NAVAL AVIATION NEWS

Mugu Missiles
Crystal Ball
Aerial Static

February 1947

RESTRICTED

BIRD'S EYE VIEW OF?

A little fog in lower photo might aid recognition. If you have ever zoomed over these stations, you will be able to recognize them as Central, West coast bases. (Ans. on Pg. 40)

HIGH POWERED ASSISTING ROCKETS LAUNCH A NAVY LOON, ONE OF MANY PILOTLESS AIRCRAFT BEING TESTED AT NAMTC PT. MUGU

New Overwater Test Range at Pt. Mugu Evaluates Navy's Fast Guided Missiles

In October of 1946 the Naval Air Missile Test Center at Pt. Mugu, California, was established to test and evaluate a new type of weapon for naval warfare. Guided missiles, although relatively unproved in modern warfare, had shown such tremendous potentialities that a major portion of the Navy's research and development program will be centered around these weapons.

Between the actual Fleet use of a guided missile and development of the first prototype by the Navy's engineers and scientists, lie many months of test and evaluation. This testing must prove the missiles as effective offensive or defensive weapons.

For accurate evaluation and testing, adequate ranges must be provided which afford a maximum of safety to personnel and property. They must have all the facilities necessary to collect data needed in the development of a successful Fleet weapon.

Formerly a training ground for *Acorn* units, training battalion and anti-aircraft training, Pt. Mugu offers excellent terrain for establishment of a new test center.

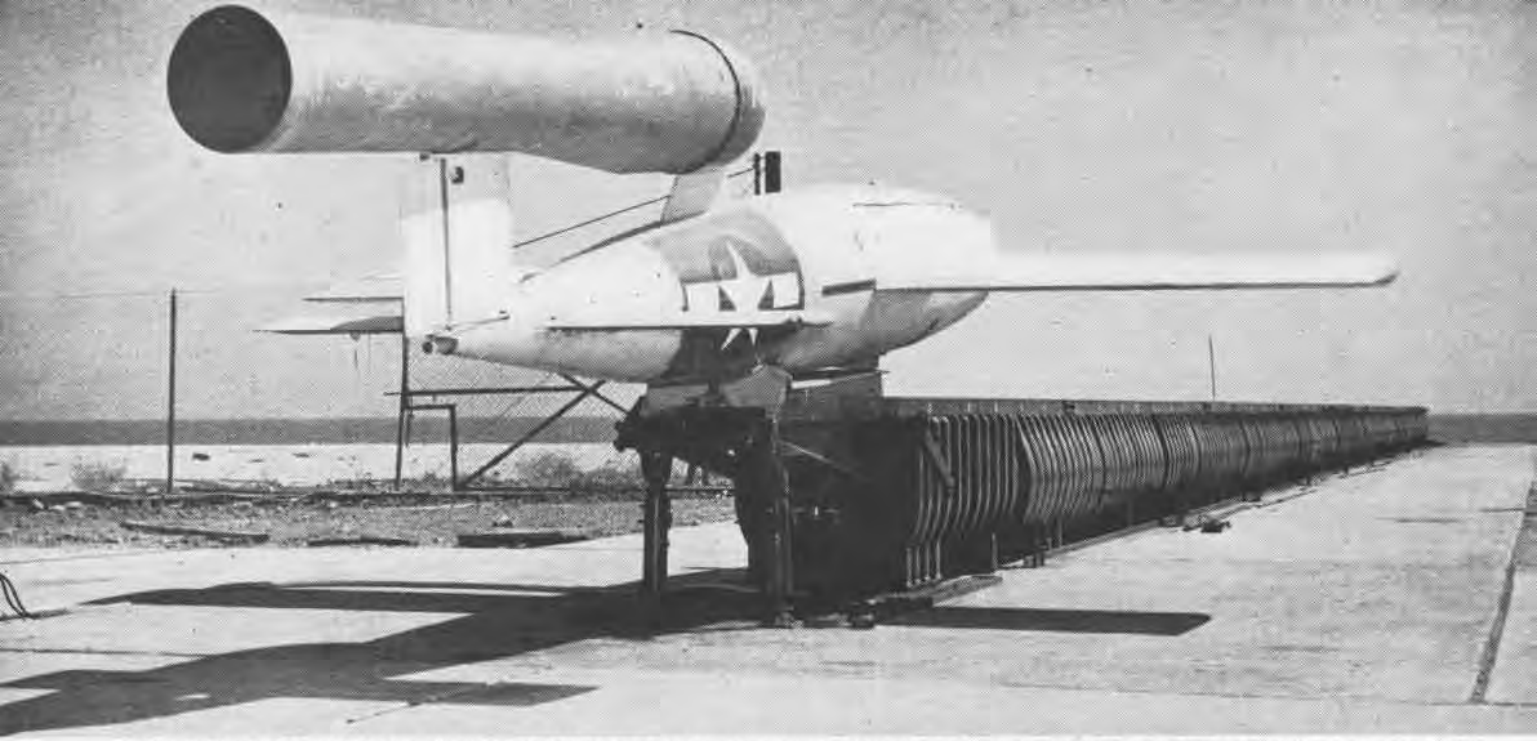
Although Pt. Mugu has all the terrain usually associated with a South Pacific base, naval personnel, with assistance from nearby Port Hueneme, are rapidly building an efficient base.

Pt. Mugu has been proposed as a major test center because of the excellent topography available. A string of islands along the 100-mile overwater range has favorable locations for many vital observation posts. Trajectories of 100 or more miles can be closely observed and plotted from the Santa Barbara Channel Islands.

Besides offering excellent instrumentation facilities, one of these islands will also provide safe launching sites for missiles during dangerous initial phases. Pilotless aircraft may soon take off from a secluded base on San Nicolas and be controlled in a high speed 360° circuit around the island, utilizing a 50-mile safety circle.

Begg Rock, which juts out of the sea off Pt. Mugu, makes an ideal non-sinkable ship target for radar homing and other guided missiles.

With the approval of Congress, strength of this new station is expected to reach, by 1948, 764 enlisted men, 176 officers and approximately 1,000 civilian employees.



PULSEJET MOTOR RESEMBLES FLYING STOVEPIPE, PROPELS LOON OVER 400 MPH AFTER LAUNCH FROM SLOTTED CYLINDER CATAPULT

Navy Pushes Its Guided Missile Work, Is Still Far from 'Push Button' Warfare

SHORTLY after the end of the war with Japan, the Navy decided to concentrate on the West coast all BUAER activities in the field of pilotless aircraft. By December of 1945, the new Pilotless Aircraft Unit was a going concern with units at NAS MOJAVE and NAF PT. MUGU.

Under the command of Capt. A. B. Scoles, PAU included the *Loon* project, the Special Weapons Tactical Test and Evaluation Unit from Traverse City, Mich., and the Rocket Group from Annapolis, Md.

Meanwhile, a special board headed by Capt. W. V. R. Vieweg had surveyed all tentative sites early in 1945 and the Navy recommended to the President that Pt. Mugu be adopted as the best available site for guided missile test and evaluation.

The President referred the project to the Joint Chiefs of Staff who approved the present form of the plan after it had been considered by their committees. Thereupon, the President approved the project and forwarded it to the Bureau of the Budget. The program was soon under way.

MODEL 11 TARGET DRONE TAKES TO AIR FROM MOBILE CATAPULT

In May of last year, PAU began transferring to Pt. Mugu in line with the Vieweg board's findings, and by last month the move was complete. Because of its expanded functions Pt. Mugu was redesignated the Naval Air Missile Test Center. The test center is now an integral part of the Guided Missile program which includes pilotless aircraft activities.

Pt. Mugu's facilities are being built literally from the sand up. The small group of officers, enlisted men and civilian technicians already is absorbed in its work, using surplus Quonset huts and Butler buildings for laboratories until more suitable accommodations can be provided.

Although a pioneer in the remote radio control field, the Navy, in beginning its guided missile program, took certain cues from the Germans who first sank Allied ships in 1943 by means of pilotless aircraft.

DEVELOPMENT of the V-1, V-2 and other missiles had opened scientists eyes to the potentialities of these weapons. A similar program for developing such "crash" missiles for naval use resulted in the use of the *Bat* in the latter stages of the war.

Some commentators voiced the opinion that here were missiles capable of supplementing or replacing all large or medium caliber guns. Instead of guns or rockets, future aircraft could carry various offensive and defensive guided missiles.

However, guided missiles are far from being at the push button stage. The missiles, including pilotless aircraft developed by war's end, are still in their infancy.

Cessation of the war permitted the crash program to stop and gave engineers time for evaluation of previous work. The Navy now has an opportunity to draw up an efficient program for development of guided missiles for use by the fleet. Vital parts of that program are the test bases of which Pt. Mugu is one.

Though most of the missiles now being tested at Pt. Mugu are obsolete for modern warfare, they are serving an important purpose. They are used as test vehicles, revealing data to help engineers to develop even better guided missiles.

The Navy's problem in this field is to evolve efficient defensive or offensive guided missiles. But testing and evaluating these weapons is an expensive process. At Pt.

Mugu, the Navy gains a maximum of preflight knowledge through laboratory testing for economy's sake.

Even when a contractor, with the help of NACA and other agencies, has provided a missile which meets all specifications, the Navy must test and improve methods of launching. After the launching is classified as an everyday affair, within the ability of the average officer and enlisted man there comes the problem of control in the air.

THIS brings in the problems of instrumentation and control. The terrific accelerations imposed by catapults in launching or by maneuvering a missile in high speed turns play havoc with various internal connections and instruments used to control the bird.

Acceleration strains imposed on these missiles and their components are not comparable to those of a normal piloted aircraft. Some of the new subsonic missiles now under development will make wide sliding turns, imposing as much as 18 G's, while homing on maneuvering targets. Development in the future of supersonic missiles will make this problem even more difficult.

Facilities are provided at Pt. Mugu for the testing and evaluating of ramjets, pulsejets and other components and for measuring fuel consumption and operating temperatures.

The *Loon* (former V-1) furnishes a good example of the type of flight testing now being conducted at Pt. Mugu. Conceived as a complement to the tactical aircraft in bad weather conditions or for continuous harassing of the enemy, the *Loon* project was established in June 1945.

This pilotless aircraft was to attack enemy targets by night or day at ranges of 100 miles. Obsolete in the light of present knowledge, the *Loon*, tested jointly by the Army as the JB-2, serves as a test vehicle for compact high speed launching devices.

The naturalized V-1 also helps engineers perfect methods of control in the air, tracking and homing on the target.

On the ramp at Pt. Mugu, technicians have an elaborate, though temporary setup for gaining such data from *Loon* flights. These tests require perfect coordination of all agencies which make up a test and evaluation center.

Radar starts to work early on the day of a launching, searching the target area for small boats and other craft. A *Polly* plane flies low over any intruders, warning them with its loudspeakers to clear the area.

At the appointed time, an engineer in an armored booth starts the pulsejet engine. Another technician in a nearby tower makes sure that the engine is working saisfactorily and then fires the catapult or rockets used in launching.

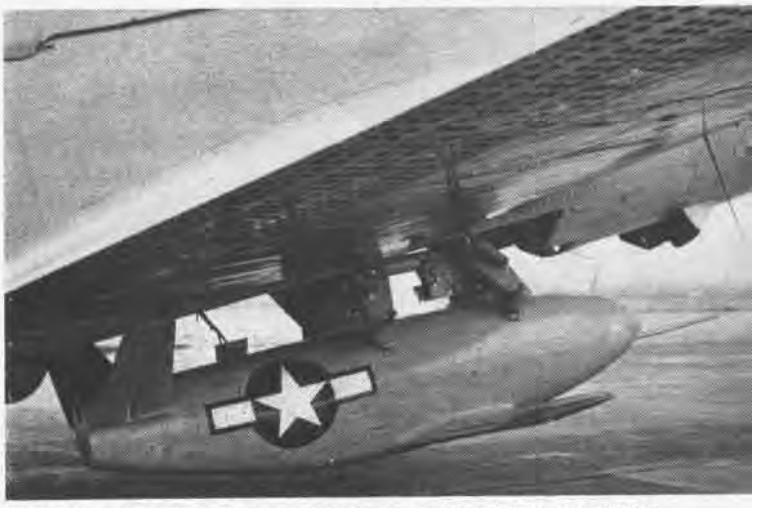
AS THE bird roars away a P-80 zooms behind it ready to shoot it down in case it tries to wander out of the designated danger area.

Guiding the missile is a man who can not visually see the bird. A tracker watches its progress with the help of radar operators and relays information concerning course and speed relative to the target. If a course change is needed the "pilot" merely flicks a switch and dials the required number of degrees, right or left.

Two large telemetering trucks nearby contain equipment which records information radioed back from instruments in the *Loon*. Decoding of these records gives engineers data on every second of the bird's flight which often aids in the design of new missiles.

A theodolite, captured from the Germans, is trained on each missile as it leaves the ramp. This instrument, manned by two operators, gets an accurate record on photographic film of what happened to the missile at any one angle, altitude or time of flight. On the 1400-foot mountain behind Pt. Mugu, the Navy has also stationed various tracking devices for recording of vital information.

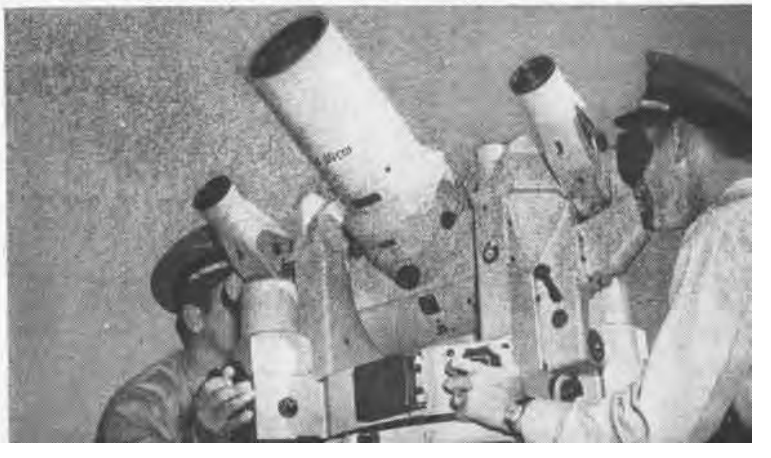
KDD PROVIDES GUNNERS WITH SHIFTY HIGH SPEED TARGET



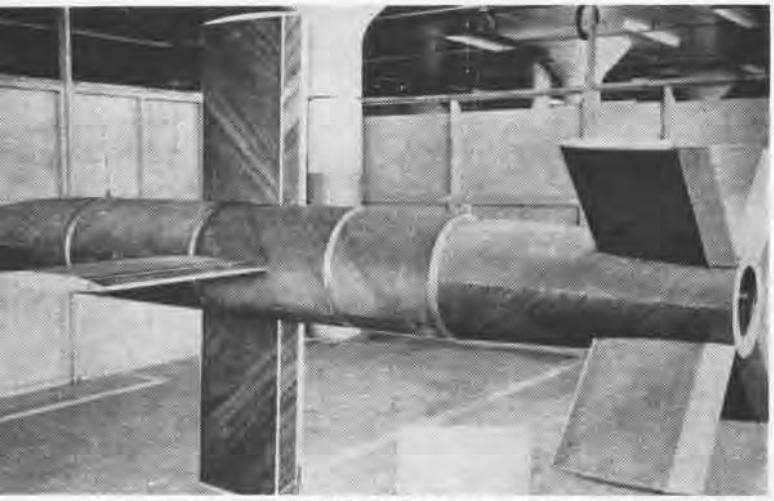
GLIDING GARGOYLE CAN BE DROPPED, CONTROLLED BY PLANE

GORGON IS USED FOR AIR-TO-AIR PILOTLESS AIRCRAFT TESTING ◆

CAPTURED GERMAN THEODOLITE RECORDS A MISSILE'S FLIGHT ◆



TECHNICIANS CHECKING RADIO CONTROLS OF TARGET DRONE



LATEST MISSILE TO BE REVEALED IS AIR LAUNCHED KAQ-1 LARK

HEART OF MUGU'S TEST RANGE IS SANTA BARBARA ISLAND CHAIN

GLOBE MODEL NINE, OTHER DRONES MAKE CHUTE LANDINGS

Pt. Mugu is Only Test Center Providing An Area for Fleet Training Maneuvers

ALL FLIGHT testings is conducted so as to give maximum engineering or tactical data after the inevitable crash. The best way to obtain this information is through instrumentation. Guided missiles have two types—external and internal.

Modern external instrumentation systems include visual tracking photo-theodolites, high speed cameras for the study of launching and initial flight, telephoto cameras to record critical portions of the flight such as target interceptions and chain radars for non-visual long range tracking.

Internal instrumentation comprises the devices and techniques used to record flight data developed internally to the missile. Its purpose is to give a time history of the missile's roll, yaw and pitch. It gives altitude, airspeed, angle of attack and position with respect to a target.

Providing realistic targets for flight tests is another important function of the test range. The Navy provides radio controlled boats at the present time. Heat seeking devices can be accommodated with radio controlled trucks into whose bodies the equivalent of a ship's boiler has been built.

Launching problems arise according to the mission of the missile. Some missiles will permit horizontal or slightly inclined launching systems while others require a vertical or near-vertical launching attitude.

For instance, the comparatively short range of antiaircraft missiles such as *Little Joe* (KAN-2) makes it necessary to launch it from a nearly vertical attitude in ground-to-air firing.

The launching thrust can be supplied by the missile itself as in the case of the V-2. However, most ground launched missiles are launched by some auxiliary force such as catapults or JATO. The auxiliary rocket motors separate and fall away from the missile at the expiration of their burning.

TO MEET the general shipboard launching problems for guided missiles, naval engineers have developed a new-type catapult, characterized by its slotted cylinder and multiple firing of powder chambers.

This is a development initiated by the Germans during the past war, but the American version is of greatly improved design and much lighter in weight.

It is designated as the XM-1 catapult and is scheduled for installation on board a CVE in 1947. Another slotted cylinder catapult, the XM-2, is similar to the XM-1 but is of shorter length and designed for 360° train and up to 30° elevation. (See Jan. 1947 NA Conf. Bulletin.)

Some test and evaluation of target drones is carried on at Pt. Mugu. Several high speed drones are now at various stages of test. The KDD-1, a mid-wing monoplane utilizing a fixed "V" stabilizer with movable ruddervators, is the first to be powered by a jet engine. It will serve as a high speed antiaircraft and air-to-air gunnery target.

The KDR-1, a high-wing, all-metal monoplane, is powered by a Kiekhoefer 35 hp. engine. It has a top speed of 180 mph, while maneuvering for antiaircraft or air-to-air firing.

Launched from a catapult and flown by radio control from the ground or a mother plane, the Globe Model 10 is powered by an eight-inch resojet engine. This mid-wing, all metal monoplane is recovered at the end of its flight by means of a parachute.

Pt. Mugu is one of four important test ranges in the United States. It has the only overwater range. Three other land ranges are dispersed as follows: BuOrd has a range at NOTS INYOKERN, Calif., which is used in early

launching tests. The Army ordnance range at White Sands, New Mexico, where the V-2's are now being launched for various studies is supplemented by a large Navy camp.

This base has facilities for safe instrumentation with a maximum range of 80 miles. The Navy also has joint use of facilities at the AAF range at Wendover, Utah.

Joint use of all these ranges is expected to reduce the cost of developing Army and Navy weapons. Both services have set up, at field agency level, a technical Committee on Guided Missile Test Ranges to coordinate these activities.

Meanwhile the Navy has announced that plans are being made for setting up a national committee of experts to choose a site for a "very-long" guided missile test range.

As the program develops, actual launching will be carried out by ships of the fleet. Pt. Mugu is the only guided missile test center which provides an area for Fleet training. Several cruisers have already practiced tracking and evasion problems with the *Loon*.

Since Pt. Mugu is convenient to Fleet training areas it will continue to expand in this direction. Eventually, when the missiles have passed engineering tests and are proven reliable flying machines, they will have to prove their worth as a military weapon. Tactical evaluation will mean a wringing-out process where performance under actual conditions is tested and evaluated.

The missile will no longer be babied. Run of the mill enlisted men and officers will replace trained technicians for operations and maintenance.

Launching will be made in all types of weather and conditions. In the process of all this, the best means of tactical employment will be evolved. Then, and only then, will a guided missile take its place in the Fleet.

Guided missiles for the Navy can be divided into four basic types: air-to-air, air-to-surface, surface-to-air and surface-to-surface. Often a missile may serve in two or more categories.

The entire Navy guided missile program is coordinated by a new division under the Deputy Chief of Naval Operations for Air. This new division is headed by Rear Admiral D. V. Gallery. BuAer, BuOrd, BuShips, Office of Naval Research and other agencies all cooperate under this division in developing guided missiles adapted to naval warfare, capable of being launched by ships and aircraft.

WEIRD CLOTHES PROTECT MEN IN ACID ANILINE ROCKET FUELING

As noted above, the term *guided missile* includes pilotless aircraft.

Although the only guided missiles on hand now are obsolete they are valuable for test purposes. They are being used to develop better methods for testing and in some cases for training.

The *Bat* is now serving to train squadrons of large patrol planes in the use of such missiles. These guided missiles are scheduled to be utilized until more advanced missiles are available.

Two of these guided missiles, now out of the restricted category are examples of the types to be tested at Pt. Mugu. Already at the end of its evaluation, *Little Joe* (KAW-1), a ship-to-air missile, is a radio controlled, rocket propelled missile which has provided valuable data for more advanced missiles. The *Gorgon* (KUN Series) is an acid-aniline rocket propelled vehicle used to test all sorts of the many components which make up a weapon. The *Gargoyle* (KUD-1) is a type which can be dived into maneuvering targets.

The Navy realizes that the development of efficient guided missiles is a slow process and that push button warfare is still a long way from the rosy picture which some writers have painted as lurking just around the next corner.

PT. MUGU'S LAUNCHING RAMP SHOWS TEMPORARY STATUS OF BASE WHICH WILL BECOME A MAJOR GUIDED MISSILE TEST CENTER

GRAMPAW PETTIBONE

Pyramid of Errors

The flight leader was a Marine pilot with 1625 hours of flying. His assignment was to lead a group of junior pilots on an extended cross-country flight. He found the radio of his plane inoperative, but rather than delay the flight he called the tower from another plane and asked permission to take-off.

Since he had no means of communication after returning to his own plane, he signaled for his flight to take-off and fly with a division just ahead. The tower called him as he left the field to say that his clearance was denied, but he had no way of hearing them. In flight he made no effort to stay close to the formation, and was last seen following a mile or so behind.

He apparently became lost and decided to land on a highway to ask where he was. He put his wheels and flaps down and picked out a straight section. Unfortunately he hit two power lines during his approach and landed with one wheel off the highway. The plane swerved to the right, dug a wing and flipped over on its back. The pilot's shoulder straps were not locked and he was killed.

The spot where the plane landed was well off the course line of the formation flight. Investigators found the fuel selector set on the main tank which contained only three gallons of fuel, although the reserve tank was full. This may account for the statement of witnesses that the plane's engine was sputtering at the time of the emergency landing. There was a large hayfield adjoining the road where the pilot could have made a safe wheels-up landing.

Grampaw Pettibone Says:

I've heard of injuries multiple and extreme, but this looks like a case of *errors multiple and extreme.* How any pilot with 1625 hours of flying could pack as many mistakes into one flight is beyond me. Let's add them up:

1. **Violated flight regulations by requesting clearance on a cross-country flight with his radio inoperative.**
2. **Lagged behind the flight and allowed himself to get lost.**
3. **Did not use his fuel system intelligently and ran out of gas.**
4. **Selected an unsatisfactory landing area when there was a better one adjacent.**
5. **Put his wheels down for an emergency landing.**

6. **Forgot to lock his shoulder straps.**

From the time the pilot made his first error the odds were steadily pyramiding against him. By the time he crashed he was so completely confused that every decision was wrong and he forgot his shoulders straps which at the last second might have saved his life.

GRAMPAW'S SAFETY QUIZ

1. **At what altitude should you commence using oxygen: *(a)* Day *(b)* Night.**
2. **What is the minimum angle at which you may cross a civil airway while on instruments?**
3. **In an F4U is it permissible to practice *(a)* inverted spins, *(b)* normal spins?**
4. **It is dangerous to attempt take-off with ice or frost on the wings but loose snow on wings will blow off and not cause any trouble. True or False.**
5. **You have been out on a roaring bender on Friday night and only got two hours sleep. When you arrive at the hangar the next morning you discover that you have a flight scheduled. You should:**

(*a*) Take 4 or 5 aspirin tablets in a tall glass of water and give it a try.
(*b*) Hide in the head.
(*c*) Go over the hill to avoid a court-martial.
(*d*) Report your condition to the Flight Surgeon or senior officer present.
(*e*) Phone the chaplain.
(*f*) Take out additional Life Insurance.

(Answers on Page 40)

Attention Tall Pilots

The pilot of an SNJ was making his approach to a landing at an outlying field. He made a fairly fast wheels landing and then suddenly nosed over. The ambulance and crash equipment sped to the plane and removed the pilot. He was conscious but in the words of the medical officer: "was found to be suffering from complete sensory and motor loss of function in the trunk and lower extremities, and partial sensory and motor loss of function in the upper extremities." His neck was fractured and despite immediate medical attention he died shortly afterwards.

The accident board believes that this pilot attempted to slow his plane down while it was still in a tail high position. The left brake apparently locked, as there was a 60-foot skid mark before the plane flipped over on its back. According to the pilot's own statement, he had his seat locked in the uppermost or top position. His shoulder harness and safety belt were properly secured.

Comment:

This pilot was nearly six feet tall—some three inches taller than the average naval aviator. The overturn structure in the SNJ does not afford adequate protection in the event of a nose over for a tall pilot if the seat is all the way up.

A check of all the SNJ nose-over accidents in the past year in which there was any injury to the pilot reveals that in 13 out of the 14 injury cases the pilots were taller than average.

In a nose-over the pilot is fully protected only if he has his shoulder harness and safety belt locked and tightened, and the seat lowered commensurate with his own height. A good way to check on this is to allow a full hand spread between the top of your head and the canopy—but don't forget to open the canopy before landing.

