROPS

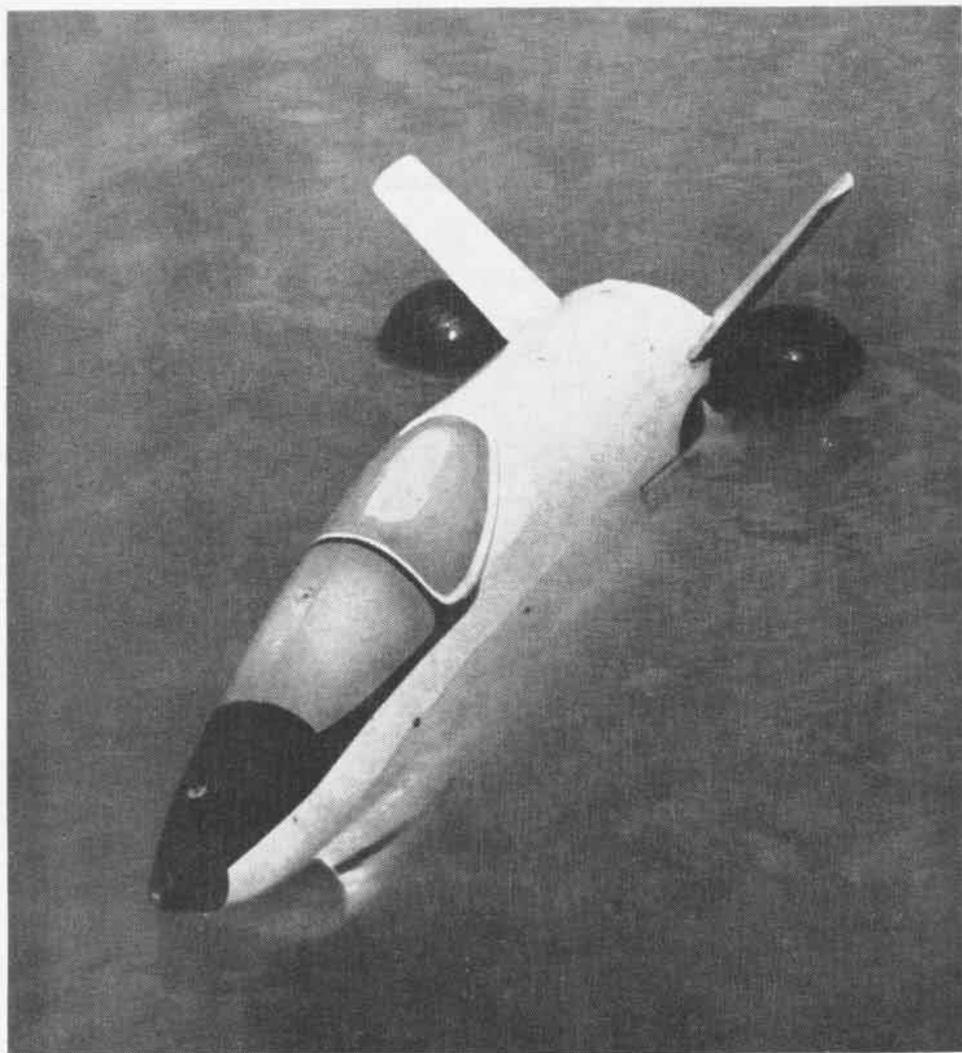
U
T
I
L
I
T
Y

O
N
E





TO YOUR HEALTH!



NAVAL AVIATION

NEWS

This Panda-faced rig, developed by Chance Vought under Navy contract, may be the answer to the problem of improved pilot environment, escape and survival. Separated from the airframe by shaped charges, it will descend by parachutes and afford pilot protection on land or water for an indefinite period. In this issue, still other aspects of the Navy's major role in Aerospace Medicine are narrated by Captain Frank B. Voris (MC), USN.