Check yourself the next time you fly and learn to use the seat position which affords full protection and sufficient visibility to see where you are going. After you have slowed to taxi speed—raise the seat to the top position for best visibility.

Here lies a young pilot named Snerd
Who claimed he could fly like a bird
Flat-hatting one day
He flew into the bay
And this is the place he's interred

Safety by Seeing

The picture above shows the results of a night solo landing by a primary student who didn't heed his instructors' warning about landing too long.

After landing about half way across the field and during his roll out the left wing of his aircraft collided with the right wing of another plane. The student climbed out to survey the damage and was greeted (???) by his own instructor who was flying the other plane! Sorry we can't print the conversation.

Grumpaw's Letter Box

The following is from a Lt. (jg) who writes of a recent dunking:

"After a normal carrier take-off, I joined up on my section leader, and as we reached an altitude of 1,000 feet, I tried to change from my right main tank to my right wing droppable tank. The fuel selector valve seemed stuck and as my shoulder straps were rather tight, I couldn't get a good grip on it to actually apply any pressure. I released my shoulder straps to spring tension and leaned down, taking a good grip on the valve.

"I put a normal amount of pressure on it and the valve snapped inside allowing the selector switch to spin freely without stopping at any position. I kept trying to work the valve in both directions but it would just turn freely in my hand without any internal stops being felt. I assumed that the valve had jammed on the right main tank, and that in trying to change tanks the selector switch had snapped.

"I called my section leader and told him that my fuel selector switch had broken, and as I had only 55 gallons of gas left in my right main tank and couldn't change from it, I was going to return to the ship. He agreed to this and told me to drop my droppable tank. Heading back for the ship at an altitude of 1,000 feet I dropped my tank. About twenty seconds after dropping the tank the engine began to cough and sputter and then quit. I assume now that when my selector switch broke, the valve must have been turned to my droppable tank, but I couldn't do much about it then.

"I called the ship and told them I was going to land in the water. I opened my canopy, put down my flaps, turned into the wind, made a futile attempt to restart the engine and then put all my attention to making a safe water landing. As soon as the plane came to a stop I released the safety belt and climbed out on a wing. I pulled my raft out of the cockpit and inflated it. The plane sank in about twenty seconds, so I climbed into my raft and waited for the destroyer."

Grampaw Pettibone Says:

Some days a fellow would be better off in bed. Since you were not sure which tank you were getting fuel from, it would have been a much better idea to leave everything alone for a few minutes and think of all your alternatives.

Your best bet would have been to request permission to fly to the nearest landing field accompanied by your section leader. As a second choice you could have requested permission from the carrier to land aboard with your drop tank.

However, I think this is the first case of its kind that I have heard of and I realize how easy hind-sight is. You did a swell job on your water landing and you remembered to call the carrier after your engine quit and to make proper use of your safety equipment, so don't lose too much sleep over the fact that you dropped your only available fuel into the ocean.

Don't Doze in Your Drone

Here's an accident which should be of interest to safety pilots who ride radio controlled aircraft.

During a recent radio controlled training flight, a TD2C plowed into an embankment, and as a result the plane was a total loss and the pilot was injured. Under radio control from the air and from the ground, the TD2C, with a safety pilot aboard, had successfully completed three take-offs and two landings. In the third approach the airborne control plane transferred radio control to the ground control truck. This transfer was carried out about a mile and a half away from the field and at a low altitude in the approach.

After the wheels and flaps were put down, the drone settled below the level of the slightly elevated runway and crashed into an embankment. The investigation revealed that the pilot had attempted to take over control by throwing out the servo control and adding throttle, and also that the ground control operator had attempted to prevent the crash. The plane with its wheels and flaps down did not react immediately to full throttle and crashed in a nose high attitude.

Grampaw Pettibone Says:

I haven't mentioned much about drones such as the TD2C or the F6F-3Ks, but this accident should serve as an example of what not to do. This particular safety pilot waited too long before making a positive effort to get himself and the plane out of an embarrassing situation. Of course, the transfer from air to ground control was made at a very low altitude, but the safety pilot was on board to prevent just such an accident as this.

No matter how much confidence you have in your drone and in the radio control operator, you can't afford to dope off even for a minute. There is always a chance of a sudden wind-up due to a malfunctioning servo unit, and this hazard is greatest during landing and takeoff. The best insurance a safety pilot can have is to fly with one hand on the stick and the other on the servo throw-out control. I'm saving one of the five canes that I got for Christmas to break over the noggin' of the first safety pilot that I catch taking "reading material" along on a flight.

Shoulder Straps Save Pilot

This TBM had a complete engine failure not far from an airport. The pilot called for emergency landing clearance, but found that he was falling short of the field. He attempted a landing down a city street a few hundred yards short of the airfield. When his left wing sheared through two telephone poles, he lost flying speed and entered a spin to the left. After a quarter-turn he hit the house as pictured above. The plane was a strike and the house a wreck, but the pilot received only one small scratch—HIS SHOULDER STRAPS WERE LOCKED!

DID YOU KNOW?

Barin Field Closes Operations

Accidents Once Earned 'Bloody' Name

NAAS Barin Field—After four years of operations, during which it turned out thousands of Naval Aviators, Barin Field has closed its short but colorful history.

Officers and men who reported on duty aboard Barin Field a year after Pearl Harbor remember when there were three or four buildings in the administration area completed. None of the streets was paved, and the road between the main gate and the Mobile highway was a mass of clay mud or dust, depending on whether or not it had rained the previous day. Barin was an advanced base operating in the Naval Air Training Command, within the continental limits.

From this humble beginning, the field went through several phases of rise and decline during its active life. In May 1944, when operations were at the maximum peak, pilots here flew more than 42,000 hours. Then in May 1945, operations were at a low point, and only 2,500 hours were flown.

After this there was another rise in operations for a short time, before Congressional economy forced its closure. During the process of the field reaching its peak in operations, so many fatal accidents occurred that the field became known as "Bloody Barin". After having acquired this name everyone aboard became more safety conscious and the name almost disappeared.

Navy Plans High Altitude Test

Scientist, Aviator to Probe Upper Air

A Navy pilot, yet to be selected, will assist Dr. J. Piccard in a balloon ascent next June in an attempt to reach 100,000 ft. Present records stand at 72,395 ft., set by an army balloon in 1935.

The scientists will search for data on the physics and chemistry of the stratosphere. The Office of Naval Research has contracted with General Mills Aero Research Lab for the construction of a special cluster-type balloon and gondola to be used in studies of the higher altitudes.

Instead of the large-capacity envelope used in former ascents, the gondola for this trip will be supported by 100 balloons, each 57 ft. in diameter. According to Dr. Piccard, use of more small balloons gives greater lifting power and eliminates inflation hazards.

DR. PICCARD STUDIES GONDOLA MOCK-UP

He believes that the 400 lb. gondola can be held in the stratosphere for hours while controlled scientific measurements are made, something impossible in unmanned radio balloons and rockets. The ascent is planned for mid-June from NAS Ottumwa, Iowa.

The gondola mock-up is now under test but development of plastic film for the balloons is still in the experimental stage. This will be Dr. Piccard's first trip to the stratosphere since 1934 when he and his wife went to 57,979 ft.

NAVIGATION QUIZ

SECTOR SEARCH

Fly a geographic sector search from 330°T to 000°T for distance of 200 nautical miles. Carrier is on course of 315°T, sp. 20K.

Given:

1. CV's 0300 position, Lat. 25°23'N, Long. 125°36'E.
2. Wind 15K from 300°T.
3. TAS 180K.
4. Report at 0630. At 0658 investigate unknown ship bearing 303°T, 10 miles.
5. At 0713 strafe enemy ship and return to first leg on course of 330°T. Complete search.

Find:

1. Position of strafed enemy ship.
2. TH on first leg.
3. Time to turn on first leg.
4. TH second leg.
5. TTT from second leg.
6. DRM third leg. (a) (b).
7. SRM third leg.
8. TH third leg.
9. Cus. third leg.
10. G.S. third leg.
11. ETA at carrier.

(Answers on Page 40)

New Navigation System Is Used

Aerologists Help in Plotting Course

VR-2—Naval Air Transport Service has been experimenting with principles of single heading flight, a system of navigation which was employed by pilots who flew the *Truculent Turtle* halfway around the world.

Objective of the single heading plan is to assume at the point of departure a compass course which will bring the aircraft over its destination without subsequent course changes, enabling the aircraft to cover the most distance in the least possible time.

This computed heading may cause the aircraft to follow a track made up of one or more smooth curves. It has the effect of canceling out the beam wind components of drift, or, at least, of supplying an angle of correction to the rhumb line course of departure which will take care of the combined drift of the aircraft during course of the flight.

Basis of the theory depends on the fact that force and direction of aloft winds in various flight levels are directly proportional to slopes of the isobaric surfaces in the atmosphere. These slopes can be computed and predicted by aerologists who, by simple computations, can come out with the single-heading answers.

Marines Start Training Program

Officers and Men Attend Classes Daily

MAG-33, El Toro—As part of the Marine Corps' plan to increase proficiency of all officers and men, MAG-33 has started a series of schools to be conducted by all squadrons.

The first hour of each working day has been set aside for schools only. All enlisted men will be checked out completely in use and care of assigned weapons, interior guard duty, drill and classroom instruction in his military specialty.

Officers attend classes in Naval law, interior guard duty, military correspondence and all subjects pertaining to aircraft. In addition, each officer is required to finish the basic aviation course from Quantico in one year time. It is the policy in the group to fly all transport pilots a minimum of two hours at night and four hours on instruments, all other pilots a minimum of four hours night flying and two hours of instrument each per month.

LT. CHAMPION TALKS TO CLARK IN LUNG

NATS Saves Life in Philippines

Flies Iron Lung to Bring Patient Out

NATSPAC—Naval Air Transport Service recently added to its list of mercy flights another life-saving achievement—the transporting of a victim of infantile paralysis from Guam to Moffett Field.

The man was Derrill Lee Clark, S1c, who was stricken while at Manicani ship repair base near Samar. After a two-weeks rest period, Clark was flown 10,000 miles by NATS and arrived in the states in good condition, to be greeted by his mother who was flown by NATS from Seattle.

Clark was kept alive on Manicani Island by a makeshift iron lung made by Seabees out of a water tank. A standard iron lung was flown from Oakland Naval Supply Center to Guam. It weighed 1100 pounds and was operated by a portable generator, with a standby hand pump in cases of power failure. Clark was accompanied on the trip by Lt. Ruth Ann Champion, Nurse Corps; Cdr. F. C. Johnson, MC; one chief pharmacist's mate, two PhM's first and one chief electrician's mate. The latter went along to keep the lung in working condition.

Hurricane Booklet Distributed

Provides Concise Practical Information

How to recognize typhoons and hurricanes and how to avoid them—the last word on tropical storms from intense study by Navy aerologists during the past few years—is put forth concisely in a new booklet entitled *Typhoons and Hurricanes* (NAVAER 00-80Q-21). The booklet is filled with practical information for the line officer.

Typhoons and Hurricanes is being distributed widely throughout the Navy in order that each interested officer may have a copy for his own use. Activities desiring additional copies for officer personnel may obtain them from offices of Chief of Naval Operations.

Night Fliers Save Lost Pilot

Ex-Army Aviator and Wife Guided In

NAS KEY WEST—A couple of night-flying searchlight planes made two lifetime friends for Naval Aviation on 9 December by helping save an ex-Army pilot and his wife who were lost over the Gulf of Mexico.

Two aircraft from VX-1, a PBY-5A and an F6F-5N, were sent out to practice searchlight runs at low altitude near Key West. Mr. and Mrs. Jack O. Bennett of New York City had gone sightseeing over the Cuban coastline in their new Stinson 150. The Boca Chica field operations log tells the story:

1837 3V47 (F6F-5N) airborne, local searchlight.
1907 31V47 (PBY-5A) airborne, local searchlight.
1940 SOS received from NC 97816; out of gas.
1941 Local crash boats and rescue plane alerted.
1942 Two searchlight planes ordered to proceed to reported position of NC 97816.
1950 3V47 reported sighting position lights of unknown aircraft on an easterly heading.
1952 3V47 identified plane as NC 97816.
1955 31V47 reported sighting both the F6F and Stinson.
1959 NC 97816 reported sighting the lights of Key West, and that a single-engine plane was acting as guide with a PBY following.
2015 NC 97816 landed at Boca Chica field with approximately five minutes gas aboard.

A shaky pilot and passenger stepped from their plane to the good, solid earth, just as the PBY and F6F crossed over the field with their searchlights on, signaling the happy ending to a possible last flight for Mr. and Mrs. Bennett. Bennett expressed his sincere gratitude and relief in his statement, "The Army never was like this!"

When NAS JACKSONVILLE cleaned out its 'boneyard' of wrecked planes recently, it came across the above. This old Brewster had been standing in the salvage dump so long a tree had grown through its flaps.

Waves Sweep Over Majuro Atoll

High Water Almost Washes Out Quarters

VR-2, ALAMEDA—The little Pacific island of Majuro, one of NATS' stops, was swept by unusually high waves late in November, doing considerable damage to installations. Two of the causeways on the eastern end of the atoll were washed away. Cocoanut logs and other debris were swept into NATS living area. At one time the water was within an inch of the deck.

Damage to other facilities included destruction of the submarine telephone cable and movement of two gasoline storage tanks from their foundations.

Beneath the gleaming white buildings and battlemented "castles" of Naples, Italy, the U.S.S. *Randolph* (CV-15) lies beside a dock in the bright morning sun. Sixteen of her air group's *Corsairs* face each other across the bow of the flight deck, lined up in case her skipper decides to use an *Operation Pinwheel* maneuver to help bring her into the dock or maneuver on leaving. The *Randolph* followed the *Roosevelt* in Mediterranean.

XS-1 BENEATH B-29 RESEMBLES A BAKA

Navy Aids Army's Air Project

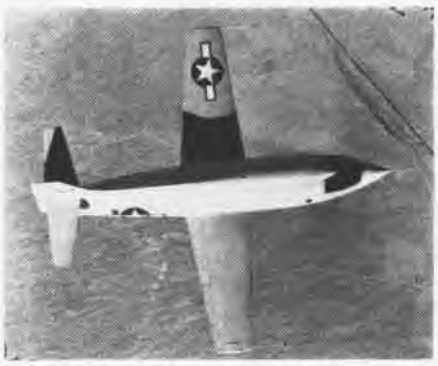
Pilot, Engines in XS-1 are Furnished

The Navy has a hand in the Army Air Force's attempt to be the first to fly a plane at supersonic speeds—the pilot of the Bell XS-1 "needle nose" is a former Navy ensign and the four engines which drive the plane are Navy-designed rocket engines.

The plane made its first flight at Muroc lake, California, the middle of December. Pilot Chalmers H. Goodlin got it up to 550 mph., without too much effort but was awaiting further test flights before trying to crash the sonic barrier around 750 mph. Goodlin served as a ferry pilot with Aircraft Delivery Unit, Trenton, and later was with Fighter Squadron 17 for three months before resigning in 1943. He formerly was with the Royal Canadian Air Force.

Powering the XS-1 are four 6000-C4 rocket motors developed by the Navy and Reaction Motors at Naval Ammunition Depot, Dover, N. J. They burn ethyl alcohol and liquid oxygen at a rate which, at top speed, would consume four tons of fuel in 2½ minutes. Nitrogen is used to force the propellants into the motors under pressure.

Each of the engines develops 1500 pounds of thrust and can be operated singly or in combination. Weight of each engine is only 210 lbs., length is 56″ and diameter 19″. Somewhat similar engines have been developed for installation as auxiliary power plants in the Navy's sonic research aircraft the Douglas D-558 *Skystreak* (see NANEWS, January, pg. 24). This plane has a conventional jet engine for main power, the General Electric TG-180.



XS-1 DROPS AWAY FROM 'MOTHER' PLANE

Trinidad Enjoys Navy Day Show

PBM Display Impresses Native Visitors

VP-MS8—On Navy Day this squadron based at NAS TRINIDAD, B.W.I., played host with the air station to some 6,000 native visitors, giving them a close-up glimpse of Navy seaplane operations and the hangar facilities for the first time since the base opened in 1941. In the morning nine squadron PBM's flew in formation over the towns of Port-of-Spain and San Fernando.

PBM JATO TAKEOFF AT TRINIDAD SHOW

The air station was opened to the public in the afternoon, and spectators had an opportunity to inspect the hangar area with its many departmental exhibits. Survival equipment, radio and ordnance gear, and a cut-away engine were shown.

An air show was put on by three PBM's, the program including a formation take-off, low altitude formation tactics, a JATO take-off in which the plane was airborne in six seconds, and masthead and high-altitude bombing. The bombing was done without a bombsight from 3500 feet by the Skipper, Lt. Cmdr. W. T. Sutherland, USN, his drops about 35′ from the target.

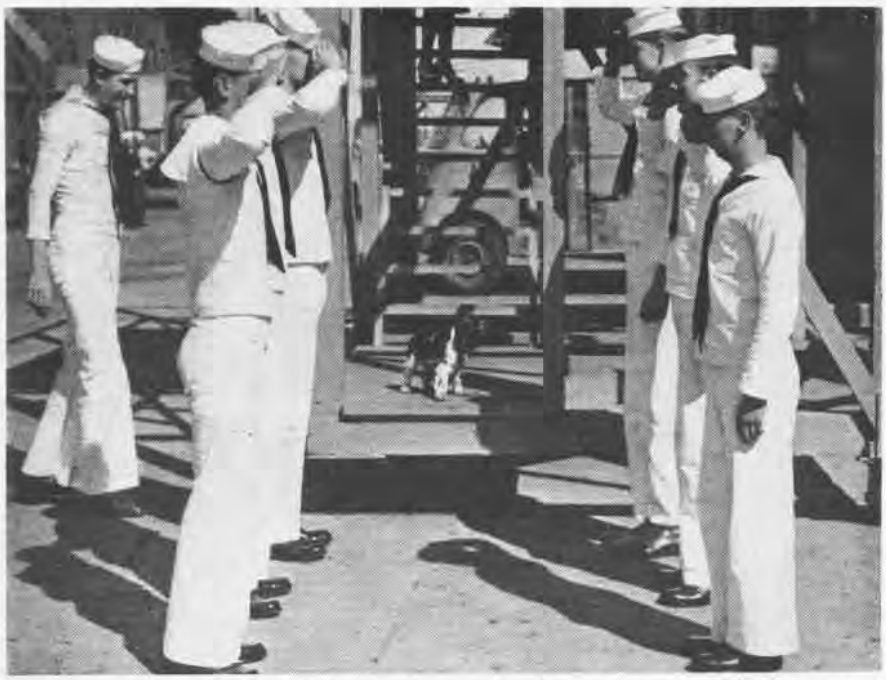
NATS Pilots Like New Trainers

Want to Log Time Put in Link Flights

VRF-2, PATUXENT—Can C-54 Link time be logged? This is the amusing inquiry offered by VRF-2 pilots who have solo time in this new type Link trainer. "If only per diem could be granted for these Link cross country hops; no baggage to carry, no laundry or transportation problems to boot!" sighed an old ferry hand.

Those who have enjoyed this new contraption with its wheel control and realistic flight characteristics are passing the word and a deep groove is expected to be worn between the squadron and the NAS trainer building. The flights are so realistic that the log yeoman is carefully watching itineraries for any logged time of this nature.

NAS WILLOW GROVE—The four-page Philadelphia bus and subway pamphlet, *The Traveler*, often overlooked as an advertising medium, recently contributed greatly to enrollment of enlisted men for this Reserve station. The compact folder, with a circulation of 250,000, gave front page spread to needs of the Reserve program and helped set a new high for the month's enrollment of men.



BRAND NEW *mascot sizes up his floating home. Standing at attention while being piped aboard the U.S.S.* Randolph (CV-15), *the cocker spaniel is a gift from the governor of Rhode Island and a descendant of the famed My Own Brucie. He reported aboard in time to finish the summer cruise with Annapolis midshipmen. To date,* NANEWS *has not received information on the puppy's name, which was selected by ship's company.*

MARINES IN 'OPERATION DUCK'

VMF(N)-542, MIRAMAR — Marine and Naval aviation played a leading role in the recent joint Army-Navy maneuvers off the coast of California, flying strafing, bombing and close air support missions for troops landing on the "enemy" beachhead.

Several aircraft carriers participated in the action. Bad weather was on hand most of the time, making a closer resemblance to actual battle conditions. Army P-80's and P-51's, plus Marine and Navy *Corsairs, Helldivers* and *Hellcats*, flew the closest approximation of actual combat since the war was over.

Through smoke of real bombs, rockets and Naval shellfire, the 9th Regiment, 2nd Division, stormed the beach at Pyramid Cove, San Clemente Island. A day late because of foul weather, the regiment led off the first major assault in the joint exercises which reached a peak four days later when the full division went ashore near Oceanside.

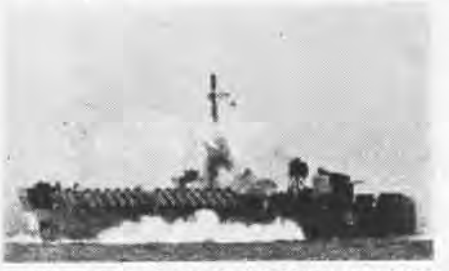
Of the nine waves of planes planned to soften the beach with live bombs and machine gun bullets, only one group failed to appear. That was the Army A-26's grounded at March Field by low fog early in the day. They joined the show later.

B-25's and P-47's of the all-Negro 477th Composite Group, flying from Blythe, Arizona, led initial air attacks followed by eight P-80's from the 1st Fighter Group flying from El Centro. The B-25's carried a 500-lb. bomb apiece, dropped in canyons above the beach.

Navy planes from North Island and Marines operating off CVE *Rendova* cruising nearby made up other waves. Marine planes were armed with rockets.

Meanwhile, after cruising at sea on the night of the 20th following the bad weather, the 30-ship task force under Rear Adm. A. D. Struble with tactical command vested in Rear Adm. B. J. Rodgers, anchored in the transport area offshore and 300 troops of the 9th Regimental Combat team, 2nd Division, went ashore in small boats.

The scene was sharply reminiscent of other amphibious landings during the war except that there were no dead on the beaches despite the real bombs and rockets. Most spectacular phase of the surface bombardment was that of the four rocket ships which blasted the shoreline just before the first six waves hit the beach. The squat, tough craft bristling with rocket mounts, pack a heavy punch like a BB.



ROCKET SHIP BLASTS INVASION BEACHES

Every rocket ship was scheduled to fire 60 rockets that burst at surface level and in real war did tremendous damage to personnel and beach targets.

Preceding the landing, 12th Air Force planes, including P-80's, put on a spectacular air show with Navy and Marine craft. They zoomed low over the beaches while "enemy" troops fired simulated antiaircraft guns. Ten minutes before the main landings, a squadron of troop transport planes droned over the Pendleton air strip, dropping several "sticks" of dummy parachutists.

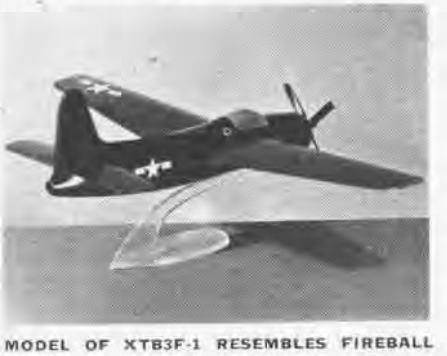
Tank traps, barbed wire, simulated mines, fox holes and various dummy gun emplacements greeted the 2nd Division. Positions were prepared by "enemy" forces which took quite a beating even before the division arrived. Living under combat conditions ashore, they suffered through 10 of the season's rainiest days but still managed to do a remarkable job in providing a rough reception for landing forces.

During the course of the maneuvers, Marine Ground Control Intercept Squadron One's air defense control center functioned as a radar picket station, controlling daily local CAP, consisting of F6F's, F8F's, F4U's or Army P-80's. About 150 successful interceptions were effected.

Navy Unveils Jet Attack Bomber

XTB3F-1 2-man Grumman Torpedo Plane

Before the old year ended the Navy added another jet-reciprocal engine combination airplane to its growing jet line. Grumman attack plane, the XTB3F-1 is a two-place monoplane, powered by an R-2800-34 engine forward and a 19 XB jet turbine aft. The piston engine is rated at about 2300 hp, while the turbine delivers 1600 lbs. thrust.



MODEL OF XTB3F-1 RESEMBLES FIREBALL

The new plane is designed to use the jet engine only for emergency or combat operation. However, the plane can operate on the jet engine alone in the air. Both engines utilize the same fuel setup and either power plant can use internal, external or bomb bay tanks. Maximum power gives the plane a speed well in excess of 350 miles per hour and a climb of over 3700 feet per minute at sea level.

Range as a torpedo bomber is around 1500 miles, but used as a Scout plane range can be boosted to something over 2000 miles with external and bomb bay tanks. In ferry status the plane has a maximum range of 2900 miles.

The XTB3F-1 cruises at 180 knots, service ceiling is 36,000 feet. Top gross weight is 22,000 pounds.

An unusual and comfortable feature of the plane is its seating arrangement for the crew. The pilot and radioman are seated side by side in one cockpit. This seating system enables the pilot to use the primary radar scope and greatly aids inter-plane communications. Also, in case the pilot is wounded or killed, the radioman will have an opportunity to help or replace him at the controls.

Armament consists of two 20 mm fixed guns. In addition, the plane can carry two *Tiny Tims* and eight five inch rockets. Bomb loading varies with the mission, but the plane can carry one 2 000 pound torpedo internally and two externally.

NATS Licks Fog By Using GCA

Commercial Lines Fail to Use Trailer

NATSPACIFIC — Considerable poor flying weather in San Francisco area, which cut commercial flying to 21 percent, failed to halt NATS, thanks to ground controlled approach equipment. None of the NATS flights failed to leave or arrive.

Little use has been made by private airlines, however, of COMNATS standing offer to resort to NATS GCA in any ground emergency weather situations. All NATS pilots currently using GCA transmit and receive on both VHF and HF while in contact with the ground trailer control unit.

By using two frequencies simultaneously, a pilot is protected against failure of either one of the channels. The procedure also is a backstop in case reception on VHF is blanked out or dimmed because of an obstacle between the plane and the GCA trailer.

THIS XSN2J, FASTER AND MORE POWERFUL THAN THE PRESENT TEXAN, SOON MAY REPLACE THE WELL-KNOWN 'JAY' AS TRAINER

CRYSTAL BALL

Future trends in utility, transport and training aircraft are outlined in excerpts from a report on activities of the VU-VR-VT design branch of BuAer.

Aircraft varying in weight from the 1,300-lb. *Grasshopper* to the 92-ton *Constitution* and in design from the amphibious *Duck* to the *Mars* are among the 7600 planes supported in service and training by the Design branch.

There are in addition about 10 experimental planes not yet accepted under its cognizance. Thirty-four types or models of aircraft still exist of more than 150 utility, transport or training versions which have been flown by the Navy in the past 10 years.

Utility Aircraft

In reviewing need for utility aircraft action is being taken to provide a possible successor for the *Duck*. The XJL, made by Columbia Aircraft Co., has been flown and preliminary data indicate it is more than just a replacement for the J2F. Not only will there be range and cargo space, but with good visibility over the engine, carrier landing and catapult conditions incorporated and folding wings, it will satisfy any need for a carrier-based amphibian. The XJL has better rough water characteristics, being designed for 4½-foot wave conditions. It has tricycle gear.

Another amphibian now taking shape is the XJR2F which, though slightly smaller than the PBY *Catalina*, will replace the JRF and J4F and may become the *Dumbo* for Naval Air Stations. A study of wartime air/sea rescue data on *Catalinas* and *Mariners* was made prior to design of the XJR2F and adequate strength has been made in the hull for rough water landings and take-off. Acceptance for service will depend on how it operates in rough water. It has a tricycle landing gear, can carry two tons of cargo or 14 passengers for 700 miles.

Pending further evaluation, the XJR2F may be prototyped into an administrative aircraft for Naval Attaches or as an intermediate amphibious multi-engine trainer replacing PBY's and PBM's now used for indoctrination.

The need for high speed tow planes is

CONSTITUTION DWARFS TINY BEECHCRAFT

XJL AMPHIB CAN OPERATE OFF CARRIERS

clouded by the increased use of drones for targets and the necessity of continuing training in anti-aircraft firing. If it is necessary to continue air towing at higher speeds, two methods of procurement are open: *1.* Either a combat jet or turbine model airplane may be modified for towing, or 2. An experimental design of airframe with towing provisions could be developed for flight test and evaluation of some of the high power experimental turbine or jet engines now in the design stage.

Transport Aircraft

Transport aircraft have been procured more or less off the shelf in the past, and have been modified for service use either by the contractor or by Navy A&R's. Only the R5O, JRM-1, R4D, R5D and R5C, of all the types used during the war, still are in service. The JRM-2 and two XR6O's (the *Constitution*) are at contractors' plants and probably will be in service next year. It is interesting to note that the JRM-2 seaplane grosses 16,000 lbs. less than the XR-60 landplane but will carry 16,000 lbs. more on a flight of 2,400 miles. Future procurement may be dependent on types we now possess, upon proposed commercial designs successfully operating with airlines, or from AAF.

Training Planes

Primary training planes have changed little the past 10 years. The Stearman and NAF *Yellow Perils* weathered the war. Today there are no service biplanes and all except the trainers have flaps, retractable wheels and controllable props. The trainers may be safe but they hardly are modern. The 1936 student seldom saw any one of the three controls, but the 1946 student is surrounded with all types having those features. Canadian students have trained in the SNJ-type as the basic trainer and no great difficulties were encountered. It may now be possible to change our syllabi and indoctrinate the student at the start with additional controls.

With this in mind, the Fairchild XNQ-1 will undergo demonstration and evaluation tests as a primary trainer. This may or may not be the airplane changing the syllabi of Naval Air Training. It may be necessary to add additional dual instruction hours before solo. However, further instruction will be reduced when advancing to heavier type aircraft.

In the advanced trainer field, the design of the SNJ is more than six years old and has never approached the performance desired. The XSN2J may be its successor. It can operate from a carrier, has better dive, high speed and tactical performance. Like the SNQ, it has conventional landing gear. Due to continuing Army Air Force interest in tricycle landing gear, some objection may be voiced by the Army in continuing conventional gear on this type of training aircraft.

FAST LITTLE XNQ TRAINER CAN DO 170

In speculating on what further Naval Air Training may need to fit the new Naval Aviation to service type aircraft, the multi-engine training picture now burdened with *Mariners* and *Catalinas* being maintained for indoctrination might well be studied. The XJR2F may be sufficiently rugged to become a good transitional trainer. Although it is an amphibian, the tricycle gear should lend itself to multi-engine landplane indoctrination for P2V, PB4Y and transport.

Jet Trainers

In reviewing attack or fighter aircraft which may become service types, the jet or turbine engine may affect the training picture. With these engines, a new type pilot technique may be necessary for slow speeds and for carrier work. The fighter, particularly, may be considered a hurdle inasmuch as no air check out is possible. A single seat high speed aircraft might be flown by an experienced pilot but for one right out of training definite personal judgment and cockpit troubles may appear.

If training has to expand again as it did in this war, just past, a jet or turbine checkout plane would speed indoctrination of pilots and reduce fatalities considerably. The McDonnell Aircraft Corp., has submitted an informal design based on the FD-1 *Phantom* incorporating two cockpits. Changes to the aircraft are limited to the fuselage forward of the wing spar. Weight, balance and performance are similar.

The additional seat is made at the cost of some armament and fuel capacity. In reviewing possible use of this plane it would not only familiarize the student with multiple jet engines but with carrier qualifications, gunnery training, high speed navigation, single engine performance and fast climbs, all under supervision. Such an indoctrinal plane could be made from any of the experimental fighters now being considered. When a jet or turbine fighter is accepted and considerable production is contemplated, the two-seat version is recommended for Navy consideration.

RUGGED XJR2F MAY REPLACE CATALINA, MARINER AS DUMBO OR MULTI-ENGINE TRAINER

MARINES SANK MANY JAP SHIPS IN RAIDS ON INDO CHINA COAST

MARINE RESERVES GET FAMED SQUADRON NAMES

BACK IN Guadalcanal days, when the Navy and Marines were fighting to hold onto their jungle toehold, VMF-121 in two months of combat destroyed 69 Japanese planes. Today, VMF-121 is a Marine Reserve squadron, based at Glenview, Ill.

That squadron is typical of a policy adopted by the Marine Corps of keeping alive the tradition and honoring the memory of its famous wartime fighter, torpedo or dive-bomber squadrons by naming Reserve fighter units after them. There are 24 Marine Corps Reserve squadrons carrying the famed numbers and insignia at various air stations over the country.

Major Joe Foss' old squadron, VMF-121, probably is the most famous heritage handed down to today's Reserve fliers. It shot down more Japs than any other Marine Squadron, 209, and had seven aces, including Foss with 26 planes. When our forces seized Munda airfield, the squadron shot down 18 of the 58 Japs downed on D-day.

One Marine Reserve unit, VMF-321, at Anacostia has five men on its roster today who were with the original fighter squadron when it was chasing Japs from the Solomons to Japan. Major Edmund F. Overend, its first skipper, was an eight-plane ace, five of which he got with the *Flying Tigers*. In one month it destroyed 39 Japs. Only ingenuity of its ground crews in repairing damaged planes kept them flying and fighting. The squadron later helped neutralize the Japs on Guam and participated in air cover for the occupation of Japan.

Other Reserve squadrons named after famed outfits:

VMF-112, Dallas—The famous *Wolf Pack* squadron now flies from the Texas plains. This outfit moved into Guadalcanal one day, refueled and took off within an hour to fight Japs. They kept at it until they had in a short time destroyed 56 Japs and lost only one pilot. Later they flew *Corsairs* and turned back 50 *Zeros*, shooting down seven. Lt. Synar got three in a few seconds. When the Marines took Iwo Jima, VMF-112 was flying cover, the first time carrier-borne Marines had provided air support for their land forces. The squadron also fought at Okinawa and over Kyushu. Their total war score was 140 Japs shot down, third among Marine squadrons in the recent conflict.

VMF-123, Los Alamitos—This wartime squadron flew *Corsairs* into Vella Lavella, shot down seven Japs the first day and in 10 days bagged 28 more, losing two pilots. Once the squadron destroyed six Jap supply barges loaded with gasoline and ammunition. Later they flew air support at Iwo and Okinawa.

VMF-124, Memphis—This was the first squadron to take *Corsairs* into combat. Its outstanding wartime ace was Capt. Kenneth Walsh with 21 kills. After a few months the squadron had 68 planes shot down and 20 probables. On its second tour of duty it was aboard a carrier and raided targets in French Indo-China, destroying or damaging 34 planes and three cargo ships.

VMF-213, Minneapolis—Self-dubbed the *Hellhawks* after Guadalcanal's dive-bombing hawks, this squadron carries as its insigne the ferocious bird-of-prey. Arriving in the Pacific too late to get in on Guadalcanal, they supported the Russells operation. Their *Corsairs* were the first ever catapulted from a CVE, the *Copahee*. After fighting at Rendova and Munda, the squadron racked up 130 kills and had seven aces, including Lt. Wilbur J. Thomas with 16½ and Capt. James N. Cupp with 13. Later, aboard the *Essex* they supported the Luzon invasion, hammered Tokyo in the first carrier strikes against that city.

VMF-215, Olathe—Although it did not begin fighting till July 1943, this squadron ranks fourth among Marines with 137 planes shot down and 10 aces. Their biggest pickings were around Vella Lavella. Knocking off four or five Japs in one dog fight was a frequent experience. By the time their third combat tour was over Lt. Robert M. Hanson had shot down 25 Japs, Capt. Donald N. Aldrich 20 and Capt. Harold L. Spears 15. Many pilots had hair-raising adventures with the jungles and life rafts—like Lt. Kenneth Duval who drifted among sharks, hungry, for eight days. Lacking a mirror, he scraped the bottom of his cup until shiny and attracted a rescuing destroyer. The squadron hit Rabaul and got 19 sure and six probables without loss by using the "section weave." It got the first Navy Unit Commendation.

VMF-216, Seattle—On its first engagement in the Solomons, it destroyed seven planes, on its second 17 more, with only one pilot loss. The Japs quit coming and the squadron concentrated on ships, getting among others a cargo ship loaded with soldiers. Later, on Guam, a Jap crawled into a *Corsair* with a hand grenade, setting it off when the pilot approached. The Jap died and the plane was damaged, but the pilot escaped. At Iwo Jima, VMF-216 was on the *Wasp* doing close air support and CAP, shooting down four and getting 15 aground. Then they swept the Tokyo area and the Ryukyus.

VMF-217, Squantum—The *Wild Hares* arrived in the Solomons area after the "turkey shoots" were over, but they bagged their share of Jap shipping, barges and picked off 16 planes. VMF-217's ground crews won notice for maintaining 260 planes for four months and keeping them fighting, instead of the usual 40. For this they won a commendation from Admiral Nimitz. After a stint at Guam, the squadron went aboard the *Wasp* and flew support at Iwo Jima, then hit Tokyo and pre-invasion Okinawa.

VMF-251, Grosse Ile—It went to Guadalcanal as a VMO but did a quick shift to a VF squadron when the going got tough, some pilots going aboard cruisers to fly the old SOC's to observe artillery and Naval gunfire. Major Joe Renner made fighters out of a collection of observation pilots who had been flying dive-bombers and "freshmen" from the States—then led them into battle. They ran up a score of 20 Japs downed with loss of only one pilot, although their job was only to protect dive bombers and torpedo planes. They did so well not one of their "flock" was lost. The squadron participated in the New Georgia, Bougainville, New Britain and Philippines campaign.

VMF-221, St. Louis—This squadron takes up the banner of the *Flying Falcons* who began fighting the Japs the day after Pearl Harbor on the *Saratoga*, taking over Midway when

Wake fell. For months they flew monotonous anti-submarine patrols and awaited the Jap attack, which came in June 1942. In that terrific melee the squadron lost 14 pilots but shot down 50 Jap aircraft heading for the island and our fleet. Their next battles with the Japs came when the squadron headed off an attack on Tulagi. Lt. James E. Swett shot down seven Japs in 15 minutes to win the Medal of Honor. The squadron shot down 16 more Japs off Rendova the day the Nips lost 101 planes in one day. After action at Vella Lavella and Rabaul, the squadron went aboard the *Bunker Hill* and fought at Iwo Jima and Tokyo. The squadron was second highest Marine outfit of the war with 185 Japs shot down and 11 aces. Swett had 15½.

VMF-351, Atlanta –Switching from an observation to a fighter squadron, this outfit did not get into action until it saw carrier duty in February, 1945, off Japan. After the war they flew cover for mine-sweeping operations. Although the score did not mount to any impressive total, the squadron enjoyed the distinction of shooting down every enemy plane without loss.

VMF-132, New York—This was a dive-bombing squadron during the war, VMSB-132. It participated in the decisive battle for Guadalcanal, sinking or damaging a battleship, cruisers, destroyers, cargo ships and landing craft, as well as several planes. As part of the First Marine Division, it won the Presidential Unit Citation for its work. Later in the war, trained for rocket and other close air support tactics, it flew cover for mine sweeping in the East China Sea and among Jap home isles.

VMF-142, Miami—Another dive-bombing squadron whose wartime colors are carried on by Reserve fliers. It too helped turn the Jap tide at Guadalcanal with its repeated raids on shipping. Besides regular assignments, its pilots would fly *Pistol Pete* hops to wipe out bothersome Jap artillery emplacements that were shelling Henderson field. Later it aided the Army in the Philippine campaign, winning high praise for bombing accuracy.

VMF-143, New Orleans –This unit perpetuates traditions of VMTB-143 which scourged the Japs at Bougainville, Buin, Tonolei, the Shortlands, Munda, Kolombangara and Bairoko. After carrier training in 1945, it flew close air support for Marine ground forces on Okinawa and other Ryukyu islands, then moved to the Balikpapan invasion and supported landings there. Although a torpedo bombing squadron, it still got 7½ Japs.

VMF-144, Jacksonville—A dive-bomber squadron, VMSB-144 flew *Dauntless* planes at Guadalcanal, the Russells, Munda and Bougainville, neutralizing airfields and hitting Jap ground installations to soften them up for invasions that followed. They were training for carrier operations when the war ended and flew cover over Formosa during the occupation.

VMF-141, Oakland—Another dive-bomber squadron of Guadalcanal fame whose record is now carried on by a Reserve unit. It participated in the naval battles off that island, destroying or damaging several cruisers, destroyers and cargo ships. When the Jap battleship Hiyei was hit, the squadron helped sink her.

VMF-234, San Diego –As a torpedo squadron, this unit's wartime namesake was active against the *Tokyo Express* in the Solomons, sinking or damaging nine ships, including destroyers. It also hit numerous shore installations at Munda, Kolumbangara and other islands. It was the first SBD squadron to fly off Munda when it fell to us. Aboard the *Vella Gulf* as a carrier squadron, they operated in the Marianas area and at the Tokyo surrender.

FAMED JOE FOSS (CENTER), SQUADRON MATES AT GUADALCANAL

MARINE WILDCAT TAKES OFF WRECK-LITTERED HENDERSON FIELD

VMF-451, Willow Grove—In less than three months of carrier action, this squadron shot down 51 planes. It was on the *Bunker Hill* until that CV took two Kamikazes. It supported Marine infantry on Iwo Jima and was one of the first squadrons to hit Tokyo. They also hammered Kure and later took part in the Okinawa invasion where they shot down 16 planes. One ace, Major Archie G. Donahue, got nine in the Solomons and brought his total to 14 at Okinawa.

VMF-244, Columbus—Another scout-bomber squadron whose traditions were handed down to Reservists, this outfit saw first action at Munda and Bougainville areas. The *Bombing Banshees* later hammered Rabaul's tough airfields, destroyed nine planes, five freighters, an oil tanker and 29 barges, plus damage to three destroyers and a troop transport. The squadron lost 10 percent of its personnel to enemy shelling while holding the Torokina airfield. They supported the Army in the Philippines, flying 235 strikes in four months and covering the 100-mile dash over the central plain to Manila.

VMF-233, Norfolk –A scout-bomber squadron at Guadalcanal, it sank or damaged several destroyers, cargo ships and submarines in the vicious battles of "The Groove." Once its SBD's, each loaded with instantaneous-fused depth charges wiped out a large Jap ground bivouac area. It also fought in the New Georgia campaign and at Bougainville, using TBF's in the latter action. Later, aboard the *Block Island*, it swept the Ryukyu chain for targets and supported the Borneo landings.

Two Reserve air stations have been assigned second Marine Reserve squadrons—Squantum and Los Alamitos. Squantum's second was VMF-234, a unit active in the Bougainville-Solomons area and later at Rabaul. VMF-241, at Los Alamitos, sprang from the famous *Ace of Spades* Marine squadron which made a spectacular record in the Battle of Midway when it lost 10 officers and 13 men. Capt. Richard E. Fleming won the Medal of Honor and every other officer who participated won the Navy Cross and all gunners the DFC. Major Lofton R. Henderson, the squadron commander, also lost his life in the battle and his name was perpetuated at Henderson field, Guadalcanal. Later the squadron bombed Rabaul and New Britain strongholds from fields on Munda, Bougainville and Emiran.

The Marine Air Reserve Training Command is headed by Brig. Gen. Christian F. Schilt whose headquarters are at NAS Glenview. Gen. Schilt's record as an outstanding airman dates back to 1928 when he was a lieutenant. He won the Medal of Honor for his airmanship and courage in evacuating wounded Marines from a besieged town in Nicaragua. In World War II he was chief of staff of the 1st Marine Air Wing, CO of Solomons strike command, island commander of Peleliu and later he served in the conquest of the Ryukyus in the spring of 1945.

RESERVES GET DENVER STATION

Newest Unit Will Serve Rocky Mountain Area; Bad Weather Hampers Flying in the Program

FORMER Naval Aviators and other personnel in the great middle west, who had to go either to NAS OLATHE or NAS OAKLAND to do their flying, have been given a break. The Navy has opened its 22nd air station devoted to Reserves at Denver, Colorado, so that men in the Wyoming, Colorado, Nebraska and Utah areas will have an opportunity to join the Reserve.

The newest naval air station is at the former Army air base, Buckley field. Because the Navy had no air stations in the Rocky Mountain area during the war, a blank existed in the Reserve picture. A CVE group will be located at the new Denver station as soon as organizational plans have been worked out and men recruited for stationkeeper and Reserve duties. It was a B-17 and B-24 base when the AAF was using it.

The problem of how to bring Reserve benefits to former Naval aviators and others in the Rocky Mountain states long has been a stickler until the Army made its field available. Some men in the New Mexico-Arizona area were flown by transport planes to San Diego for drill periods. Even with the Denver NARTU, the problem of long distance transportation still is present as it is a long way between cities in that section of the continent.

Most Reserve units reported in their news letters for November that they were having some difficulty keeping up their flight hour records because of poor flying weather as winter comes on. More emphasis thus is being given to training and indoor classes of indoctrination in new developments and planes. Armistice day gave many units a chance to get themselves before the public via air shows, parades and open houses.

Excerpts from news letters for November follow:

● NAS COLUMBUS—The station got back from Ohio State University the barracks, BOQ and mess hall space it took over last March to house part of its student-veteran enrollment. The return will enable the enlisted training department to set up full operations.

Pictures of Cleveland men on duty around the world in the Navy featured the station's display at the National Aircraft Show at Cleveland. Photos were rushed to Washington by overseas commands. Relatives of the men got duplicate prints. Mild weather permitted Reserve pilots to log 1220 hours during November.

● NAS ATLANTA—The week started with Armistice Day, Nov. 11, was a big one for the Reserve unit here. Navy's football team stayed on the station prior to the Georgia Tech game. A special guard was put on the Navy goat mascot after Tech students housed on the station threatened to barbecue it.

Sunday and Monday the Air Rodeo at Marietta surpassed any event of that sort in the South, with a crowd estimated at up to 200,000. It was the largest gathering in Georgia history. Sixty planes, dating back to a 1910 pusher biplane to the present day P-80 were displayed. The Navy's show team "Blue Angels" put on an air show with their F8F's. All this activity helped boost interest in the Organized Reserve. In the future, all stationkeepers will be selected from the Reserve list.

Marine Ground Intercept Squadron 15 was commissioned here and began drills in November. About 250 Marines and guests attended a dinner dance honoring the Marine birthday anniversary. A 50-pound cake with 171 birthday candles was consumed.

● NAS GROSSE ISLE—Through cooperation of the Detroit Common Council, an office for recruiting enlisted Organized and active duty Reserve personnel opened in the Navy club in downtown Detroit. Results thus far have been highly gratifying and permission was granted to use the office for six months. The CO had 14 prominent civilians as guests on a cruise on the U.S.S. *Saipan* in the Gulf of Mexico for two days.

● NAS SEATTLE—A heavy schedule of public addresses by officers and enlisted men of the Reserve unit helped get the word across on its activities. Three of the appearances were before women's clubs with the view in mind that modern women exert a powerful influence on sons and husbands and that they were experts at "passing the word" around. While awaiting arrival of R4D's, the newly-formed VR squadron is flying SNB's. It is hoped the transport squadron will be able to fly Organized Reserve personnel from their homes to drill periods.

● NAS MIAMI—Considerable interest was indicated in newly-scheduled lecture periods conducted by the enlisted training staff recently returned from NATTC Memphis. Planes of the unit participated in air shows at Sarasota, and West Palm Beach during the month, putting on carrier rendezvous and breakups, mock strafing attacks on the fields and formation flying. The CO of the CASU assigned here flew 600 miles from Atlanta for the sole purpose of maintaining his drill attendance record.

Besides the red, white and blue recruiting truck which toured the state during November, the unit was aided by a recent column in a local newspaper divulging that housing facilities were available for enlistees. Results were staggering. Calls were received from as far north as Boston and one radio-telephone call was received from British West Indies. A total of 130 enlistments were effected for Organized Reserve and stationkeeper billets.

● NAS NEW ORLEANS—Although bad weather held down flying hours, the Reserve unit was busy drumming up publicity. Navy and Marine platoons of stationkeepers marched in the Armistice day parade. Later, a color guard took part in ceremonies dedicating International Week celebrated at New Orleans. Radio announcements and speeches, talks before vets' organizations and student groups

MEMBERS OF MARINE RESERVE UNIT AT SAN DIEGO POSE FOR THEIR PICTURE BEFORE F4U

helped advertise the program and stir up enlistments.

● NAS Norfolk—Total flight hours during November weren't high but on one week-end CVEG-60 pilots and volunteers made 206 hops in two days, piling up 260 hours. NARTU enlisted stationkeepers were given a day's liberty for each prospect they signed up for the squadrons and CASU. Results were satisfactory, with 33 secured for the CASU. The station's A&R cooperated in recruiting weekend members for them from their non key ex-servicemen civilian employes. Twenty-five recruiting show cards, painted by the sign shop, were placed near time clocks in A&R. All this effort increased our Organized Reserve enlisted membership 275% during November. The public information officer broadcast reserve plugs at all high school and professional football games.

● NAS Jacksonville—The extensive recruiting program started to pay good dividends during November, boosting stationkeepers to 121, or 75 percent of complement. Organized Reserve recruiting is not so good, but efforts are continuing.

Publicity for the drive consists of a four-pronged campaign: *1.* Direct contact via decorated trucks on the city streets and at football games, public announcements. *2.* A book, borrowed from NAS Miami, was published with the title "For Men Only." It outlines the advantages of the Reserve program, with several humorous cartoons. *3.* Classified ads proved effective, bringing in more than 100 phone calls in two days. They not only filled billets but gave a mailing list for future contacts in event of program changes. *4.* Personal talks to civic organizations. 450 newsboys from Jax attended a Jax-Fort Benning football game as guests of the NARTU. Six fighter planes from the unit escorted Santa Claus in a commercial seaplane to a landing on the city's waterfront to open Christmas season.

● NAS Minneapolis—Reserve "fly boys" here are getting in plenty of time, piling up 1342 hours during November, one of the highest marks in the Reserve. The PIO arranged for showing of Navy film to a Boy Scout troop meeting, supplemented by a demonstration of semaphore, blinker and marlinspike seamanship by a signalman and seaman from the station.

Announcements over radio stations concerning Reserve activities include such unusual items as movie schedules of the station theater, Organized Reserve paydays, new squadrons commissioned, and billets still open in Reserve squadrons. Stationkeeper total was 424, only 13 men under allowance.

● NAS Olathe—The air station held open house for all school children in the Greater Kansas City area on Pearl Harbor day. Special features included an air show, continuous movies, and exhibits of interest to high school aeronautics classes and aviation clubs. A total of 840 pilots have enrolled in the Reserve program here.

● NAS Anacostia—Marine pilot and ground officers are showing great interest in the Reserve program and a waiting list of 67 pilots and 16 ground officers has been established. Only six Corsairs are available thus far and flying is mostly in SNJ's, SNB's and F6F's. Despite bad weather, all Reserve pilots flew 1167 hours. Ten men were sent to NATTC Memphis for training and upon return will instruct stationkeepers and O-2 personnel in their various specialties. The Reserve basketball team has a 30-game schedule lined up.

CAPT. EWAN COMMISSIONS VR-58 AT WILLOW GROVE; LT. CDR. JOSEPHS IS ITS C.O.

● NAS Memphis—Forty-three enlisted stationkeepers joined the ranks during November, bringing the total to 312, or 84 percent of billets. Assisting in this recruiting were spot announcements sent to 30 radio stations in the area. Sixty-two Sea Scouts were guests of the air station over one weekend. They received instruction in communication, fire fighting, navigation and aerology and participated in various athletics. They saw Navy movies and completely lived the Navy life for the two days. Excellent newspaper publicity was received on this event.

● NAS St. Louis—As winter weather hampers flying somewhat, attention is being given to instrument flight. All SNB-type aircraft aboard were rigged with amber plexiglas hoods of the latest type, for use with blue goggles. Training of pilots on instrument procedures is underway. Special shield-type head pieces were rigged for use in single-engined aircraft. Several cross-country packets were obtained for use by pilots doing cross country work.

Capt. Roland P. Kauffman, CO of the station, was host to 15 distinguished St. Louisians on an air trip to Pensacola and a visit aboard the U.S.S. *Saipan* to observe air operations.

● NAS Oakland—In addition to the usual radio and newspaper stories for publicizing the Reserve activities, stories on the program were submitted to various trade journals including Standard Oil, Pacific Telephone and Telegraph, Tidewater Oil, Shell Oil and Pacific Gas and Electric Co.

The Navy and Marine Corps recruited at Stanford University, University of California and several smaller colleges. Pilots of the unit showed they were a good cross section of those who follow aviation by making two wheels-up landings and five ground loops during November.

● NAS Dallas—A total of 461 stationkeepers were on duty at the end of the month, with 23 new members added during the period. Flight hours totalling 521 were piled up by 177 pilots.

G.C.A. Helps Nats Operations

Pilots Brush Up on Their Navigation

VR-5—With the coming of wintry weather, NATS operations have been hampered in the Seattle-to-Alaska area. Ground controlled approach equipment has been installed at most terminals including Seattle. The crew at Seattle should be mentioned for its fine work in bringing our planes in each morning from the north during the low ceiling and visibility conditions existing there. GCA has replaced SCS-51 approach at Seattle, which was relied upon during the war.

Because of approach of bad weather, the operations officer insisted that squadron pilots, new and old, brush up on all phases of navigation. The Nav department gave refresher work in Loran, high-altitude radio altimeter drift reading and even celestial navigation.

Under precipitation static conditions, common during winter along VR-5's routes, accurate use of Loran and ADF equipment sometimes is restricted. Only infrequently are celestial bodies visible. Aware of such conditions, VR-5 pilots are easily convinced of the desirability of knowing how to use all nav aids.

WORLD TOUR? JOIN VA-1A

VA-1A—Wanna travel and see the world? Do you, huh? Attack Squadron One-A has a ticket for you then, all you have to do is transfer to this red hot outfit and go along 'cause VA-1A (ex VB-4) is getting around these days.

Here is what VA1A has done since 12 May 1945, when the squadron was organized at NAS ALAMEDA as a part of Carrier Air Group Four. The squadron first moved to NAAS WATSONVILLE, the center of California's spectacular resort area. The stay at Watsonville was very enjoyable 'cause picnics, swimming and elaborate parties filled almost every evening and week-end.

The first of July found Attack One-A on its way to Quonset Point, Rhode Island. You really didn't think the fellows would be satisfied without a visit to the East, did you?

A week later everyone took up residence at NAS WILDWOOD, New Jersey, where they enjoyed the hospitality of our Easterners. Again swimming, clam bakes, barbecues, and county fairs provided entertainment for the members of VA-1A and their lovely girl friends.

The stay at Wildwood was much too short but who can refuse tickets to Groton, Connecticut? You're right, everyone accepted those tickets because Connecticut has always been famous for "good liberty," and the squadron found that those hardy people were proud of that reputation as they did everything they could for the fellows.

About the middle of January bad news came along. Norfolk has always had a bad name and the orders stated that East Field, NAS NORFOLK was waiting for VA-1A to move in. Oh well, one always finds thorns among the roses. Things weren't as bad as everyone thought and expected.

Having its share of shore duty VA-1A went aboard the U.S.S. *Tarawa* for a shakedown cruise to Cuba. To date, everyone insists that they thoroughly enjoyed visiting the "playground of the vacationists." After a successful two months near and at Cuba, the U.S.S. *Tarawa* and Attack One-A returned to Norfolk for another two months "on the beach"—Virginia Beach, that is! That duty wasn't too bad.

By now many of the boys were ready to return to the West Coast so shouts of joy were heard when orders for San Diego via the Panama Canal were received. Uh-huh, liberty was excellent in Colon and Panama City where the charming senoritas turned out and took over the moment liberty call was sounded.

NOW SAN DIEGO—there's a town! Everyone was so sorry when departure date arrived but new horizons were ahead so they went willingly.

The next stop was Pearl Harbor, Hawaii, where famous Honolulu and Waikiki Beach had a chance to prove their qualities. Having only a few days, the squadron had to rush to see and do everything that appeared necessary to thoroughly "do" Hawaii.

At this moment the well-traveled squadron is on its way to Saipan, Guam, China and all those parts of the Far East that are veiled beneath so much mystery and charm.

Don't get me wrong, a lot of work goes with all this travel but no one really objects. It's far from monotonous.

Next Month: Life on Saipan

Want Your High School Diploma?

Schools Still Credit Service Training

You can still cash in, educationally speaking, on training received during your Navy career. Those weeks spent in technical aviation courses, for example, can be translated into academic points later on, if you decide to go after a delayed diploma. During the war years many service men and women accumulated credits toward high school or college graduation. The American Council on Education recognized and evaluated wartime experience, service schools, correspondence courses, and off-duty class study.

A bulletin recently issued to the schools of the nation, recommending continuance of this policy, states: "Thousands of young men will continue to serve in the armed forces during peacetime, and many of them will attain measurable educational growth while in the service, just as others did during the war."

The only important change in the plan involves recruit training. The wartime recommendation for credit for basic or recruit training was made to avoid penalizing a man drafted or enlisting during the last months of secondary school. Since present Selective Service regulations ordinarily do not require a man to leave high school before graduation, it is no longer recommended that credit be granted for recruit training for men entering the services after conclusion of hostilities.

Although individual schools actually determine how in-service training shall be credited in academic units, the bulletin prepared by the American Council on Education serves as a standard guide all over the country. Completion of a specific service school for example, will mean something definite in the way of high school credit to every school principal and college dean. Correspondence courses offered by the United States Armed Forces Institute (USAFI), by collegiate extension divisions and by the Marine Corps and Coast Guard Institutes, will continue to be honored. Similarly, off-duty class study, done under educational services programs and measured by USAFI examinations, rates evaluation.

For personnel beyond normal high school age the nationally standardized "Tests of General Educational Development" give a chance to show the value of broad experience not easily measured in conventional subject classifications. Travel, civilian or military occupations, reading, and other factors may show up on these GED tests as the equivalent of several years of ordinary schooling. If so, due credit can be given under the program's continuing liberal policy.

TBM. AT END OF ONLY 350-FOOT RUN. TAKES TO THE AIR; CAR IS STOPPED BY DC CURRENT

ELECTROPULT LAUNCHES JETS

JUST LIKE a housewife with her kitchen appliances, so it is with the Navy and its catapults. They're both going electric.

Disclosure of the prototype at NATC PATUXENT and the second model at NAES PHILADELPHIA, of the Navy's newest catapult type XE-2 shows that electricity is not only suitable for implementing the takeoff power of an airplane, or drone, but it may be preferred in the future.

When a P-80, Army jet fighter, took off on the XE-2 straightaway at Patuxent recently it was airborne in 370 feet—a figure just 1630 feet under the normal distance required for the *Shooting Star's* takeoff. With the aid of the new electric catapult the P-80 had cut more than 4/5ths from its starting run.

The XE-2 has a track 1500' long laid in a concrete bed. Riding this track is a shuttle car which can be motivated to a speed of 200 mph within from 500' from starting point.

With the induction motor principle as the basis for operation, the motor for the catapult has the usual cylindrical parts laid flat. This gives actual linear rather than circular motion for the current to travel.

To make possible such linear motion the catapult is built in the following manner. Collector rails make contact with 16 collector shoes (or wheels) to afford the track for the car as it rolls down the runway.

Guiding rails along the side act as a channel for the wheels. A running rail is connected to the car by a power line to supply the energy just like a trolley running on the "third rail" principle.

THE SHUTTLE car motor is divided into two principal components, the first including the primary core and windings and collector shoes, the second including the secondary core with squirrel cage windings, running rails, guiding rails, collector rails, and copper bus bar power supply or feeder lines.

To transform kinetic energy that originates as the basis of power and to multiply it to desired strength, an intricate process is involved.

Leaving the A/C engine, the current is transformed into DC in the DC generator and goes through the electric motor. Leaving the DC motor, the energy hits the flywheel and turns it thus providing a multiple of 15 for the energy before it hits the AC generator and becomes electric energy.

The car, two feet wide by four feet long, stands 5 and one-half inches above the tracks. It requires eight to 15 seconds to get in high gear. That time consumes ¼ to all of the 1500' of the track.

To slow down the speeding shuttle job and prevent damage on striking the end of the rail, A-C power is fed into the collector shoes. To bring the dolly-like affair to a complete halt D-C power is applied.

Practical use of the catapult manufactured by Westinghouse has not extended it to carrier operations, but that should come shortly. And interim plans are progressing for using it to launch robot planes and guided missiles. The speed and efficiency of the XE-2 make it a practical means of launching rockets and other drone jobs in the future. New developments in powder and hydraulic catapults in use now may be another method to get take-offs at high speed.

CORSAIR POSITIONED ON SHUTTLE CAR ON PATUXENT RUNWAY

SADDLE FOR SLING CONNECTS TO UPPER PLATE OF SHUTTLE CAR

MARINES MAKE MECHS FROM RECRUITS

DURING the war the emphasis was on training and thousands of officers and men were poured out of Navy schools all over the country to fill technical jobs in aviation.

Today the rush is off but the problems aren't any less. The job is being tossed back more and more into the laps of the squadrons themselves. Take for instance Marine Service Squadron 32, at MCAS EL TORO.

The squadron had 136 enlisted men and six officers at the start of November and by the end had nearly 407 enlisted men, with the same number of officers. Ninety percent of the men were recruits, with no military specialty and little or no indoctrination in aviation.

Plans were for the squadron to go overseas in the near future. Naturally training, and quick, was what had to be done. This particular unit farmed out the men to station and other organized schools in the base. Equipment was set up to give the men "on the job" training and select them for jobs they would fit into best. Experienced non-coms are helping teach the greenhorns some of the ropes.

Other Marine squadrons at El Toro are placing similar emphasis on training. Some haven't been able to start yet, like Ground Control Intercept Squadron 3, which has a skeleton strength of one officer and one enlisted man. It's waiting for Marine Air Control Group 2 to procure and train men in intercept procedure and radar maintenance so that it can begin functioning.

Headquarters squadrons of MAG-32 and MAG-33 sent their enlisted men to various station schools like F4U cutaway school and AES engineering school. The group provided a basic engineering school for the men, taking advantage of more experienced technicians on hand. Newly arrived R4D's are used to retrain transport pilots.

VMF-312 gave individual instruction with and without arms, drill, military courtesy, and discipline as well as technical aviation training. Navy educational films are used in conjunction with lectures whenever possible. Since the Marines are specializing in fighter aircraft, VMF-323 gave transitional training to its VT pilots, including rocket, gunnery, glide bombing and tactical flights day and night. One hour a day is devoted to a school for officers and men on naval law, rifle company, platoon tactics, military rites and ceremonies, ordnance, combined operations, close air support and military insurance.

VMF-224 reported similar problems of training the 74 percent of its command who were serving their first enlistment in the Corps. Untrained men were assigned a billet in the squadron table of organization. This obviates the situation where five men would train for a billet which calls for one man while another billet which calls for 15 men had no one training to fill it.

Two other fighter outfits, VMF-223 and VMF-311, also fitted their training program into the pattern followed by other squadrons at the California base.

Squadrons at El Toro secured some realistic flight practice when they flew strikes and combat air patrols in connection with joint Army-Navy maneuvers on nearby beaches.

Photo squadron 254 participated in the operations, flying 46 photographic missions, taking 1800 negatives and dropping 1577 positive prints to ground troops for study. It was the first time the squadron had dropped pictures after taking them.

Another type of education is provided by the station operations department at El Toro. Enlisted men are taken for flights in R4D's on Sunday afternoons to acquaint them with the area within which they are serving. Hops are usually 1½ hours long and cover points of interest within 100 miles radius. Beforehand, all hands are checked out on chutes, lift rafts, first-aid kits and ditching procedures.

VMF (N)-534 at Miramar has enrolled about 50 percent of its enlisted men in courses to complete their education for high school diplomas or to get college prep or college credit. All squadron officers enrolled in either Marine Corps adminstration basic course or post exchange accounting. Six pilots training as night fighters are getting practice in day and night airborne radar intercepts, ground controlled intercepts and GCA.

New Secretary Flies a Mariner

Flies Co-Pilot in PBM at San Juan

VP-MS-1—John Nicholas Brown, the Navy's newly-appointed Assistant Secretary for Air, checked out personally as a co-pilot in one of the squadron's *Mariners* recently.

BROWN (WHITE SHIRT) AND PBM'S CREW

Mr. Brown went aloft in the squadron commander's PBM for a bounce hop in the San Juan area. He commented favorably on flight characteristics of the aircraft after a trick at the wheel as co-pilot. This medium seaplane squadron formerly was VP-201.

Selective Training Eliminated

CNO Directs Termination of Program

Chief of Naval Operations has directed that selective flight training for Naval Aviation college program students be disestablished not later than 31 June 1947.

It also was directed that selective flight training for officers training in grade, as conducted at NAS DALLAS, be discontinued on 31 April 1947. At the same time, pre-flight instruction at this station for officers will be disestablished, and subsequently officer candidates for flight training will be entered directly into basic N2s.

The 4 February 1947 output of the college program will be about 200 students, who will receive selective flight training followed by Tarmac duty at the respective selective flight training stations pending input into pre-flight. The next college output in June 1947 of about 500 students will not be scheduled for selective training.

Gremlins Getting Group's Goat

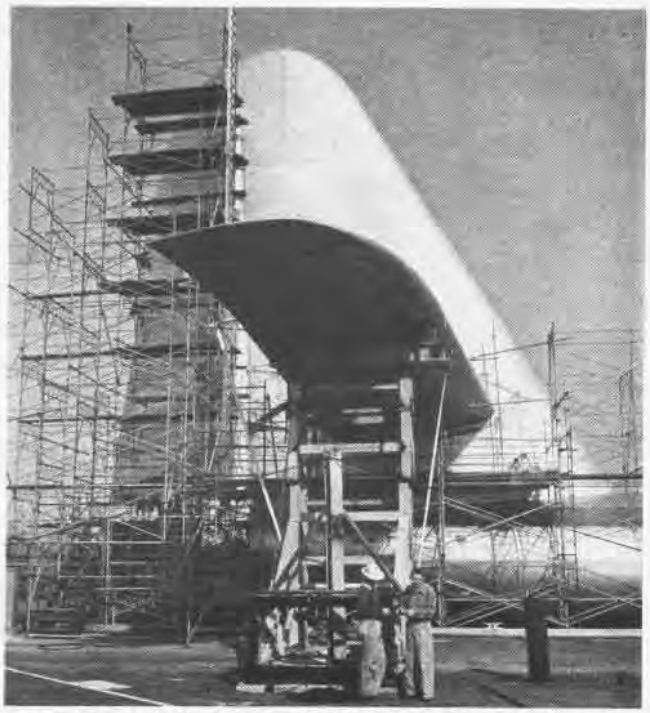
Little Men Harass Transport Squadron

VR 8—Suspicion is growing that the squadron is being plagued by several NATS size, manhandling gremlins. Their presence was first suspected when the weight from the end of a trailing antenna dropped on the head of a first pilot who was making a pre-flight check on the exterior of his plane.

Further proof was provided when the squadron flight officer was mysteriously hurled from the top bunk of a plane during flight. Although the air was not turbulent, the officer spun into the deck and suffered a wrenched shoulder.

Most recent example of the gremlins' sadistic humor occurred when they pushed the squadron skipper off the wing of a plane while he was trying to check the gas. He pancaked from 15 feet, executing a full stall in a sitting position.

NATSAsia—For those persons who like rain, we recommend Samar in the Philippine Islands. The NATS detachment there found out what the rainy season really means when, during a period of three days, it rained continuously. In one 24-hour period 17 inches of rain fell. Needless to say, flight operations were handicapped.



RED BEACON ON SCAFFOLD PROTECTS 80' TAIL FROM AIRCRAFT

HERCULES

EYES OF the air-minded Navy, which have been on flying boats since Glenn Curtiss put floats on his *June Bug* back in 1909, are watching with interest development of the world's largest flying boat—the $20,000,000 Hughes *Hercules*.

Many admirals and Marine aviation generals have made inspections of the 400,000 pound wooden monster being assembled on Terminal Island, California, near the Naval Air Station. Test pilot and crew have been using a PB2Y for checking out and arrangements have been made for NATS to take up one as co-pilot in a *Mars* aircraft as "transitional training" before trying to fly the *Hercules*.

Here are a few statistics on the huge seaplane:

Power plant—eight Pratt & Whitney *Wasp Majors*.
Wing span—320 feet; height of tail 80 feet above water.
Fuel supply—14 gas tanks of more than 1,000 gals. each.
Range—3,000 miles with 75-ton pay load.
Cruising speed—150 mph., landing speed 80 mph.

Hull and wings are unique in that they are made through-out of birch plywood. The interior of the plane is arranged only for freight carrying, with no accommodations for passengers. Gas tanks are in the hull, together with two trimming tanks to adjust balance, using salt water.

The hull, wings and tail section were all constructed at the Howard Hughes plant inland and transported at a cost of $250,000 overland to the Terminal Island dock. It is possible to walk through the leading edges of the wings, standing erect, to any engine and to enter the engine nacelle and service the rear of the engine.

The plane has eight 17′ 2″ four-blade propellers. The four inboard ones are reversible pitch. Controls are unique in that each surface has six complete controls thereto. Normal control is with oil and servo motors, paralleled by auxiliary air control from bottles and two compressors.

The boat originally was scheduled to have clam-shell doors in the bow, like an LST, so that a 60-ton tank could be rolled in. For test purposes, these doors were removed and a solid bow installed. Draft, fully loaded, will be 80″.

TO GIVE water-tight construction, the hull is a veneer, bonded with plastic plus an outer coating of paper also bonded with plastic. The only spruce in the plane is the two fore and aft heavy members securing the main spar.

An ingenious arrangement was used to install flaps and ailerons, which are larger than an ordinary plane's wings. This device consisted of air bags on which the surface rested. As the air bags were inflated by pump, they raised the surface into position for final securing.

Pilot and co-pilot have duplicate controls, including throttles and engine controls. Seats are six feet apart. Two engines are on each throttle. The flight engineer's panel has all instruments for each engine in a vertical line. After the pilot takes over engine control, the flight engineer has an auxiliary throttle with which he can control only 10% of the power of each engine for synchronization.

The gasoline system has by-passes and emergency pumps for operating any or all engines directly from main tanks as well as from the service tanks. In the radio installation, the operator may tune in and adjust any circuit desired and give it to the pilot immediately. Engineering instruments, like the radio controls, are only a short distance behind the co-pilot and pilot so cooperation is easy.

Anchoring arrangements are operated through a door in the boat's bow. Heavy snub bollards are arranged forward and aft on both sides with a door immediately adjacent. These bollards may be pushed through the hull or retracted when in flight.

Wing tip floats are fixed and slightly more than 200′ apart. These floats appear to be about four times the size of an observation plane main float. The main wing consists of three spars, having no gas or storage arrangement.

POWER, PHONE LINES RAISED OR CUT TO PERMIT PLANE MOVING

NOTE MAN ON WING, HELICOPTER NEAR TAIL OF HUGE HERCULES

NAS Corpus Christi—Back when there was a war on, the Navy turned up with a WAVE tower operator at Kahalui air station on Maui. Resenting the feminine intrusion, pilots went out of their way to make her first few days as hectic as possible. Bit of plane talk overheard the second day: "Hello Naska, Hello Naska, this is Buck Rogers at 98,000 feet—request straight in approach." Without hesitating, the WAVE shot back: 'Hello Buck Rogers, this is Naska; circle the earth, Flash Gordon on final."—*The Beam.*

MCAS El Toro—To help shoppers at the commissary keep their foods in warm weather, the quartermaster recently installed a 600 cubic foot walk-in type refrigerator. Since most shoppers are men who buy for their families, the idea has proved a boon because it would be hard otherwise to keep perishable food from spoiling during the day. The refrigerator is run on the honor system and nobody as yet has gone south with some one else's rhubarb. Each person marks his own packages for identification.

AFLOAT AND ASHORE

VP-204, Atlantic—This squadron has inaugurated an incentive maintenance program that is paying dividends. The plane crew achieving highest availability each month and the crew whose plane presents smartest and most shipshape appearance at the C.O.'s monthly formal inspection are awarded an extra day of liberty. Although eight of the nine planes attached are out of commission an average of three weeks each, due to transfer or replacement, this squadron has accomplished an overall availability record of more than 50% for the past three months.

U.S.S. Saipan—This CV has been busy a la tourist steamer lately. Three civilian groups in one week were taken for cruises aboard the carrier to view operations at sea. A group of 50 Army aviators made the first trip. Upon her return she took out a group of civilian dignitaries from Birmingham, Ala., who had been waiting somewhat impatiently for their turn at sea duty. Third group was 20 Boy Scouts and 8 Sea Scouts.—*Gosport.*

NAS San Diego—The disbursing officer of the station has been designated to pay drill pay to Reserve Squadron VP-916. Since official money lists had not been printed by the Bureau, they were made locally by ditto machine. To facilitate payment and insure proper form and accuracy of the money lists it listed names, ranks and total number of drills—data obtained from the commanding officer of the drill squadron. Certified copies of active duty orders of all officers and men are retained in the disbursing office file for future reference.

MCAS El Toro—Marine Air, West Coast, and the station education offices recently pooled their resources and opened up an education office in the PX lounge to give education-hungry Marines a chance to complete their high school and college credits.

More than 100 men already have been tested for high school diplomas and college credits, with the waiting list continuing to grow. In the first two days of operation, the education office issued 69 Marine Corps Institute Correspondence Courses for extra high school and college credits.

NAS Grosse Ile—Pilots from this station did some precision flying between halves of the Michigan-Illinois football game which netted them favorable publicity. Twenty-four planes flew over the stadium during half-time ceremonies. Arrival of the planes coincided with the formation of both bands in a large block "anchor" on the field. The planes flew first in a block "anchor," then in a block "M," then a block "I" formation.

NAS Norfolk—Personnel stationed at this base have no trouble telling when it is time to hit the sack. One of the cherished traditions of the Norfolk Navy Shipyard is the famous "nine o'clock gun" fired each evening at 2100. It is heard by residents of Norfolk, Portsmouth and St. Helena.

It all came about in 1886 when Rear Admiral Stephen C. Rowan USN, ordered a curfew gun fired at 2100 daily from the receiving ship. The gun served not only as a curfew but as a timepiece as well. Residents of the surrounding communities became so used to checking their watches by the gun that they petitioned President Taft in 1909 when the custom was dropped temporarily.—*Dope Sheet.*

VR-5, Seattle—With the cold weather here for good, the Kodiak detachment of NATS is successfully loading and unloading its big transport planes inside the hangar. Planes are not pulled outside until they are ready to start the engines. This contributes greatly to the comfort of passengers, efficiency of the loading crews, and ease of starting warm engines.

NAS Tillamook—The executive officer happened to look out of the window one day. He spotted a sudden burst of flames apparently from one of the public quarters on the station. He called the fire department. Although the fire turned out to be half a mile from the station, the department went to work and saved the farmer's house, milk shed and tool house. The blaze was out when local firefighters arrived. For the second time in recent months, one of the station's planes spotted a forest fire in a nearby area and by reporting it to local state forestry officials brought about its quick extinguishment.

UtWings, Pacific—The *Hellcat* drones which successfully braved the unknown dangers of the atom bomb explosions are due for a relatively gentler (?) demise. They will be used as high speed target drones for the fleet.

Pilotless F6F-3K drones used in the *Able* and *Baker* tests have been assigned to Utility Squadrons Three, Eight and Eleven. Only one of the planes, victim of an operational accident, failed to survive the test. Additional F6F-3K and 5K type drones are being modified by NAMU to be used in training fleet gunners.

NAS Whiting Field—This base recently began training Peruvian flight crews for operations in PV-2's. When their training is complete, the Peruvian Army Air Force will have three plane crews capable of flying these planes. The students plan to ferry six PV-2's from Whiting to Lima, Peru, completing the assignment in two trips. —*Whiting Tower.*

NAS Jacksonville—Yardcraft engineering department has refitted a 33 ft. rearming boat as a shallow-draft fireboat for use in extinguishing seaplane blazes. Maneuverable in shallow water, the craft has an 11 man crew and is on call 24 hours a day.

The 33 ft. boat, which makes approximately 15 kts., has a 750 gallon per minute Chrysler pump and a Johnson rated at 500 gallon per minute. Its hoses are capable of throwing water in eight different directions.—*Jax Air News.*

VMF-461—While General Vandegrift and other high Marine Corps officers looked on, this squadron participated in a simulated air support problem and air show at Atlantic City recently. Twenty-one planes provided air support for underwater demolition teams and landing parties, making simulated dive bombing and strafing runs on the beach. During a parade in the city the squadron flew division maneuvers in echelon, column and parade formation and spelled out the numbers "461" at 3,000 ft.

NATC Patuxent River — This station and NAS Banana River were visited by the Royal Air Force *Lancaster Aries* which flew over the northern magnetic pole a year ago and found it was 200 miles away from the spot designated on maps. The *Aries* was on a tour of Army and Navy air stations. It demonstrated latest British navigational facilities and studied the new pressure pattern method of navigation.

NAS Tillamook—This station has 415 aircraft in storage, including 203 TBM, 27 F4U-4, 57 SC-1, 51 SB2C, 11 SBW, 32 JRB, and 34 SNB planes.

NAS Pensacola—A hundred army aviators got a taste of carrier life aboard the *Saipan* here recently. The ship went through take-off and landing procedures at sea to give the landlocked fly-boys a chance to see how the Navy does it. Army aviators can fly planes but many never realized the problems of operating on the narrow confines of a carrier deck or of landing in the gear.—*Gosport.*

A 1,200,000-VOLT GENERATOR AND A B-25, EXPERIMENTAL GROUND TOOLS, SHOWN AT REST ABOVE, WERE ELECTRICALLY JOINED BELOW

Precipitation Static Curb, Long Sought by Army, Navy, and Civil Aviation, Due with Plastic Use

MANY's the time when loud noises like eggs frying and coal or ashes being dumped blotted out radio transmissions. Then pilots and aircrewmen shook their head in wonder. They've searched the sky for signs of lightning but to no avail. No lightning—and still we get static. What gives?

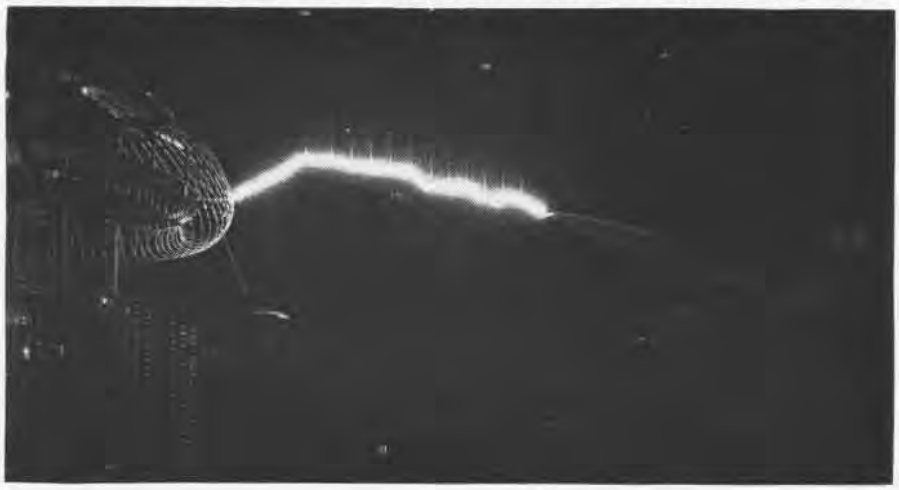
The "give" is a static separate in sound and effect as much as in origin from that provoked by lightning. *Precipitation static* is the name applied to radio and electrical disturbances often experienced when flying near or in precipitation areas.

A nearby atmospheric electric field resulting from charged clouds or particles in the air striking an aircraft will cause static electricity to collect on a plane's surface in excess of the dielectric strength of the adjacent air. When this occurs, the accumulation of electricity discharges into all the surrounding air.

This discharge is accentuated visually by flames, known as St. Elmo's Fire, appearing along the lines of discharge. The discharge always occurs at the extremities having the smallest radii of curvature such as trailing edge of wings and empennage, pitot tubes, antennae, and propeller tips of the flying plane.

The fire appears to be on the plane, but, actually, it is just off the aircraft and does no physical harm. Precipitation static's danger lies in the blocking out of radio transmissions. Intensity of the disturbance varies proportionally with the speed of the plane and the amount of precipitation or area of electric field incurred, observation shows.

WHEN VOLTAGE CUTS LOOSE IN SET-UP ABOVE, A SPECTACULAR PICTURE WILL RESULT



NOT A MAN FROM MARS GO-CART, BUT A B-17 USED TO CARRY AND TEST POLYETHYLENE

Minneapolis Hangar Opened to Reveal Instruments Used During Decade Long Research Program

SMALL static charges accumulated by an aircraft in a clear atmosphere are negligible. In an area of precipitation, however, three conditions may cause trouble. Friction caused by striking pellets of rain, snow, etc., may produce a charge. Striking particles may divide into charged fragments upon impact. Also in the electric field associated with thunderstorms convective processes transfer an electric charge on the plane's surface.

These conditions generally provoke corona discharges great enough to demand preventive and curing measures. A joint Army-Navy project at NAS MINNEAPOLIS under Dr. Ross Gunn, head physicist at the Naval Research Laboratory, has attempted and succeeded in developing both preventions and cures.

Recently Dr. Gunn and his associates opened the doors of their long restricted research hangar at Minneapolis, disclosing the implements with which they have developed and tested the equipment they now recommend.

Unlike Merlin of King Arthur's court who never opened the cave where he hid his magic secrets, the precipitation static scientists have not only opened the passageway, but they are showing to one and all, civilians and service personnel alike, the magic they have conquered and their methods of conquering it.

This current exposé is the product of a study which began in 1929. That year, the *Los Angeles*, a Navy dirigible, acted as guinea pig for operational testing of an electric field meter, an instrument which measures the magnitude of electrical fields around airborne objects.

Vertical convective currents (up and down drafts) will generally be found wherever electrical activity exists, so the meter was under observation to check its ability to measure electric fields accurately enough to warn lighter-than-air crews of the imminence of vertical currents which might strike the dirigible and cause extreme damage.

At that time no one realized the connection between the static charges on an aircraft and the radio disturbances incurred while in flight. Later, however, as speeds increased and static noises became more violent and disturbing, it became evident that the corona discharges were the contributing factors. The meter was employed to measure the intensity of the electric fields causing precipitation static.

THE PROCESS of measuring volts per centimeter having been solved, Gunn, perfector of the field meter, set about with his colleagues to correct the severe handicap in radio communications imposed by precipitation static. The first effort was to develop means of preventing the corona discharge from occurring. A resulting simple and fairly effective method was the application of dry wick dischargers to the plane.

Located along the outer and trailing edge of the wings, atop the rudder and on the side of the horizontal stabilizer, these wicks, known as AN/ASA-3 dischargers, consist of 12-inch lengths of long-fiber cotton cord metallized to make them slightly conductive. They are covered, except near an exposed end, by plastic tubing to afford rigidity and are attached to the plane by a light aluminum tubular ferrule.

Several of these wicks placed on the aircraft in the prescribed places will enable the plane to discharge three times as fast as it would without their application and still produce no interfering noise.

They are relatively inexpensive and may be kept in condition by trimming off the plastic tubing as necessary until shortened to a minimum of six inches, at which time new ones should be installed.

Because the wick is frayed by the slip stream so that each strand acts as a separate discharger, it is especially compatible to an aircraft's need for small radius dielectric points. The wick is by no means fool proof. It requires a strong electric field to promote the discharging action. The wicks become effective only when the free charge on the plane or its potential is quite large.

AN INTERIM modification is being used on aircraft now in service and will be incorporated in future planes. It is the application of a plastic product known as polyethylene to cover exposed antenna parts. This is one of the most important discoveries of the research group.

Experiments and actual practice have shown that, with an airtight covering of the plastic, radio transmissions can be received clearly and without the interference familiar to precipitation static even when the luminous St. Elmo's Fire glows from many edges of the plane.

The *Sacred Cow*, President Truman's personal plane, is equipped with the insulated plastic antenna and his pilot reports that on a recent trip across the North Atlantic at a time when bad weather caused all other flights to detour south, the plane went through without trouble.

In its record-breaking non-stop flight from Perth, Australia, to Columbus, Ohio, the *Truculent Turtle*, a P2V, was equipped with polyethylene. One of the co-pilots on the flight reported that the new equipment "worked very well" although severe precipitation static conditions existed on parts of the journey.

Although these two planes are among the first to put the plastic to practice, polyethylene has been used for testing purposes on a number of aircraft at Minneapolis for quite a while. A B-25, a PV, and a B-17 have all been used in the hangar and flight-tested using the material to see how it would function.

Now, a JRB is being equipped with the plastic for demonstration purposes. It will travel around the country visiting air stations and civilian fields to publicize the corrective measures that have been developed.

THE Beechcraft twin-engined job will be equipped with an automatic charger capable of exerting a positive or negative charge of 350,000 volts over the plane. By natural means, the charge on an aircraft is always negative. It also has a hookup to alternate the usage of the normal or the polyethylene covered antenna for the purpose of comparison.

If you are on hand when a demonstration of the JRB is given or if you run into a plane already using the polyethylene, don't make a saboteur of yourself by using more than your sense of sight to inspect the covering.

Handling the plastic may cause it to be injured in some fashion, and even the slightest hole in the material destroys its value. With just a pinprick for an opening, an electric field equal to any on the plane will exist within.

Till the time when all planes are equipped with the preventive and cure methods to take care of precipitation static, it's best to remember a few points when flying in areas subject to promoting corona discharge on aircraft.

1. Select a flight altitude that will permit safe clearance of not only highest terrain along proposed track, but also above adjacent terrain.

2. Use VHF radio for making contact when actual precipitation static occurs. HF will be 20 times as intense in length of time of static interference, tests have shown.

3. Use propeller alcohol when available, but if immediate clearing in radio reception is not noticed, turn off alcohol flow to conserve supply.

4. When using rotatable shielded (sometimes called "anti-static") loop, turn it so that it is parallel to the line of flight. Maximum signals may be obtained this way, and it will operate long after conventional antennae are useless.

5. Use the ADF unit when signals are blocked out. Use of ADF stations for homing is recommended as they are more powerful than range stations.

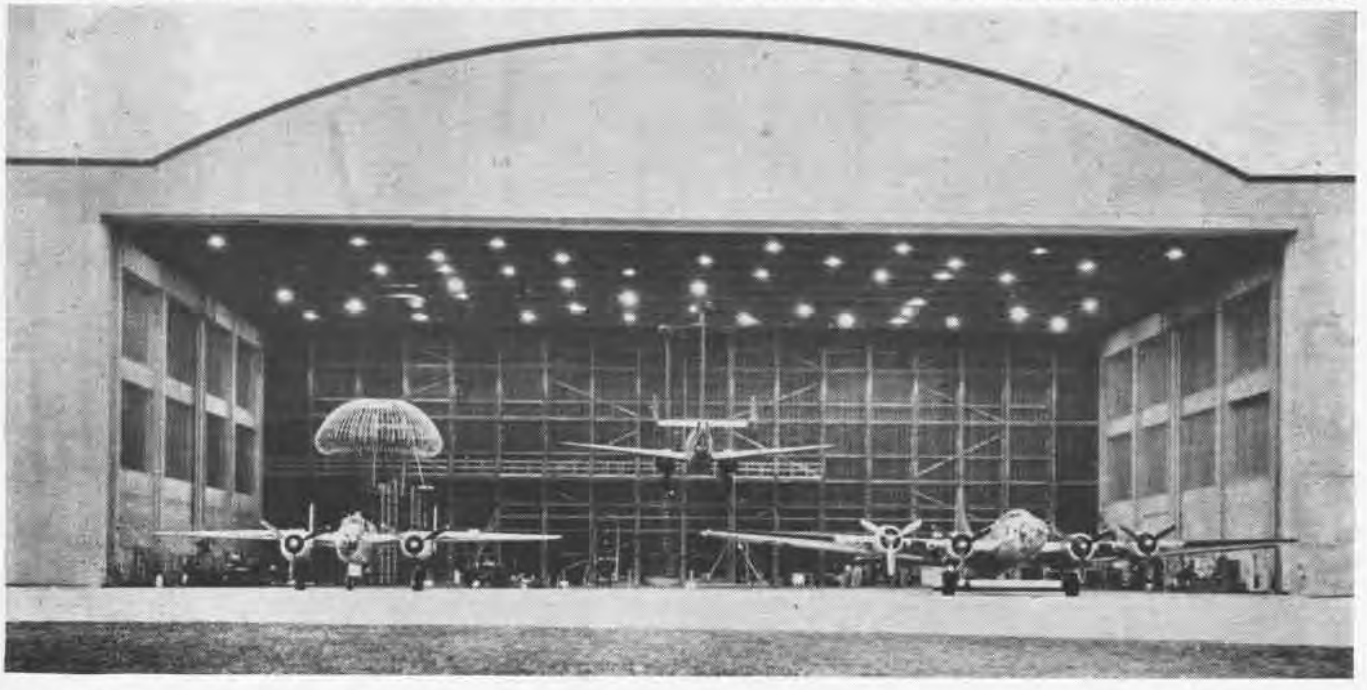
6. When using radio range and quadrant signals are inaudible, listen for the station identification period. First identification is from "N" tower, the second from "A." Whichever is more loud is the quadrant you are in.

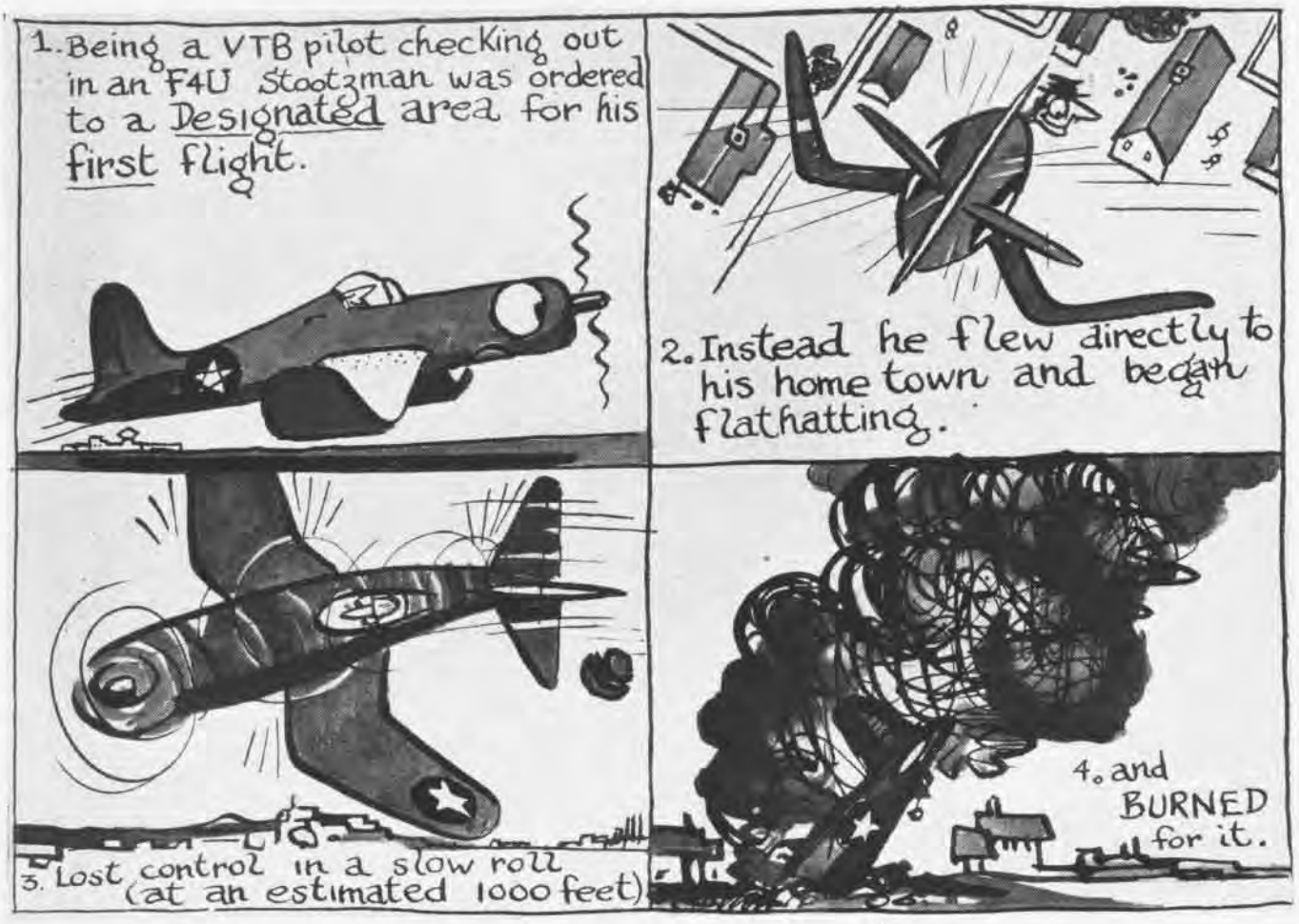
7. REDUCE AIR SPEED AS MUCH AS PRACTICABLE. TESTS HAVE SHOWN CHARGING RATE ON AIRCRAFT IS 27 TIMES GREATER AT 300 MPH. THAN AT 100 MPH.

Precipitation static cannot be overcome by the scientists alone. You must contribute your part by being alert and using common sense when in the plane.

NAVY ARTIST PRESENTS IDEA PILOT GETS FROM PRECIPITATION STATIC OCCURRENCES

ARMY-NAVY JOINT UNIT USED THREE PLANES IN FLIGHT AND ON THE GROUND IN TESTS. HERE THEY ARE GROUPED IN MINNEAPOLIS





LT. A. STUNTZMAN

***Moral:* Don't Flathat—Obey All Flight Rules**

SINCE the day ADAM took a bite of the apple, some men have looked upon rules as something to be broken rather than obeyed. The temptation to do something that we are not supposed to do can be traced to man's curiosity to find out what will happen. Too often, however, we don't survive the results. This is particularly true of flathatting, for records indicate that approximately 75 percent of the flathatting accidents are fatal to the pilot. So don't attempt to impress your girl friends, your family, and your home town friends with your flying ability by stunting or flying at too low an altitude and bashing a house into small chunks or reaping an entire wheat field with only one try—YOUR LAST.

CAA and Navy Regulations prohibit acrobatics at low altitudes and over populated areas. Local flight rules further supplement these regulations. Bear in mind that behind each of these flight rules there has been intensive research plus years of experience learned the hard way. All of this goes into working out flight rules to make flying as safe as it is humanly possible to do so. Don't consider these rules as a hindrance to your flying ability. In reality they are a guide for your own protection. OBEY ALL FLIGHT RULES! YOU'LL LIVE LONGER.

Here are some case histories definitely proving that FLATHATTING DOES NOT PAY:

Case 1. A pilot in an SNJ made a normal take-off and began circling the field. He then made a shallow dive levelling off at approximately 100 feet and 200 knots over the take-off runway. A left slow roll was started during which altitude was lost, and when roll was three-fourths completed, the right wing struck a shed tearing off the wing. Remainder of the aircraft, plus the pilot, tore through a small lumber mill and burned upon coming to rest.

Case 2. An F8F pilot attempted a slow roll immediately after take-off with an airspeed of approximately 175 knots and altitude of 150 feet. The slow roll was started in a nose high altitude. When the roll was half completed, the nose of the plane dropped sharply and the plane lost altitude rapidly. The pilot completed the roll but had lost so much altitude that the plane crashed into the runway in a three point attitude. The plane exploded and burst into flames on impact, killing the pilot instantly.

Case 3. A torpedo plane pilot was sent out for a first flight (check-out) in an F4U. His orders were to proceed to a designated area for familiarization. His pre-flight check-out was satisfactorily conducted and reasonably complete for type aircraft. Upon departure from his base the pilot proceeded immediately to a point considerably removed from his assigned area and indulged in flathatting over a populated area in which his home was situated. While attempting a slow roll at an altitude estimated at about 2,000 feet, temporary loss of control resulted in a nose down crash followed by fire. The pilot was instantly killed and the airplane was completely demolished. DON'T FLATHAT!

TECHNICALLY SPEAKING

MARINE RADAR SCANS CHINA SKY

HOMER UNIT IS QUARTERED IN QUONSET HUT

MAG-24, CHINA—Stateside aviation units may be interested in the set-up used by the Marines at Nan Yuan airfield near Peiping to scan the skies and keep track of aircraft through the medium of Ground Control Intercept Squadron Seven.

It furnishes ground control for day and night interceptions by fighter aircraft in the area. As a secondary function, the squadron also gives early warning radar and air navigational aids.

The communications section consists of a VHF homer (SCR-575) including two complete units, one of which is for standby. This Homer operates on a 24-hour basis on guard channel 10 (140.58 MC). Under good operating conditions, it has been known to reach aircraft 160 miles distance.

In accordance with MAG-24's winterization program, the Homer unit for normal

D F OPERATOR STAND HAS BATTERY BELOW

operations was moved in part into a standard Quonset hut, as illustrated, affording a more comfortable place to work and a more easily accessible unit. The Homer occupies about a third of the floor space, the rest being shop, tool room and communications office.

Two SCR-573 and two SCR-574 vans are parked south of the hut (*see photo*), housing the transmitters and receivers for channels one, ten (Homer) and the transmitters for channels five and seven (142.04 MC and 142.74 MC). These are used for communications in controlling interceptions by the radar area located about 200 yards southeast of communications area. Transmitters and receivers for channels five and seven are controlled by underground remote lines.

Primary power for the above equipment is furnished by General Motors Series 70 model 3016E motor-generator set. Relief power units consist of two PE-95G motor generators. In extreme emergency or in case of complete power failure, the Homer may be run on a set of batteries located, with charger, under the D/F operator's stand. All vans are set on blocks with radiators drained and engines winterized. Vans have heaters. The set-up helps train inexperienced personnel.

Alaskan Flying Hit By Winter

VR-5, SEATTLE—Multi-engine training in Florida was never like this! Pilots of NATS squadron Five operating in Alaska report they sometimes have to be towed to the Operations hangar after landing because ice and 90 mph. winds make it impossible to taxi up the runways.

Headwinds over the Gulf of Alaska up to 100 mph. make plane commanders check and recheck their gas supply as winter sets in with a vengeance. GCA at Seattle has proved itself time and again. Kodiak is working on a few bugs up there before minimums can be lowered.

Navigation department is furnishing pilots with GCA procedure plates for Seattle, Shemya, Kodiak and Adak and an instrument letdown approach for NAS MOFFETT FIELD. Included in these procedure plates are the VHF and HF frequencies. Each plate will fit in a H.O. 510-A or H.O. 510-D manual.

Squadron Tries Out Wing Tanks

VA1-1—During a battle problem between Task Force 71 and Task Force 77, this squadron was ordered to install 100-gallon droppable gas tanks. The tanks were installed on the left wing of all aircraft. This was the first time such tanks have been used in this squadron since it reformed in May 1945.

Preliminary investigation showed that many planes could not be started satisfactorily on the wing tank. The engine would run about 45 seconds and then cease firing when the wing tanks were used. Stoppage was probably the result of insufficient suction on the extremely long line from tank to engine. Best results were obtained when the engine was started on the fuselage tank and then the wing tank selected for use. Operations in the air were most satisfactory. These included dive bombing with tanks partially filled.

The tank, being on the left wing, made

DROPPABLE GAS TANK INSTALLED ON WING

take-offs quite uncomfortable in that the drag from the tank caused a very "heavy" left wing. Aileron tab settings up to 15 degrees were necessary to compensate for the load.

Most pilots indicate that they are pleased with results obtained through the use of the wing tank despite the added difficulty on take-off. The extra gas during searches created a comfortable feeling.

▶ ***BuAer Comment*—VA1-1 uses SB2C-5 aircraft. It is recommended that fuel from the fuselage tank be used in accordance with the instructions of the Pilot's Handbook and the Erection and Maintenance Manual, when starting the engine. Flight Safety Bulletins No. 7-44 and No. 2-46 recommend that the aircraft be above 3,000 feet altitude when using fuel from droppable tanks and that this fuel should be consumed as early as practicable.**

EMERGENCY TOOLS EASILY FIT INTO KIT

New Crash Kit Speeds Rescues

MCAS, EL TORO—A new type aircraft crash kit, designed and assembled on this station, has proved of value on several occasions in extracting personnel from wrecked and burning planes.

The kit contains a screw driver, cutting pliers, knives, metal saw, bolt cutters, wrecking bars, and other equipment as is shown in the above photo of layout.

[DESIGNED BY RAYMOND R. SUESS, Fire Chief]

JET PLANE HAS SMOOTH SKIN

THE NAVY'S new F6U jet fighter, made by Chance Vought, incorporates a new type of surface called *Metalite*—a sandwich of high-strength aluminum alloy and balsa wood which permits making wings, fuselage, and other surfaces without rivets.

Designs of super high speed aircraft are such that considerable skin friction and the noticeable drag are undesirable. Steps had to be taken to do away with as much as possible. The Navy has been experimenting with the material on stabilizers of F4U aircraft and has more than a hundred planes equipped with them under flight test.

The F6U will have a skin almost entirely of metalite, giving it an absolutely smooth surface of light-weight material that will stand up under flight loading with an absence of wrinkling. It can be formed accurately to the required shapes of leading edges of wings or stabilizers. Another advantage is that it can be used for interior bulkheads and web members, permitting a simplification of structure by eliminating most conventional stiffeners, ribs and other auxiliary members.

Metalite consists of thin sheets of high strength aluminum alloy of from .005 to .04 inch in thickness, separated by a thick, low density core of balsa wood and bonded firmly together to form a single light, rigid unit. The grain direction of the balsa core material is set perpendicular to the metal faces.

A core material of greater density than balsa can be used in local spots where more strength is desired in the core. The core ranges in thickness from ¼" to ⅜". The core and faces are bonded together under moderate heat and pressure. For curved work, several different methods of bonding can be used to form the work.

When only gentle curves are required, the work can be assembled flat on the bench and then the entire assembly placed in the mold and forced into the desired shape by applying pressure. When sharp curves such as in the leading edge of a wing are needed, the metal sheet which is to be the outside surface is bonded to the core while flat, then formed into the desired shape, thus keeping the wood always in compression across the grain. The inner sheet is prepared in the normal manner, formed approximately to shape, if necessary, and glued in place in a second operation.

SANDWICH CONSTRUCTION GIVES STRENGTH

Due to the thickness gained by the light core, the bending stiffness of a panel is many times greater than that of a simple sheet of metal the same weight. Because of the hard metal surfaces, metalite is not easily damaged and can be walked on or jumped on without injury to the slick surface.

ALUMINUM ALLOY PLATE APPLIED TO CORE OF BALSA WOOD GIVES F6U GREAT STRENGTH

METALITE MIRROR SHOWS A SMOOTH JOB

The use of Metalite, by providing exceptional smoothness and an over-all saving in weight, gives the F6U higher speeds and a longer range than could be obtained with a similar-sized airplane using conventional methods of construction.

China Marines Keep Planes Fit

VMF-115, CHINA—During recent maneuvers carried on 300 miles from their home base, this squadron achieved something considered all but impossible in this theater of operations—100 percent availability of aircraft.

Equipped with 23 F4U-4 planes, the plan of operations called for flights up to 20,000 feet on oxygen and dive bombing runs using dive brakes. The usual dust conditions prevailing had been minimized by installing special filters in the air intakes of all planes.

Achieving the 100 percent availability took cooperation of all personnel in the squadron at a high standard over a period of seven days.

VMF-218, CHINA—This squadron established a flight record in October which should stand for some time in the China theater. Pilots flew 1001.6 hours in 489 flights—an increase of 56 percent over September's 639.9 hours, which in itself was the greatest number of hours flown by any squadron in the zone.

Toward the latter part of the month, when it appeared we could break 1,000 hours if a real attempt were made, the squadron was a scene of continual feverish activity as we sweated out engineering difficulties and bad weather. On 31 October a 16-plane squadron tactics hop led by the C.O. put us over the hump, and everyone relaxed with the sweet satisfaction of achievement.

The story is not complete without many words of praise for the energetic efforts of our line and engineering departments, who completed routine repairs and checks in a minimum of time and were largely responsible for our setting such a record.

Corsair IFF Gear Takes Beating

VBF-4, PACIFIC—This squadron has had considerable damage to the APX-1 (IFF) antennas which protrude from the undersurface of the fuselage of the F4U-4 aircraft, and to the AS-32-APX-1 mount which seats the antenna in the fuselage.

Flight deck personnel moving among the planes on a crowded flight deck often find it necessary to crawl under the fuselage. This is especially true when the plane is turning up since the space between the tail of one plane and the prop of the plane behind it usually is insufficient to allow safe passage.

Personnel accidentally strike the antennas with their bodies, causing the fragile mount to shatter, thus allowing the antenna to drop out and making the equipment useless to the pilot. Since this is apt to happen immediately preceding a launch, the pilot may find himself airborne with no IFF in working order. The antenna usually is undamaged and may be used again when the mount is replaced.

Although personnel are constantly reminded to take precautions in this matter, in the three month period ended 1 November, this Air Group had to replace or repair 48 damaged antennas and mounts and three-quarters of them were on F4U-4 planes. It is suggested that a new location be found, possibly on the turtle-back, as in the case of the F6F, and a stronger mount be devised.

***BuAer Comment*—CAG-20 by its RUDM R-1-46 indicates additional failures of this type of antenna and mount. Consolidation of the reports of CAG-4 and CAG-20 indicate that both antenna and mount are subject to damage from what might be called "unrelated causes". The Bureau is investigating and will publish corrective action when such has been determined.**

Atlanta Saves Money on Ashes

NAS ATLANTA—This station has developed a method of handling its heating plant ashes which will save time and money for other stations as well.

Previously, ashes were put into a wheel barrow, wheeled to an elevator and lifted to the street level where they were dumped in a pile. After accumulating a week, they were picked up and disposed of. This further involved hand shoveling onto a conveyor belt into a truck.

With the new outfit, ashes are taken directly from boiler level and hoisted by conveyor belt directly into a truck standing on street level. The system involved use of surplus material and about $500 of labor for installation. It will save about $150 monthly in labor required to dispose of the ashes.

Grosse Ile Makes Engine Heater

NAS GROSSE ILE—Severity of Michigan winters has made necessary construction of 15 new aircraft engine warmers by the parachute loft crew.

Design is similar to that of an oversize engine cover with two large collars sewed into the body. Metal fasteners are provided for tight drawstring adjustment. Five minutes are required to install the warmer on any type engine. This includes setting up and attaching standard Herman Nelson aircraft engine pre-heaters.

PRE-HEATER INSTALLED ON FRIGID F6F

***BuAer Comment*—These engine covers are similar in design to the standard insulated engine covers, Stock No. R89-C-600100 and R80-C-600150, carried in stock by ASO's. Use of these covers is covered in TN 1-44 and TN 83-42 shows the covers in use with the Herman Nelson heater.**

Link Engineers May Be Secured

Field activities using Link trainers may secure the services of 10 field service engineers to install or maintain that type of equipment, the Office of Naval Research, Special Devices Center, has announced.

Specialists in the work are under contract with the Navy and they may be secured on reasonably short notice by request through channels to the Center at Sands Point, Port Washington, Long Island. Their itinerary is scheduled through the Center.

Marines Lick China Dust Woes

VMF-211, CHINA—This squadron, flying *Corsairs* in North China, had been plagued with dust troubles grinding up its engines until it worked out a system which greatly increased total flight time on them.

Dust ranges from ground level to as high as 15,000 feet. Visibility often is so low it is necessary to fly instruments for short periods of time. This dust was the chief factor that reduced operating time on the P&W R2800-18W to an average of 120 hours before they had to be taken off the plane for overhaul. Aircraft brought to China averaged 30 hours on the engines and in about seven months they needed engine changes due to high oil consumption caused by piston wearing.

CORSAIRS SUCK IN DUST DURING TAKEOFF

Takeoff door air filters were installed with new engines on the aircraft. These filters combined with the procedure of operating with the intercooler door closed on the ground has greatly increased the flight time on the engine before overhaul. At present most of the engines in this squadron have 120 hours or more and none has high oil consumption.

Panama Has New Tube File Plan

NAS COCO SOLO—This activity uses an efficient method of identification and routing of tubing removed from PBM-5 aircraft undergoing overhaul as follows:

Present method—Tubing is identified from blueprints and parts catalogs. Individual egrys are used at present on each tube. Part numbers are also used on each tube. Tubing is routed as separate units. Tubing is issued by part number.

Proposed method—A board or chart of tubing physically painted to identify tubing by shape and size. No catalog or blueprint required. One egry carried 100 or more pieces. Tubing routed by installations numbers, and stored or issued by group rather than by part number. It is estimated that about $700 a year will be saved by the proposed process.

***BuAer Comment*—Storage of part by installation number rather than by part number appears all right but might cause confusion if ASO requested a certain number of parts to be shipped on the double.**

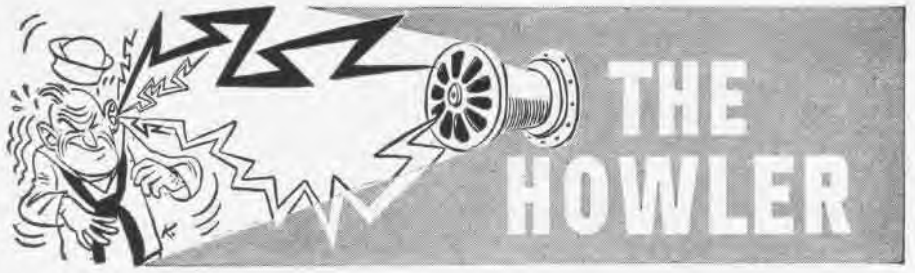
Tropics Sap Strength of Bombs

VBF-81—The bad effect tropical weather has on explosive power of bombs was demonstrated recently when the squadron made several mock strikes on abandoned LCI's with 500-lb. GP bombs which had been stowed in the open on Saipan for one or two years. Results of the blasting showed they had lost about one-third of their power.

All the planes were boresighted while on Saipan, and the following method was used to check the gunsight periodically: While on the boresight range, a small red dot was etched on the windshield at the pipper point of the reticule. A small white cross was painted on the inside of one blade of the propeller.

Then, by aligning these two reference points, the gunsight reticule alignment may be checked at any time. Since the gunsight frequently is exposed to knocks which throw it out of boresight, it is hoped that this method will give a quick check and reset without returning the plane to the range.

NAS BARIN FIELD—What to do with 400 raw recruits whose six weeks of boot training failed to give them essential military knowledge and training? Barin field started giving hour daily training in discipline and military bearing. So as not to interfere with normal functions of the station, each group goes to class once each fourth day. First results of the training showed a definite improvement in military bearing of the men in question.



Corsair Landing Gear. To clarify the question of allowable tolerances for the hydraulic pressures necessary to operate the lock links of the F4U-4 main landing gear, Chance Vought has established the following approved test procedure:

1. Retract the landing gear using the hand pump. Pressure required to close locks in the retracted position must not exceed 800 PSI or be less than 300 PSI. Difference between locking pressures of the lock links on the same gear must not exceed 150 PSI.

2. With the gear locked up the oleo must be firmly held against the stop pad on the main beam.

3. Extend the landing gear. Pressure required to unlock the gear must not exceed 300 PSI.

4. The pressure required to lock the gear in the extended position must not exceed 300 PSI.

5. No test is required for the unlocking of the gear in the extended position.

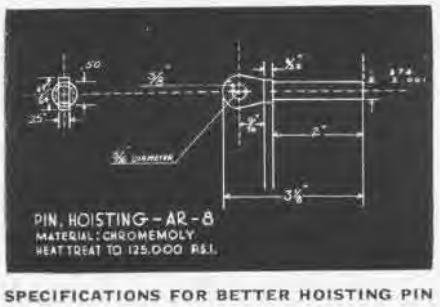
6. Auxiliary hydraulic pump stand may be substituted for hand pump.

The difference in locking pressures (see 1. above) applies to the inboard and outboard links of the same gear. There is no restriction on the difference between pressures for the left hand and right hand gear as long as each gear locks independently within the limits specified.

The contractor's test procedure is applicable to any gear of the model F4U-1 or F4U-4 airplane series, but not to the model F4U-5 series, which will use a hydraulic system pressure higher than on previous airplanes.

This test procedure is published for the information of all field activities. BuAer particularly calls attention to the test for extending the landing gear in the down position. One recent report of a belly landing stated that gear failed to extend as a result of binding caused by previous hard landing. Correct testing procedure will prevent such occurrences.

Hoisting Pins for AR-8 Life Boat. Failures of original hoisting pins received with AR-8 airborne life boats when subjected to design load of 1730 lbs. have been reported



SPECIFICATIONS FOR BETTER HOISTING PIN

DISTORTION OF HOISTING PIN IS EVIDENT

to BuAer. Tests of the hoisting pin at A&R, Navy #128 showed the annealed condition to be below normal. No reading could be obtained when pin was subjected to Rockwell tests.

Two failures, because of pin distortion, occurred when boats were being hoisted to the wing of a PBY-6A. No uneven or excessive strain was applied to cable during hoisting operations.

A new pin, manufactured by the reporting activity VJ-1, has been used on the AR-8 life boat 12 times without defect. Specifications are shown in the accompanying drawing. Activities concerned should test the hoisting pins in their possession and heat treat where necessary or manufacture new pins.

Negligence in Carburetor Overhaul. A carburetor received at the Bureau of Standards from an overhaul base was supposed to have been overhauled, adjusted, tested, and ready for installation on an engine. At the Bureau of Standards it was prepared for flow bench testing by the standard procedure consisting of the following:

1. Installing the required pressure taps.
2. Replacing the outside mixture control bleed with a blank.
3. Replacing the drain bleed with a blank.
4. Placing rubber stoppers in the boost venturi.
5. Taping shut the "low-pressure side" hole in the bottom of the throttle body.

After these steps had been taken, it was noticed that there was a large air leak into B chamber or into the channels leading to this chamber. The regulator unit was disassembled and the air diaphragm was found to be in good condition.

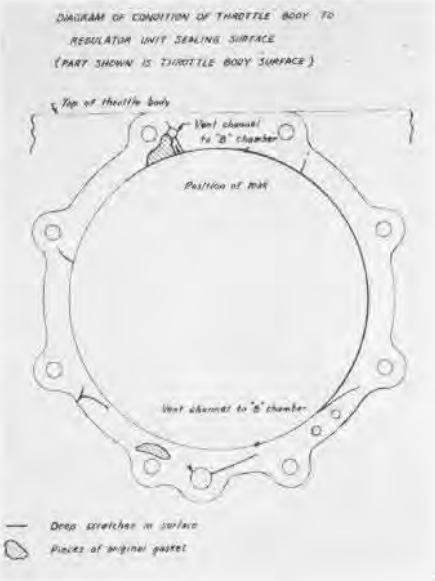
The gasket between regulator and throttle body was then removed. It was found that the sealing surface on the throttle body was badly scarred, with one deep scratch leading from A chamber to the upper B chamber vent channel (see drawing). It was found also that fragments of a previous gasket between regulator and throttle body had not been removed prior to the last assembly. One piece of this previous gasket, about .025" thick, was so located as to prevent effective sealing between A chamber and the upper vent channel leading to B chamber.

Either of these faults was sufficient to cause malfunctioning of the carburetor, since either would have the effect of placing an unwanted bleed in parallel with mixture control bleed. Once a proper seal between regulator and throttle body was obtained, no difficulty was experienced in making this carburetor flow within the specified limits.

Negligence during overhaul along the following lines is therefore indicated:

1. Neither proper tools were used nor was proper care exercised in removing the previous gasket between rgulator and throttle body.

2. Inspection was inadequate, since the defects in the disassembled carburetor were readily visible to the naked eye.



3. The carburetor could not have been given the specified air-leak test after complete assembly, or it would not have been tagged as ready for service use.

In commenting on this flagrant example of negligence, BuAer states that the quality of overhauled carburetors has been steadily declining since V-J day. All overhaul bases should take steps to insure highest quality of overhaul.

Battery Short Causes Fire. In the opinion of the Contractor, concurred with by BuAer, a fire which recently destroyed a PB4Y-2 airplane was caused by incorrect procedure in battery installation.

A similar previous fire was definitely traced to short circuiting of the "hot" battery terminal on an adjacent hydraulic line and ignition of the atomized hydraulic fluid released from the hole burned in the line. The atomized fluid squirting out under pressure was set off by the sparking terminal and resulted in an immediate fire which spread too rapidly to control.

It is standard practice (as called for in battery installation and removal instruc-

tions) to disconnect the ground terminal *first* upon removal of the battery, and connect the ground terminal *last* upon installation of the battery, thus leaving the electrical circuit open and eliminating any chance of shorting. The RUDM on the PB4Y-2 fire states that the ground connection had been made *first* and the fire started when the hot terminal was being connected. The improper sequence of operation in connecting the battery is directly responsible for the resultant short circuiting and fire.

A protective shield of canvas over the hydraulic lines in this region was incorporated to prevent shorting of battery terminals on these lines. This shield should be kept in place at all times, and care must be taken to ensure following correct procedure for battery removal and installation operations.

Seaplane Mooring Buoy Changed

The present steel spider used in connection with seaplane mooring buoys has been redesigned to improve night utility and ease in making the buoy.

The spider has been so designed to hold a 12" diameter, rubber-covered, steel cable in an upright position. This allows the bowman to grasp the loop, place it over the snubbing post with much less effort than former methods used. Once contact has been made, the plane is to be moored in the conventional manner.

In addition to the pick-up loop, the spider has an octagonal moulded rubber block supported within the loop on a one inch metal post. Sixteen ⅞" in diameter reflectors have been embedded in this block to aid the pilot in locating the buoy in darkness. Tests indicate that a pilot will have no difficulty in locating the buoy during darkness, at distances of 1400', whereas the standard buoy could be picked-up at about 700' or less.

REFLECTORS MAKE BUOY EASIER TO SPOT

The buoy shown in the photograph is non-standard and is not furnished. A quantity of the new-type spider is under procurement and will be stocked at ASO under the following nomenclature, 16-S-3550, Spider Assembly, Mooring Buoy, Pick-Up Loop and Reflector. Activities doing extensive night flying are to request replacements immediately. Other activities are to make replacements in the normal manner.

Rudder Stand Speeds Removals

VP-121—An inspection and work stand to maintain the rudder assembly on this squadron's aircraft was developed by CASU-35's metal shop. The stand is mounted on wheels from an old bomb trailer.

Materials used were three-inch channel steel, common steel pipe of assorted sizes.

RUDDER REPAIR STAND HANDLES FOUR MEN

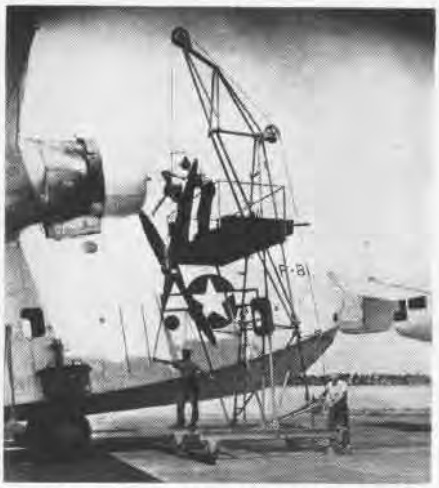
one and two-inch angle iron for the platform edges and wood flooring for the working platforms.

When in place, the stand extends on both sides of the rudder and in addition to providing a working platform on both sides, it also has two platforms at different levels. It is mobile and may be towed into position by a car or by four men.

Use of the stand in removing or replacing a PB4Y-2 rudder results in an appreciable amount of time saved. The rudder can be removed from all its hinges at the same time since four men can work simultaneously and unhampered. The rudder can be secured to the stand and after attaching bolts have been removed, the stand can be backed away from the plane carrying the rudder with it.

Hoist Aids in PBM Prop Change

HEDRON, FAIRWING 3—To facilitate servicing of PBM-type aircraft propellers, a combination work platform and propeller hoist was developed by this command by modifying a standard Engine and Turret Hoist. No single unit is available by which the heavy PBM-type propellers located high above the deck might be readily serviced. By use of a single unit which provides for easy access to the propellers, together with necessary hoisting facilities, it has been found that servicing time has been greatly reduced in addition to providing for greater safety and ease of servicing for the crew.



WORK STAND DOES NOT OVERBALANCE HOIST

A welded pipe frame platform which is supported by tubular struts was attached to a standard Engine and Turret Hoist at a suitable height below the uppermost hoist pulley. The 4½' x 10' wooden deck work platform provides adequate accommodations for a crew, propeller service tools and propeller accessories.

For convenience in raising and lowering propeller power units a block and tackle system is installed on the platform. A fixture, attached to the platform, holds a large grease gun in a readily accessible location. Wooden arms made of 2"x4" stock are mounted on pivots near the leading edge of the platform. When in position about the propeller blades, these arms are made to hold the propeller in a fixed position while the propeller retaining nut is tightened or loosened. A pipe frame guard rail was welded about the platform for the safety of the crew.

BuAer Comment—This is an excellent modification for large operating units which service enough PBM's (or any single type airplane) so that a hoist can be spared for this specialized operation—removing and replacing props. For smaller units that must use the same hoist for removing props, engines, turrets, etc., this modification is not advisable.

VB-81 Changes Flight Formation

VB-81—This squadron, using SB2C's, has been flying four-plane division with modified fighter tactics instead of the time-hallowed bomber division of two three-plane sections. After the first few division tactics hops this formation has found increasing favor with pilots, due to greater flexibility, safety and ease of flying.

However, due to the size, wing area, and poor visibility through the windshield of the SB2C, slight modifications to fighter doctrine have been necessary. A greater step-down to keep wings out of prop wash and the wash from the large rudder and tail surfaces has been found desirable. The result is a formation that is relaxed, as well as compact and more maneuverable.

ARCTIC COLD HAMPERS FIRING OF PLANE GUNS

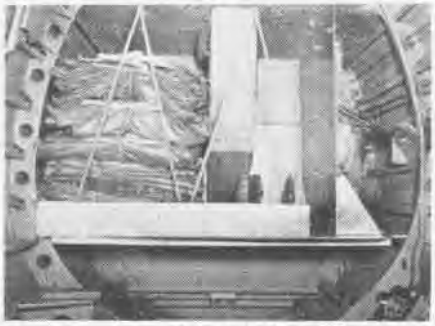
BEFORE fighting aircraft can operate successfully in Arctic regions of intense cold, a method will have to be developed to combat condensation of moisture on guns with subsequent freezing. This problem was discovered on Operation Nanook last summer.

Any hunter who returns after a cold tramp in the woods and brings his gun into a warm and humid room knows that the gun becomes wet or frosted. When aircraft return from a high altitude flight or if they have been left on the flight deck in severe weather, the guns are very cold. When the planes are moved from the flight deck to the warm and humid hangar deck, condensation occurs and the guns "steam up." If the aircraft are moved out of the warm hangar deck, the moisture becomes ice.

Present 20 mm. T-2 electric heaters do not supply heat enough to melt the ice quickly or dry the guns. Because of the normally open bolt of the 20 mm. gun, the cold air blast down the muzzle increases the requirement of heat energy. Muzzle covers can be used on take-off but are destroyed on the first shot fired. Studies are being made to determine feasibility of providing a blinker cover that will open when guns are fired and close immediately thereafter. This would appreciably reduce energy requirements.

It may be possible to isolate and insulate gun compartments. Openings for ejected cases and links make the solution difficult for normal ventilation is needed to remove smoke and unburned powder gases. Such gases under certain conditions form an explosive mixture conceivably able to blow up a wing or fuselage.

While research still is in the preliminary stage, the problem is being approached from several angles. Heat from the engine exhaust may be used with hot air or with liquid transfer equipment, using high frequency induction heating, blanketing the gun may be useful. The gun space may be compartmented or a muzzle closure made.



EIGHT TARGETS FIT SNUGLY IN CONTAINER

Fuselage Rack Handles Targets

Utility Squadron One has designed and installed an aerial tow target stowage rack for TBF/M aircraft modified for towing. The rack provides for the neat stowage of eight A.A. aerial tow targets, six iron horses, and ten snarl catchers.

It eliminates the hazards attendant upon such equipment lying adrift in the tow reel operator's compartment; and allows the operator to restream aerial tow targets with a minimum of delay. It makes possible a quick accurate check on tow target equipment on hand; and eliminates the necessity of removing tow target equipment when the aircraft is used for other than tow flights. Total weight of the rack is 10.4 lbs.

Plans are underway to prototype a TBM-3C. This or a similar stowage will be incorporated as a standard installation.

Jax Training Program Pays Off

NAS JACKSONVILLE—Several months ago the Inspection Department reported on its system of flexible training—to qualify each inspector for several inspection stations in addition to his regular A&R assignment. This system is now paying off.

Subsequent reductions in personnel brought into play the store of knowledge created through the flexibility program. Training records and fast reference charts enabled "administration" to cover the personnel loss immediately by expanding the duties of remaining personnel, thus assuring an unbroken, high standard of inspection.

Although production units fall off with personnel losses, the variety of inspections to be made stays virtually unchanged. A survey of prevailing work-load indicates which of these is best able to expand his duties to include those of the vacant station. As a result, the average number of inspections each inspector makes can be held fairly constant, while his scope is broadened considerably.

Personnel shortages make it increasingly difficult to operate this type of training, but A&R recommends "flexibility training" as good "headache insurance" to reduce delays.

Platform Weighs Only 100 Lbs.

VP 32—A new loading platform for bomb bays that can operate on the same routine as bombs with only an 18-inch increase in the gear cables has been perfected by this activity.

In this new platform 3/16" angle iron is used for the braces and around the edge of the ½" plywood decking and ¼" holes are spaced 12" apart for tying down cargo. Main beaching rack used in loading beaching gear is the main support for the newly-devised platform. It can be operated both manually and electrically.

Weight of the frame is approximately 100 pounds, and it can support a weight of 1000 pounds.

[DESIGNED BY W. W. JOHNSON, ACOMAC, USN]

Gas Tank Hauls Tow Equipment

UTWINGS, PACIFIC—A modification and utilization of the TBF-TBM bomb bay droppable tank as an aerial tow target equipment carrier was developed by Utility Squadrons Nine and Eighteen during the war and may be of interest to other units now.

The idea made it possible for a detachment of those aircraft to transport from place to place, the necessary material needed to provide AA aerial target towing services. One of the bolted ends of the tank is removed, all baffles and connections are removed from inside the tank, thus providing 36 cubic feet of storage space inside it.

Any number of combinations of various items of tow target material may be loaded into the tank without exceeding its structural limitations or unfavorably influencing weight and balance factors of the planes. It is to be noted that such heavy items as tow reels and spools of tow cable should not be concentrated in one section of the tank, but rather should be evenly distributed.

The tank has a 270-gal. liquid capacity. Total gross weight of the tank when filled with gasoline is 1740 lbs.

1217 POUNDS OF GEAR GO INTO GAS TANK

Any number of combinations giving less than that weight could be worked out—for instance, it might be loaded with 50 tow targets, weighing only 720 lbs., 28 targets and a tow reel, totalling 540 lbs.; or 12 targets, two tow reels and 15 messengers, for 1,000 lbs. In the illustration, 16 Mk 23 targets, one C-5 reel with cable, 25 Mk 7 messengers and two cables and spools were put in the tank.

***BuAer Comment*—Use of this modified tank as a towing equipment carrier permitted rendering of utility services to a greater number of activities, over more widely dispersed areas than would have been possible otherwise. Its equally effective use for transportation of materials other than tow equipment is also known to the bureau. It is another case in which the ingenuity of operating activities paid off in results.**

VJR-1—The spirit, ambition, initiative and willingness of this NATS squadron's engineering personnel was proved beyond a doubt during the period 20 September to 15 October by a grand total of 9,564 working man-hours turned in by the 30 men involved. The average of 13.3 man-hours per man each day was averaged, with a high of 18.5 for 25 men on one shift.

Aviation Progress

Short gleanings from Progress Reports of various BuAer *sections are presented here as possible items of interest. They represent progress during November, contained in December summaries.*

Carrier Electricity—BuAer has recommended to CNO approval of plans developed with BuShips for charging installed aircraft batteries in 60 aircraft on the flight decks and 48 on the hangar decks of *Essex*-class carriers. In addition to maintaining fully charged batteries for cold weather starting, the low-voltage system will provide ample current for servicing electronic equipment in the aircraft and for starting engines in emergencies. However, this 28.5 volt network cannot supply electricity for pre-flight warm-up of aircraft gun or cockpit heaters, wing and propeller deicers or electrically-heated flight suits. A low-voltage system to satisfy such demands is estimated to require 600 amperes and 700 lbs. of portable copper wire per plane.

French Carrier—Performance data and pertinent assembly drawings covering arresting gear and barriers on *Dixmude* have been transmitted to the French Naval Mission via ONI. The *Dixmude*, formerly HMS *Biter*, BCVE-3, was transferred to the French Navy in 1945.

Catapulting P-51's—Upon notification that Naval Air Material Center had fabricated one set of catapult fittings for the P-51-H, the AAF have been requested to give a delivery date on a plane for installation and test of these fittings.

XBT2D-1 Skyraider—A project was set up at NATC Patuxent River to evaluate non-inflammable hydraulic fluid in the plane's high pressure hydraulic system. The Board of Inspection and Survey is being requested to conduct additional catapult launching tests on the airplane at high gross weights.

XBTM-1 Mauler—The second plane is at Patuxent undergoing InSurv trials. The first airplane is at Martin, conducting various tests. This airplane will be used in the XAM-2 program to conduct take-off stability tests with power up to 3500 hp. with single and dual-rotation props. The first AM-1 was flown in November.

AD-1 Skyraider—The first 20 AD-1's have been allocated to ComAirPac and the next block is tentatively scheduled for allocation to ComAirLant. The detail specification on the AD-2 airplane is being prepared.

SC-2 Seahawk—Flight tests are continuing at contractor's plane in connection with eliminating the tail buffet condition reported by NATC.

Helicopters—The AAF conducted engineering acceptance of the first Bell training helicopter (HTL-1) in November. HOS-1 helicopters were grounded in November due to cracking at the blade axle pivots. A bureau bulletin correcting this condition was issued. All HNS-1 helicopters having more than 30 hours flight since last magnafluxing of blade axle pivots were grounded in November until HNS Bulletin 27 was incorporated.

Navy Develops New Photo Flash

Navy photographers will soon be equipped with the latest in high speed electronic flash lamps. Lighter and faster than most commercial models now on the market, the new unit weighs but 11½ lbs. and will produce more than 10,000 photoflashes with a single repeating flashbulb.

Consuming less electric current in 10,000 flashes than the average light bulb will burn all day, the unit can fire 4,000 times without changing batteries. It operates at three-second intervals, faster than the average photographer can take pictures.

Exposure time for the flash is 1/10,000th of a second, making the unit readily adaptable to the Navy's

OPERATOR USES TRIGGER TO TAKE PHOTO

new third-dimensional photography and to shipboard enlargers. Use in shipboard enlargers will permit high speed operation and eliminate vibration problems.

The unit consists of three main parts: a power pack furnishing 2,000 volts to the lamp, a connecting electrical cord, and the lamp and reflector. Designed for rough handling, the unit does not utilize 110 volt AC or wet batteries. The power supply contains no vacuum tubes or moving parts.

When synchronizer points are closed in the camera, the flash lamp fires within two or three millionths of a second. An operator can carry the power pack slung over a shoulder, while the flash unit and reflector are easily attached to all Navy 4" by 5" cameras.

Check Popping R-2000-9 Engines

NATS—The Asiatic Wing has reported difficulties with the operation of the R-2000-9 engine. The major trouble is popping and cutting out. It is significant to note that this trouble has been experienced in the Atlantic Wing, then moved westward to the Pacific Wing, and now on to the Asiatic Wing. A large percentage of the trouble has been eliminated in the first two wings mentioned by operating at high cylinder head temperatures whenever possible.

It has been found in many cases where cutting out occurred and carburetion was blamed that the cause was actually cracked insulation bushings in the ignition harness where the high tension leads connect. It is suggested that these bushings be carefully checked on all engines when cutting occurs.

If this does not correct the trouble, the valve mechanisms should be inspected. If heavy carbon is visible, check the valve play in the guide. The chances are that if there is heavy carbon on the valve mechanism, there will be guide wear and wide play between valve stem and guide. In this event either the cylinder or the engine probably will require changing.

New R-2000-9 engines now being received incorporate changes which should eliminate a large percentage of the cutting out, popping, and surging. The most significant of these changes is the installation of steel tipped exhaust valve guides—actually a scraper to remove carbon which would otherwise cause heavy guide wear.

▶ *BuAer Comment*—In the last few months BuAer has received few reports concerning popping and cutting out. It is believed that proper maintenance, i.e., good valve inspection and adjustment, inspection and upkeep of ignition and carburetor accessories, will keep the cause of popping to a minimum. As soon as adequate parts are available the steel-tipped exhaust guide will be incorporated in Class I engines.

Death Lurks Behind Engine Fluid

Water injection fluid speeds up airplane engines but it kills human engines cold. That half alcohol-half water mixture will keep fluid down to minus 35° F., but it was never intended to defrost the mechs on the line, according to Technical Order 35-46.

The fluid has been standardized for all types of aircraft with water injection systems. It is composed of 50% water and 25% each of ethyl and methyl alcohol. In temperatures below zero the percentage is boosted to 60% alcohol by volume.

"Over-emphasis cannot be placed on the fact that human consumption of water injection fluid will result in blindness or in death," the TO states. "Repeated inhalation of the vapors given off by the material has the same effect as internal consumption by mouth; hence it should never be used or uncovered in closed unventilated spaces. There is no antidote. Treatment consists of repeated drinking of warm water with induced vomiting."

The order directed that all mixtures containing the fluid be marked as containing wood alcohol which is deadly poison if taken internally.

VBF-82—Here's one way of bringing in an airplane with a broken tail wheel oleo strut. In field carrier landing practice a pilot made a hard landing in a slight skid and broke the strut. He hit once and came around again. The second time he made a transport-type landing, holding the tail up as long as possible, and only Class D damage was done when the plane settled.

ROCKET FIRING AFFECTS JET-TYPE AIRCRAFT

A MAGAZINE article recently pointed out what appear to be insurmountable difficulties in firing guns and rockets from aircraft approaching sonic speeds. As proof, it said that AAF attempts to fire guns in the P-80 had destroyed the airplane. Another grim instance was cited. A gnat had struck and stuck to the wing leading edge. The disturbance of airflow caused by the shattered gnat's body had been sufficient to wrinkle and partly crumple the wing skin.

A check into the magazine reports that the author was somewhat over-enthusiastic. The gun blast did damage the nose cowl on the P-80, but this was a case of poor installation and a weak nose structure. The P-80 did not disintegrate. The story of the gnat remains unconfirmed.

The blast disturbance of guns and rockets on the air flow around a plane structure is a definite problem and the answer as to its effect at high speeds is unknown. At present, it appears certain that wing and fuselage covering will need to be strengthened to withstand the aerodynamic steam hammer of forces from the sonic shock wave. Outside coverings as heavy as ⅜" are being talked about.

Whether the disturbance of gun or rocket blast will increase these severe forces of the dancing shock wave through the transonic speed range is unknown. However, means to test and check these problems are becoming available in new wind tunnels and in free flight rockets equipped with telemetering instruments.

The British jet *Swallow* disintegrated in flight in attempting to reach sonic speed. It is now known, however, that the *Swallow* became longitudinally unstable at speeds near 650 mph., and that the pilot was trying to again fly it at that speed to explore the porpoising effect, when the wings were torn off.

It is understood that British pilots flying *Meteors* and *Swallows* now slow down to the speed of a *Spitfire* before firing guns.

AR-8 Life Boat Used in Rescue

VP-53—The first reported use of an AR-8 droppable life boat in an actual emergency where personnel were rescued was made by this squadron in July 1946.

At approximately 2300 on 10 July, an Army C-54 ditched about six miles offshore just north of Guam. At about 2330 the PBY-6A of VP-53, standing by at Agana Field, was notified and immediately readied for flight, taking off at 0030, 11 July. At 0119 the AR-8 was launched, and the seven survivors were seen to climb aboard from their rubber rafts at 0123. Immediately afterwards the air sea rescue boat took the survivors off the AR-8 and landed them back at Guam about 0200. The whole operation lasted about three hours and all hands received a "well done."

After picking up the survivors the rescue boat left the AR-8 drifting in the sea, and the next three days were spent in locating and returning it to Guam.

The squadron reports that maintenance of the AR-8 is a problem at outlying bases. With the boats slung under the wings it is practically impossible to keep out rain water which soaks through from one compartment to another. This eventually weakens the boat and keeps gear, such as blankets, first aid and signaling equipment in a damp, mildewy condition requiring frequent removal of the boat from the plane for drying, repair or replacement of gear.

Parachutes for the AR-8 present another problem. Those currently in use were sent out to the forward area with the boats approximately six months ago and have not been opened for inspection or repacking, since no parachute riggers in the field are qualified in that type pack.

VP-53 makes the following recommendations, in case the AR-8 continues in use:

1. That steps be taken to provide facilities for inspecting and repacking the parachutes.
2. That each squadron using AR-8 boats be provided trained repairmen and suitable maintenance kits.
3. That boats be stowed indoors near plane to facilitate inspection and that engine be operated periodically. Ordinarily where a plane is on air sea rescue standby there is only one plane, and if the boat is slung for use the plane is grounded for local familiarization and training flights. It is not considered good policy to practice landings while boat is in place. A crew may stand by for a month or more without getting a call, whereas it requires a maximum of 20 minutes to install the boat if the rack is kept in place.
4. That all AR-8 boats be painted a bright yellow or orange to facilitate spotting with the exception of the fins which should remain gray, as they invariably break loose upon impact with the water and might cause confusion at a later date by being identified as a life raft.
5. That both Army and Navy flight crews be instructed to leave the boat equipment stowed in place until actually needed. Much of the gear was lost or damaged beyond repair in the boat that was dropped on 10 July, even though the survivors were aboard less than an hour. They just wanted to see what was aboard.
6. That AR-8 boats not be dropped until it is fairly certain that survivors cannot be picked up within a reasonably short time by surface craft, as the AR-8 is expensive, hard to replace, and not dependable for more than one drop.

▶ ***BuAer Comment***—**AR-8 was designed for quick attachment to aircraft and it was not intended to be left attached at all times to standby aircraft. AR-8 should be kept under cover as is practicable and routine checks made on all equipment as suggested.**

If parachutes are left in sealed package no trouble should result from mildew, or contamination by oil or other dirt.

Personnel problems do not permit special maintenance crews. Do not believe special maintenance tool kits necessary.

Concur with 4, 5 and 6 of VP-53 recommendations.

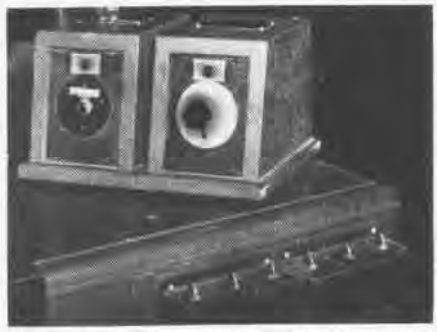
It would require, according to VP-53, 20 minutes to rig a boat. In this instance one hour elapsed during which time the boat could have been wheeled out and mounted with no loss or delay.

Further procurement of the AR-8 is not contemplated at the present time.

12 Links Run by One Instructor

NAAS BARIN FIELD—Faced with a critical shortage of Link Trainer operators, the Link navigation department solved the problem by an ingenious system which allows one instructor to operate 12 trainers without assistance.

The set-up consists of remote control units for changing wind directions and velocity and for switching crabs on and off as well as a master intercommunication system among the trainers. Thus is effective operation of twelve trainers performed by one instructor.



WIND, INTERCOM CONTROL AT LINK DESK

Using a system previously developed (NANEWS, April, 1946), the Link Nav men have connected the intercom through the desk junction boxes. The wind drift mechanisms are operated from the central control desk by a series of telemotors which are actuated by a central control box.

Radio compass control boxes, not used in the navigation syllabus, are used for central control boxes for wind velocity and direction.

This system is intended for the crucial period of limited training personnel only and the adaptations have been made on a temporary basis so that the trainers may be reconverted quickly and easily.

MCAS EL TORO—You never know when it is going to come in handy to be in good physical shape. More than 400 men from this station found it out the hard way when they were called out suddenly to fight several forest fires in rugged terrain in the area. Many were on constant duty for long periods of time and only topnotch condition enabled them to keep on fighting. It was another case of where the Marine Corps' physical conditioning policy paid off very nicely.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

New Aircraft Sight System Mk 1 Mod 2

Attack Aircraft AM-1 and AD-1 now being produced are equipped with the aircraft sight system Mk 1 Mod 2. This system incorporates into the sight unit corrections for rocket firing and dive bombing in addition to acting as a basic illuminated gun sight for gunnery firing.

It is readily apparent that the job of the pilot in the controlled release of missiles from his airplane has become increasingly involved with the advent of new planes, new types of projectiles, and new types of sights. A great many variables have to be solved, such as angle of attack, which is a function of airspeed, dive angle and aircraft weight. Sight setting must be determined as a function of trajectory drop and angle of attack.

The fixed type illuminated sight, such as the Mk 8, used heretofore for all pilot-operated attack problems presented its difficulties in use to the pilot inasmuch as he not only had to precompute the allowance for angle of attack but also had to aim above or below the center of the reticle pattern to make the necessary allowance for sight setting.

The sight system Mk 1 and mods enables the pilot to present his reticle center in elevation above or below his boresight line in accordance with the type airplane in which the system is installed, its load, and the type of exercise in which the plane is to take part. In actual use, then, the pilot has only to make the necessary allowance for lead. In cases of rocket firing, this, too, may be precomputed, so that the pilot may put the reticle center on target during the run and keep it there until firing.

The sight system Mk 1 and mods is composed of three units, electrically interconnected, namely: the sight unit, the relay and the control unit. The sight unit is basically an illuminated sight Mk 8 which has been modified to incorporate a ladder type reticle, remotely controllable in elevation.

Movement of the reticle in elevation is effected by a small electric motor installed in the sight unit which actuates, through gearing, a push rod. This, in turn, pushes or pulls the floating reticle housing, to position it in elevation. Remote control of the above electric motor is effected by a control knob, graduated in mils, located on the control box, the graduations being in two mil divisions from 0 to 75, plus or minus, thus permitting reticle motion through an arc of 150 mils. A switch on the control box has three positions marked *Off*, *Manual*, and *Guns*.

The *Manual* position enables the pilot to set the reticle in any position within the prescribed arc of 150 mils by means of the graduated control knob. Throwing the switch to the *Guns* position immediately returns the reticle electrically to the correct position for gunnery. The proper position for gunnery is preset during boresight by the ordnanceman for the particular airplane in which the sight system is installed. This is accomplished by the manual adjustment of the screw on the trimmer relays located within the relay box.

The relay box contains the electrical relays which control the current to the motor through the rheostat which is actuated by the graduated control knob. Another feature of this system is the provision for emergency control of the reticle position through a knurled knob located on the sight head. A second graduated scale indicates the position of the reticle with respect to datum. Turning the knurled knob also repositions the graduated scale.

In use, the pilot may turn the sight on, and having precomputed the proper reticle position for the coming exercise, throw the selector switch on the control box to *Manual*, then preset his reticle position by means of the graduated knob on the control box. If the exercise includes gunnery runs, all the pilot need do is to throw the selector switch to *Guns*.

Due to a delay in sight production, the first AD-1's and AM-1's have been equipped with the older illuminated sight Mk 8 Mod 0. However, provisions have been made in the planes for the newer systems, and when availability permits, it is the intention of Bureau of Ordnance to make retroactive installation in these aircraft.

CNO Restricts Use of Skeet Shotguns

Bureau of Ordnance Circular Letter GV2-46 as appears in the *Navy Department Semi-Monthly Bulletin* is quoted below. This letter was necessitated by the increased unauthorized issue and use of skeet-type shotguns. The Chief of Naval Operations has authorized these guns for use exclusively in training pilots and aircrewmen in relative speed aircraft gunnery.

1. The unauthorized issue and use of Remington Skeet Type Shotguns has been repeatedly brought to the attention of this Bureau.

2. Subject type guns are stocked and maintained solely for the training of pilots and aircrewmen. The material presently stocked for this purpose is as follows:

List of Remington Skeet Type Shotguns
Automatic Loading—12 gauge—26" barrel
Remington Mod. 11 (5-shot)
2-G-1275—Without Cutts compensator
2-G-1276—With Cutts compensator
Remington Sportsman (3-shot)
2-G-1290—With Cutts compensator
2-G-1290-50—Without Cutts compensator
2-G-1291—Modified with spade grip handles and mount adapter (for use with 2-S-5938-100)

3. The Naval Supply Depot, Norfolk, Virginia, the Naval Supply Depot, Oakland, California; and the Naval Supply Center, Pearl Harbor are designated as the overhaul activities for Remington skeet-type shotguns. Spare parts will not be provided to other than these establishments.

4. The Bureau of Ordnance will control the distribution of this equipment. Allowances for activities conducting aircrew training will be established by this Bureau. No issue of Remington skeet-type shotguns will be made without prior approval of the Bureau even to fill approved allowance.

Lengths for 20 mm. Aircraft Springs

Recent reports received by BuOrd indicate that some uncertainty exists as to when springs of 20mm. aircraft guns are no longer acceptable for service use. In order to aid using activities to determine the acceptability of the subject springs the following summary of the minimum allowable free lengths of 20mm. aircraft gun springs is given. Any spring with a free length less than the minimum allowable free length, or otherwise broken or deformed, shall be scrapped.

The rear buffer lock spring (25566) shall be scrapped when it no longer has enough tension to properly perform its function.

The above indicated test is a rough rule intended for use of operating personnel where the exact test would not be possible because of lack of equipment. As is true with many thumb rules this is not a positive indication in all cases and some malfunctions may occur when springs meet the above tests. A more exact method of determining whether the spring is acceptable is the static compression test as described in the drawing for the particular spring.

Spring	20mm AN-M2	20mm AN-M3	Free length	Min. allowable free length
Breechblock slide (A207523)	X	X	2.87 in.	2.58 in.
Driving (A25596)	X	X	26.5	23.5
Ejector (A25846)	X	X	1.89	1.70
Gas cylinder sleeve (A25599)	X		7.48	6.74
Magazine latch (A25600)	X	X	2.83	2.54
Rear buffer (B163306)	X		4.31	4.0
Sear buffer (A25601)	X	X	1.89	1.70
Gas cylinder sleeve (A7226777)		X	5.6	5.04

NAS Tillamook—"Thousands Arrive Without Flight Plans" might be the headline for this item. Weather was so bad here recently that thousands of "Geese," "Widgeon" and "Ducks" (not by Grumman but the feathered variety), had to put down on the station on a flight from Canada to Mexico. The runways and blimp mooring circles were apparently mistaken for ponds, owing to the poor visibility and some fancy belly landings and ground loops were made by birds.

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 13 December Interim Report of Service Test, NATC Patuxent, and does not necessarily reflect BuAer policy.

F4U-4B

20MM Cannon M-3 (T-31.) In 25 high altitude flights, outside air temperatures of —40° to —50°C., no difference in performance between heated and unheated guns was noticed. One gun heater was disconnected before each flight to determine effectiveness of T-2 gun heaters.

For satisfactory gun performance at high altitudes the following servicing procedure was necessary: *1.* Lubricate only projectile ends of ammunition. *2.* Lubricate cannons before each flight with equal parts of standard solvent and OS-1361 oil. *3.* Completely disassemble, clean and inspect cannons every third flight (or 630 rounds per gun).

Stoppages this interim: 6 for no apparent cause 7 feed jams; 5 worn extractors; 2 ruptured cartridges; 4 link jams; 2 broken solenoid leads; 5 telescoped rounds; 1 broken charger.

F8F-1 (187 Hours' Test)

Power Plant. Crankcase breather line was replaced after 160.8 hours, eliminating excessive oil in starboard accessory section of engine. No trouble has been experienced with oil leaks or general engine operation during interim.

Exhaust Syste With use of lower power settings, exhaust failures were minor during interim. An exhaust extension (Solar plain) failed after 164 hours, and heat from exhaust blast damaged engine baffle to a small degree. Solar seamed exhaust extensions are now standard equipment for F8F exhaust system. Stack end clamp, P/N 27673-2, was found missing after 165 hours and was replaced.

Hydraulic System. A failure occurred after 179 hours when the pilot, in raising landing gear, depressed plunger assembly on landing gear control lever enough to override "up" position stop on lever stop quadrant. P/N 58883. This caused lever links to straighten out, and threw landing gear selector valve, P/N 56219, out of phase into neutral position, bypassing hydraulic pressure into return line. *Recommend* larger "up" position stop on lever stop quadrant to prevent overriding the stop with the control lever. An internal leak also was found in the hand pump selector valve, P/N SK-550. A piece of an "O" ring seal and small particles of aluminum were in the landing gear check valve seat upon disassembly. When check ball of the landing gear check valve was found to be scored, a new hand pump selector valve assembly was installed in the aircraft.

Second failure occurred after 187 hours, noticed when unloader valve commenced cutting in an average of once every forty seconds. Investigation showed high pressure leak in both main landing gear actuating cylinders, not, however, preventing operation of landing gear.

Induction System. Service Test fix on carburetor header, incorporating reinforcing gussets and alternate air door stops, has a total of 43.2 hours without failure.

Fuel System. Service Test fix utilizing a gooseneck vent on the 150 gallon drop tank has been test flown successfully for 32.2 hours. Residue in the main system fuel strainer has been at minimum.

SC-2

Flight tests began on SC-2 airplane, BuNo. 119535 on 8 October.

Alternate Air Door Actuating Motor. Motor Air Research Mfg. Co., DWG 25800-6, type DGBP, failed at 38 hours. Investigation showed that screw jack shaft failed at the driven end adjacent to the shaft bearing.

Butt Fairing. Fairing, P/N 97-150-3005, is damaged during each launching and beaching operation of the seaplane by the main tow line passing around the butt fairing and through the tail tie down ring. *Recommend* that tail tie down ring be located on lower edge of a reinforced butt fairing.

Exhaust System. Number nine cylinder exhaust stack, P/N 97-450-3002-20, failed completely adjacent to the exhaust port flange weld. Lower left cylinder to exhaust pipe flange stud, P/N 5051095, was found broken after 59 hours.

Oil Consumption. Specific oil consumption runs were made with the following results: 51 engine hours: 55% NRP (700 BHP) .00264 lbs/BHP hr.; NRP (1280 BHP) .00216 lbs/BHP hr. Due to propeller vibration restrictions 55% NRP was used in lieu of 65% NRP.

SC-2 (69 Hours' Test)

Accessory Section Side Panel. Two of the four forward dzus fasteners on assembly P/N 97-730-3002-1 failed completely after 67 hours. Distortion of cowling by heat is believed to be cause. Resulting separation of panel from side cowling allowed exhaust gases to enter accessory section and cockpit.

Jammed Throttle. Throttle stop, Aero Supply Manufacturing Co. drawing 294520, P/N 54460, jammed the throttle in full open position after 53.9 hours. New throttle stop having guide piece ½" longer than original was manufactured.

Float Tank Filler Unit Seal. After 35 hours of flight time, cemented washers had separated and entire seal had expanded beyond circumference of the filler cap, making securing difficult. New seal, cut from gasoline resistant neoprene, was manufactured.

Bell Cranks. Alternate air door actuator linkage, sub-assembly of carburetor air scoop assembly, P/N 97-480-3001. Bell cranks, mounted on top of carburetor air scoop, linking alternate air door actuating motor with dampers, were found to have linkage attachment holes elongated approximately 1/3 larger than the original diameter. Elongation, noted after 54 hours, is believed caused by large amplitude vibration transmitted from engine. Holes were rebushed with steel bushings and jig drilled to correct diameter.

Browning Aircraft Machine Gun .50 Cal. In five firing flights stoppages occurred from following: one loose solenoid lead, two bent cocking levers, one link jam, one bent top plate bracket, and one loose charging slide.

Gun Port Fairing. After second gunnery flight it was noted that both gun port fairings, P/N 97-020-3011, had started to crack. Cracks progressed slightly during each flight. Firing was discontinued after fifth flight. Fairings are being removed and modified.

Marine Pilots Get Lost in Dust

VMF-211, China—Dust and haze are so bad around the Nan Yuan airfield that pilots have a difficult time locating check points from the air. Use of a Chinese radio station two miles north of the airfield has been incorporated as an additional navigation aid.

Pilots are assigned flights during the instrument syllabus to familiarize themselves with the range and the range procedure established by MAG-24. Use of the range is expected to result in fewer pilots getting lost in the area. Cold Weather made engine starting hard, so an auxiliary power supply truck on a jeep was pressed into service.

NAS Corpus Christi—The Ward Island Hobby Shop is open for business. Model planes mark the beginning, but many other hobbies will eventually be accommodated. Hobbies to be available shortly include leather work, plastics, printing, lapidary and electro-plating facilities.—WARDIAL.

SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Surplus Aeronautical Property

As a result of a recent agreement between the Navy Department and the War Assets Administration, ASO has released to naval aviation activities a revised procedure for reporting to the War Assets Administration surplus aeronautical material peculiar to aircraft.

The following procedure is now in effect: All surplus material peculiar to aircraft held in Class 270, which was not previously reported to War Assets Administration, is inventoried and reported on one report form for each class of material, with the exception of scrap and salvage items, educational items, and small lots. This report is prepared on a master ditto with two carbon copies, one for the activity's files and one for ASO. Columns are set up by part number, nomenclature, unit of issue, unit price, on hand, total value and condition. A code number, which will remain the same on all reports for a particular activity, is indicated in the upper right hand corner of the report form.

Scrap and salvage items are reported to the nearest authorized selling activity for sale after screening for educational items. Items required for educational purposes are reported on inventory form and forwarded to War Assets Administration, Chief Depot Clearance Division, with one copy to ASO. Small lots are sold by the nearest authorized selling activity.

This directive was forwarded to all aviation activities as ASO Circular Letter 157, Rev. #1, dated 26 Sept. 1946.

Differences in Stabilizers Noted

To date Grumman has made three types of stabilizers for the F6F planes. The differences are as follows:

1. R81-GR-24229

This is the original stabilizer and has inboard, intermediate, and outboard skins of .032" material. It is obsolete and shall not be installed in aircraft. Any stock on hand should be disposed of as scrap per CDU letters applicable.

2. R81-GR-24229-1

This stabilizer replaced P/N 24229. It has inboard skin (24229-2) of .051", intermediate skin (24229-3) of .041" and outboard skin (24229-4) of .32". This part is suitable for installation on all F6F planes *provided* Bureau changes F6F #75 and F6F, 3N #12 and #27 respectively are incorporated. Stabilizers in stock under P/N 24229-1 should be checked for these changes before issue.

3. R81-GR-24229-N

This is the most recent design. It has inboard skin (24229-2) of .051", intermediate skin (24229-16) of .051" and outboard skin (24229-17) of .040". The stabilizer beam also has been reinforced in accordance with F6F Change #75, and F6F-2, 3N, Changes #12 and #27 have been installed by the manufacturer. This part (24229N) is suitable for installation on all F6F planes.

Reinforced stabilizers 24229-1 and the latest part 24229-N are interchangeable for use between F6F-3, 3N, 5, and 5N planes. However, they are *not identical* and should be stocked separately.

Note: BuAer requires that a notation be made in the airplane log indicating which type stabilizer is installed in a plane.

Substitute Items Often Feasible

Activities must accept substitutes to an increasing degree as a peacetime economy necessity. This is particularly true in the commonly used 5-75 class of materials, for example, nuts, bolts, rivets, screws, plumbing and fittings, electrical items, extrusions, and chemicals. It also is especially true in the case of tools, not only common hand tools but also "special tools." Many acceptable substitutes are available in the field of accessories, including both power plant and airframe accessories. The following suggestions will be helpful:

1. Consult ASO Catalog, Interchangeability tables, and the like.
charts, replaceability information, substitution

2. Supplier should attempt to induce users to "accept what we've got" as far as safety of flight or similar important considerations will permit. Personal prejudices and preferences alone do not justify purchase of an item, and limited funds may, in fact, prohibit such purchase.

3. ASO will attempt to avoid new purchase as much as possible and will supply what are considered to be acceptable substitutes, based on the recommendations of technical personnel. (In exercising this judgment ASO favors giving overseas activities what they ask for, insofar as possible, and will substitute more freely in the case of continental activities, such as those performing training functions.)

4. The QSSR's as printed include only the items believed currently used. Consult them as well as the ASO Catalog and other above-mentioned publications as guides to probable current use and availability.

5. Consistent with the foregoing, avoid insisting on purchase of items when a suitable substitute is already in stock.

6. Encourage the issue and use of Class 265 items for which easy reconditioning is possible.

7. Some storekeepers stow Class 265 and interchangeable ready-for-issue items in adjacent areas. This practice is commended, as it not only facilitates intelligent stock control but eases the problem of substituting.

Emphasis has not been placed on substitutions in the field of airframe, engine, and propeller spares, as such possibilities are far more limited. However, even in these categories many Class 265 items will be found acceptable to the consumer.

BuAer Emphasizes Simplification

Current aeronautical design progress will increase rapidly the range and variety of items peculiar to aircraft and their equipment, probably doubling the range within the next few years. There are already some 600,000 items in naval aeronautical stock. Mechanics and storekeepers are thoroughly aware of today's difficulty in knowing how to obtain and use so many items. The Aeronautical Board, BuAer, and ASO are giving much attention to the additional burden likely to be imposed on maintenance and supply men through this prospective increase and are exercising the utmost care to see that simplification and standardization aims are met by designers and manufacturers.

Identification of Pioneer Spares

Much confusion in the handling of Pioneer spare parts and tools is due to misinterpretation of the letter prefix used with the number. The letters shown on the article or its drawings denote drawing sizes only. The letter prefix should be ignored completely in handling and stocking Pioneer spare parts or tools. Stations requesting Pioneer spare parts or tools should give only the number to identify the items being ordered.

Rocket Launcher Stock Numbers

The rocket launcher stock numbers as printed in the November, 1946, *Supply News* should have designated whether the launcher number to be ordered was left or right. This designation should be placed after the stock number when ordering and stocking. The complete designation, therefore, would read: R94-L-160140-1L or R94-L-160140-1R, and so on down the list.

Reinforcing of F4U-4 Wing Panel

Under Corsair Service Change No. 228 (BuAer ltr. Aer-E-243, F4U of 30 July 1945) a mandatory change affecting safety of flight is required for certain Corsair wing panels.

ASO has been advised that many spare wing panels have not yet had this change incorporated, although the BuAer Service Change Bulletin indicates that it "shall be accomplished as soon as practicable."

This change involves only commonly used rivets and 24ST aluminum sheet available in common stock.

Local arrangements should be made for completing the change in otherwise ready-for-issue panels as soon as practicable and in such Class 265 panels as will be overhauled and reused.

VRF-2—Does it irk you to have to come down to refuel a couple of times on a transcontinental flight? Then consider the plight of Lt. Komisarek, NATS ferry pilot who had to put down 22 times for gas and spent 29 flight hours on the trip. The reason: he was ferrying an OY-1 from San Diego to Norfolk.

VR-5, Seattle—Alaska has lost the tradition of being a rough, rugged country for men only. The Waves have invaded even that domain. Flight Orderly K. McGovern, CSp(V), braved the elements and became the first Wave to take a scheduled flight north to Kodiak on a NATS plane.

DECEMBER SUPPLEMENT

AERONAUTIC PUBLICATIONS INDEX

Aviation Circular Letters

Title	Order No.
§Supply of Bomb and Torpedo Handling Equipment, Smoke Screen Equipment, Tow Target Equipment, and Machine Gun Accessories.	A.C.L. 159-46
§Aircraft in Support of Research, Development and Engineering Projects—Provisions for.	A.C.L. 160-46
§Handbooks, Manuals, Catalogs, Specifications and Equipment, Revised classification of.	A.C.L. 161-46
§Defective Aircraft Tires and Tubes—Disposition and Handling of.	A.C.L. 162-46
§Reduction of Engine and Propeller Noise over Congested Areas.	A.C.L. 163-46
§Items Whose Cognizance was Transferred from the Bureau of Ordnance to BuAer.	A.C.L. 164-46
§Visual Identification System of Naval Aircraft.	A.C.L. 165-46
§Peacetime Policy for Modernization of Aircraft and Aeronautic Equipment.	A.C.L. 166-46
§Sales to Officers and Enlisted Personnel of Personal Property (Flight Clothing Items) Having a Sentimental Value.	A.C.L. 167-46
§Posting of Navigational Aids and Information.	A.C.L. 168-46
§Allowances of Aeronautical Maintenance Material and Equipment for Fleet Aircraft Squadrons (FASRons).	A.C.L. 169-46
§SNB-3H Aircraft Model Designations, Change of.	A.C.L. 170-46
§Pacific Airways Route Manuals, HO503—Declassification of.	A.C.L. 171-46
§Reclassification and Configuration of Naval Combat Aircraft.	A.C.L. 172-46

Technical Orders

§Marman Universal Hose Clamps—Replacement of.	T.O. 39-46
§Model F4U-1, -4 FG-1 F3A-1 Airplanes Restrictions to be Observed in Operation.	T.O. 40-46
§Model J4F-2, JRF-4, -5 Airplanes Towing Operations.	T.O. 41-46
§Model AD-1 Airplanes—Restrictions to be Observed in Operation.	T.O. 42-46
§Hydraulic Gun Charging Valves—Check for Leakage of.	T.O. 43-46
§Aircraft Tires—Acceptable Constructions of.	T.O. 44-46
§Life Vest—Mark 2—Inspection and Modification of.	T.O. 45-46

General

§Aeronautical Technical Inspection Manual Volume 8 Aircraft Components, September 1, 1946.	NavAer 00-15PH-500
§Aeronautical Technical Inspection Manual Volume 7— Section I Radio, Oct. 1, 1946.	NavAer 00-15PG-501
Model Designation of Naval Aircraft, Revised Oct. 1946.	NavAer00-25Q-13

Allowance Lists

Forms

The "Station Report of Aviation Facilities" is prepared on forms NAVAER 1792-1 through NAVAER 1792-14. Each sheet may be ordered as a separate unit whenever a supply is needed. The type of data carried on each sheet is as follows:

§On Board Aircraft.	NavAer 1792-1
§On Board Aircraft.	NavAer 1792-2
§Personnel Facilities.	NavAer 1792-3
§Personnel Facilities.	NavAer 1792-4
§Administrative Facilities.	NavAer 1792-5
§Operations Facilities.	NavAer 1792-6
§Storage Facilities.	NavAer 1792-7
§Aircraft Repair Facilities.	NavAer 1792-8
§Services.	NavAer 1792-9
§Landplane Facilities.	NavAer 1792-10
§Seaplane Facilities.	NavAer 1792-11
§Ship Facilities.	NavAer 1792-12
§Ordnance Facilities.	NavAer 1792-13
§Target Ranges.	NavAer 1792-14

These forms may be ordered by listing of the general title "Station Report of Aviation Facilities" together with the form number applicable to the specific page desired.

Section B

Carrier-Based:	
FR-1, Reissued Dec. 1946.	NavAer 00-35QB-52
TBM-3, -3E, Reissued Dec. 1946.	NavAer 00-35QB-47
Other Types:	
OY-1, Reissued Jan. 1947.	NavAer 00-35QB-58
§SNB-1, -2, -3, -3H/JRB-1, -2, -3, -4, -5 Jan. 1947.	NavAer 00-35QB-67

Section D

§Catapult-Type H, Mark 4 with Improvements Spare Parts & Accessories, July 1946.	NavAer 00-35QD-3
§Type H, Mark 4, Mod. 1, Change No. 1, Nov. 25, 1946.	NavAer 00-35QD-4

Section G

Class D Maintenance Activities, Oct. 1946. Change 1.	NavAer 00-35QG-12

Section R

Aeronautical Electronics Material (and Associated Test Equipment and Tools), Reissued Jan. 1947.	NavAer 00-35QR-3

Section W

§Cold Weather Material for Cold Weather Operations, Jan. 1947.	NavAer00-35QW-1
§Cold Weather Material for Prolonged or Unusual Cold Weather Operations, Shore Bases, Jan. 1947.	NavAer00-35QW-2

§Designates New Publication

Title	Order No.

Tables of Basic Allowances

TBA for General and Target Utrons, Utility Squadrons, Reissued Jan. 1947.	NavAer00-35T-24
TBA for Target Drone (TDD) Units, Jan. 1947.	NavAer00-35T-27
TBA for Helicopter Squadrons, Reissued Jan. 1947.	NavAer00-35T-28

Accessories

Coils, Booster

Operation, Service, and Overhaul Instructions with Parts Catalog for Triple-Unit Starting Coil Scintilla Part Number 10-33200-1, Sept. 20, 1945.	AN 03-5-84

Ignition System

Operation, Service and Overhaul Instructions with Parts Catalog for 18-cylinder High-Tension Igmition System, Revised Sept. 30, 1945.	AN 03-5DD-1

Hydraulic System Fuses

§Operation, Service and Overhaul Instructions with Parts Catalog for Aerosquip 702 and 722 Hydrofuse, Oct. 15, 1946.	AN 03-30C-7

Manifold Pressure Regulators

§The Automatic Manifold Pressure Regulator of, R-2800-34 Engines.	NavAer03-10H-501

Propellers

Repair Instructions for Hollow Steel Blades, Revised Oct. 28, 1946.	ATO03-20B-5

Governors and Controls

Parts Catalog for Hydromatic Propeller Governors, Reissue Sept. 13, 1946.	AN 03-20CA-3

Voltage Regulator and Control Boxes

Handbook of Operation Service and Overhaul Instructions with Parts Catalog for D-C Carbon Pile Voltage Regulator Control Boxes.	AN 03-5AA-23

Airframes

Erection and Maintenance Instructions for A-26B and A-26C Airplanes, Revised Oct. 10, 1946.	AN 01-40AJ-2
Erection and Maintenance Instructions for Army R-5A and YR-5A Navy Model HO2S-1 Revised Oct. 24, 1946.	AN 01-230HR-2
Parts Catalog for Army Models YR-5A, YR-5D, YR-5E-, R-5A, R-5D Navy Model HO2S-1 Helicopters Revised Aug. 23, 1946.	AN 01-230HB-4
§Handbook of Operation, and Service Instructions with Parts Catalog for Navy Model KDR-1 Target Aircraft, Sept. 15, 1946.	AN 28-10C-10
Pilot's Handbook for Army B-25J and TB-25J Navy Model PBJ-1J Revised Oct. 22, 1946.	AN 01-60GE-1
Pilot's Handbook for Army Models C-46, -A, -D, -F Navy Models R5C-1 Airplanes, Revised Sept. 8, 1946.	AN 01-25IA-1
Erection and Maintenance Instructions Army Models C-47, -A, -B Navy Models R4D-1, -5, -6, -7 Airplanes Revised Oct. 15, 1946.	AN 01-40NC-2
Pilot's Handbook for Army Models C-47, -A, -D, C-117B Navy Models R4D-1, -5, -6, Revised Oct. 21, 1946.	AN 01-40NC-1
Pilot's Handbook for Army Model C-54-A and Navy Model R5D-1 Airplanes, Revised, Sept. 18, 1946.	AN 01-40NM-1
Structural Repair Instructions for Army C-54, -A, -B, -D, -E, -G Navy Models R5D-1, -2, -3, -4, -5 Airplanes, Rev. Oct. 18, 1946.	AN 01-40NM-3
Parts Catalog for Airplanes Army Models C-54B, -D, -E, -G Navy Models R5D-2, -3, -4 Revised Sept. 10, 1946.	AN 01-40NM-4A
Parts Catalog for Navy Model SC-1 Airplane Revised Oct. 15, 1946.	AN 01-25DC-4
Structural Repair Instruments for Army AT-7 ,-7C. UC-45B and C-45[Navy SNB-2, -2C, JRB-3, -4 Airplanes, Revised Sept. 25, 1946.	AN 01-90-3
Erection and Maintenance Instructions for Army Model AT-11 and Navy Model SNB-1 Airplanes, Revised Aug. 15, 1946.	AN 01-90KC-2
Erection and Maintenance Instructions for Army Model AT-6, Navy Models SNJ-3, -4, -5, -6 Airplanes, Rev. Oct. 1, 1946.	AN 01-60F-2

Airplane Bulletins, Changes

F4U-F3A-FG

Changes	
Cancelled: 234	
§Hydraulic System—Landing Gear Shuttle Valve—Replacement of, Dec. 19, 1946.	235
Bulletins	
§Furnishings—Stowage Box for Boresighting Posts—Identification of, Dec. 19, 1946.	287
§Hydraulic System—Center Section—Line Installation Right Hand—Clamping of, Nov. 26, 1946.	290

F6F

Bulletin	
§Fuselage—Stations 198 to 212—Horizontal—Reinforcement of, Nov. 29, 1946.	140
Change	
Tail—Stablizer—Leading Edge Boot—Installation of, Nov. 29, 1946.	69

F7F

Changes	
Safety of Flight: 36	
§Fuselage—Pilot's Enclosure—Safety Latch—Installation of, Nov. 26, 1946.	36

§Designates New Publication

(continued on next page)

Title	Order No.
§Engine Accessories—Carburetor Air Filter System—Installation of, Dec. 9, 1946.	43
F8F	
Bulletin	
§Fuel System—Fuel Strainer Drain Valve—Installation of Nov. 22, 1946.	28
FR	
Change	
§Fuselage—After Section—Station 264 to 382—Drainage Holes—Addition of, Dec. 19, 1946.	32
§Engine Section—Accessory Cowling Upper—Reinforcement of, Nov. 20, 1946.	38
§Fuselage—Forward Section Disconnect Station 102—Upper Forward Attachment Fitting—Replacement of, Dec. 11, 1946.	40
Bulletin	
§Fuselage—Nose Wheel Door—Hinges and Bumper—Inspection of, Dec. 23, 1946.	25
JD	
Change	
§Surface Controls—Tail Surface Control Cable Guard—Installation of, Nov. 20, 1946.	1
JRB/SNB	
Bulletin	
§Heating and Ventilating Equipment—Cabin Heater Valve Control Cable Clamps—Replacement of, Dec. 11, 1946.	57
OY	
Bulletin	
§Landing Gear—Main Wheels, Tires, Tubes, and Axles—Information Regarding Size of, Nov. 18, 1946.	4
PBM	
§Electrical-Motor-Pump—Automatic Pilot Hydraulic System—Replacement of, Dec. 4, 1946.	174
PB4Y	
Change	
§Electronics—Model AN/ARC-1 VHF Communication Radio Equipment Installation of, Nov. 26, 1946.	207
Bulletins	
§Surface Controls—Rudder and Elevator Stops—Rework of, Nov. 20, 1946.	243
§Tail—Vertical Stabilizer—Rear Spar Air Seals—Modification of, Nov. 22, 1946.	244
R5C	
Bulletin	
§Instruments—Sensitive Type Tachometer—Installation of, Dec. 9, 1946.	87
R4D	
Bulletin	
§Fuel System—Fuel Tanks—Filler Neck Filler Cap Cover—Inspection and Installation of, Dec. 9, 1946.	63
R5D	
Bulletin	
§Propellers—Feathering Line Modification of, Dec. 19, 1946	97
SB2C-SBW-SBF	
Bulletin	
§Wings—Aileron Control Link Assembly—Rework of, Dec. 9, 1946.	248
SC	
Cancelled: 44	
Bulletin	
§Instrument—Automatic Pilot—On-Off Valves—Replacement of, Dec. 19, 1946.	98
TD2C	
Bulletin	
§Fuel System—Fuel Pump Assembly—Modification of, Nov. 29, 1946.	5

Armament

Turrets

Handbook of Operation, Service, and Overhaul Instructions for Turret Models Martin 250CE-113 and 250CE-125, Revised Dec. 1, 1946.	AN 11-45B-36

§Designates New Publication

Title	Order No.

Instruments

Automatic Pilots

Operation and Service Instructions for Automatic Pilots Army F-1, F-2, Navy P-1, Reissue, Sept. 3, 1946.	AN 05-45DA-1

Compasses

Overhaul Instructions with Parts Catalog for Gyro Flux Gate Compass System, Revised Aug. 19, 1946.	AN 05-15-17

Gyro Horizons and Directional Gyros

Operation and Service Instructions for Attitude Gyro Indicator and Universal Attitude Gyro Indicator.	AN 05-20-38
§Overhaul Instructions for Attitude Gyro Indicator and Universal Attitude Gyro Indicator Army Type.	AN 05-20 GD-5
Aircraft Instrument Bulletin:	
§Instrument Status Bulletins—Change in Instructions for Supply Activities Compliance, Nov. 20, 1946.	36-46

Power Plants

Modification Instructions for Aircraft Engine R-985 Series, Revised Nov. 15, 1946.	NavAer 02-10A-500
Parts Catalog for Aircraft Models R-985-AN, -1, -2, -3, -4, -5, -6B, -8, -10, -12, -12B and -14B Revised July 1, 1946.	AN 02-10AB-4A
Modification Instructions for Aircraft Engine R-1830 Series, Revised Dec. 1, 1946.	NavAer 02-10C-500
Overhaul Instructions for Aircraft Engines Models R-1830-43, -65 and -90C, Revised Aug. 1, 1946.	AN 02-10CD-3
Service Instructions for Aircraft Engines Models R-1830-82, -92 Revised Aug. 15, 1946.	AN 02-10CC-2
Parts Catalog for Model R-1830-92 Aircraft Engines Revised July 15, 1946.	AN 02-10CC-4
Modification Instructions for Aircraft Engine R-2000 Series, Revised Dec. 1, 1946.	NavAer 02-10F-500
Parts Catalog for Aircraft Engines Models R-2000-3, -7, -11 Revised Aug. 15, 1946.	AN 02-10FA-4
Modification Instructions for Aircraft Engines R-2600 Series, Revised Oct. 15, 1946.	NavAer 02-35H-500
Modification Instructions for Aircraft Engines R-2800 Series, Nov. 15, 1946.	NavAer 02-10G-500
Service Instructions for Models R-2800-8, -8W, -10, -10W and, -65 Aircraft Engines, Oct. 1, 1946.	AN 02-10GB-2
Overhaul Instructions for Aircraft Engines Models R-2800-8, -10, -10W and 65, Revised Aug. 1, 1946.	AN 02-10GB-3
Parts Catalog for Aircraft Engines Models R-2800-21, -27, -31, -43, -51, -59, -63, -71, -75 and, -79 Revised Oct. 1, 1946.	AN-02-10GA-4C
Modification Instructions for Aircraft Engines R-3350 Series Revised Oct. 15, 1946.	NavAer 02-35J-500
Handbook of Service Instructions for Aircraft Engines Models R-3350-8, -14, -24W, Revised July 15, 1946.	AN 02-35JB-2
Modification Instructions for Aircraft Engines R-4360 Series Revised Dec. 1, 1946.	NavAer 02-10H-500
Parts Catalog for Aircraft Engines Models R-4360-2, -2A, -4, -4A, -27, -35 Reissued Aug. 15, 1946.	AN 02-10HA-4
GENERAL ENGINE BULLETINS:	
Cancelled: 56, Rev. 1.	
Electric Primer Gasket—Material Change, Nov. 18, 1946. Supp. #1 to Rev. #1.	56

Radio/Radar

Handbook of Maintenance Instructions for AN/APS-4 Aircraft Radar Equipment, Reissue Jan. 15, 1946.	AN 16-30APS4-7
Handbook of Maintenance Instructions for AN/APS-15A and AN/APS-15B Aircraft Radar Equipment Revised May 1, 1946.	AN 16-30APS15-7
§Handbook of Maintenance Instructions for Radar Set AN/APS-31, Mar. 15, 1946.	AN 16-30APS31-3
§Handbook of Maintenance Instructions for Radar Set AN/APS-34, Apr. 15, 1946.	AN 16-30APS34-3
Handbook of Maintenance Instructions for Radio Receiver Unit R-64/ARW-17, Aug. 15, 1945.	AN 16-35R64-3

Catapults

Catapult Publications

Handbook of Operation Service and Overhaul Instructions with Parts Catalog for AT-1 Catapults, Revised Sept. 15, 1946.	AN 51-20-500

Training Literature

Flight Aids

§A Line on the Beast by Grampaw Pettibone, 1946.	NavAer 00-80R-23

Aerology

General

§Drift Correction Nomograph	NavAer 50-1R-194

Aerology Bulletin

§Weather Reconnaissance Reports on San Francisco (NPG) Weather Broadcasts, Addition of.	28-46
§Drift Correction Nomograph, Nov. 21, 1946.	29-46

§Designates New Publication.

NAS PENSACOLA—The undefeated Gosling football team wound up its season with a 59-6 victory over University of Havana on a Cuban gridiron. It was the second Naval Aviation training command championship won by Pensacola this season, the first being in baseball. Each member of the grid team won a gold watch for copping the title.—*Gosport.*

VR-5—When you fly from Seattle to Moffett field on NATS these days you get a free travelogue lecture along with it. Wave flight orderlies are given a running commentary on the various scenic wonders as the planes fly along the backbone of the Cascade mountains from Seattle southward. Strip charts orient the passengers.

LETTERS

Sirs:

Attack Squadron Five A, formerly VB-5, feels it has something to crow about in its successful past year's operations. A recent example of its accomplishments was the aircraft availability maintained in the entirety by officers and enlisted engineering crews in preparation for, and execution of, operations conducted with the 1946 Navy Day celebration.

VA5A is operating as a self-sustaining squadron with only 60 percent of its authorized enlisted personnel. Under these conditions VA5A completed more than 18 hours of air show operations over the Navy Day period, involving flights from San Diego to Boulder Dam and return, and from San Diego to Phoenix, Winslow, Gallup, Santa Fe, Albuquerque, El Paso, and return with 100 percent availability. Everyone of the squadron's 24 SB2C-5's participated in all flights.

A. L. LEWIS,
Commanding Officer

¶ NANEWS agrees with endorsements to the above letter by Commander Attack Carrier Air Group Five and ComFairWestCoast that the accomplishment displays a favorable comparison of the FASRon and CASU systems of service from a maintenance standpoint and indicates the good job VA5A did in maintaining aircraft which usually require considerable upkeep.

Sirs:

A recent news item reported numerous complaints had been received regarding low flying over fur ranches. This low flying, especially during mating season, has resulted in definite dollar and cents losses to fur breeders. They request pilots avoid flying over their ranches, particularly at low altitudes.

The following poem was drafted to put their appeal into more readable form:

"The mating season of the mink
is more important than you think.
"Noise of engine, whirring prop
makes the whole damned thing a flop.
"Pity the rancher, pity the beast,
and don't fly low 'til the season has ceased."

LT. CDR. H. S. YOUNG, (W) USNR
FLIGHT DIVISION DCNO (AIR)
NAVY DEPARTMENT

Sirs:

In re Recognition Quiz "Striking Power" in the December issue. No. 1 should be the U.S.S. *Cleveland* class and not the U.S.S. *Indianapolis*. The *Clevelands* have four turrets and the *Indianapolis* had only three turrets and no after catapult.

H. M. SONNTAG, AMMIIc
NATTC MEMPHIS

¶ That's good recognizing. NANEWS only alibi is that the print furnished us was mislabeled and our aircraft recognition is sharper than our ship. H. J. Gibson, CSKD, NAS SANTA ANA, also spotted the error since he served three years on the *Portland*, sister ship to the *Indianapolis*.

Sirs:

This station readily admits, of course, to having the best A&R Department in the country but this belief is helped along by such items as appeared in the NAVAL AVIATION NEWS of December, 1946, concerning the means taken to improve absenteeism at Jacksonville.

It is noted that individual shops in the A&R Department of that station for an attendance record of 87% or better are awarded special pennants. This system would give every shop in our A&R a pennant since the attendance record averages 90% or better in all shops except for specified vacation periods.

We are particularly proud of the attendance record of A&R during the recent general strike in Oakland which deprived the station of all public transportation, as well as gasoline supplies, food, and other necessities of life. During the three days of this strike the attendance averaged 92%, 94%, and 96%, a remarkable demonstration of high morale and spirit.

S. J. MICHAEL
COMMANDING OFFICER
NAS ALAMEDA

VR-1—Lt. R. E. Graham, navigator with this NATS squadron, returned from Labrador recently with a compilation of relative values of various navigational instruments when used near the magnetic north pole. In one of his flights north of Goose Bay, while heading magnetic East, the actual track was almost due West because of an easterly variation of 172 degrees. One important finding was the unreliability of even the newest charts for far northern latitudes. Graham is working on a 50-page compilation of navigational and weather phenomena experienced in his 60-day tour of the northern latitudes.

NAS ALAMEDA—Perhaps the longest trip ever made on emergency leave by a sailor of this station was made by Domingo S. Prudente, STM1c, who flew a round trip of 18,000 miles to visit his father who is seriously ill in Paveete, Philippine Islands. Through cooperation of the Red Cross, a message of his father's plight was relayed to Prudente, who went via NATS.—*The Carrier.*

NAVAL AVIATION NEWS

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The Cover Familiar rig in a new setting shows young technician as he trains his radar antenna upon a swift guided missile as it screeches away from the catapulting ramp at the Naval Air Missile Test Center at Pt. Mugu, Calif.

CONTENTS

ANSWERS TO QUIZZES

● AIR STATION QUIZ

(inside front cover)
Top—NAS Grosse Ile. Bottom—NAS Alameda

● GRAMPAW SAFETY QUIZ (p. 7)

1. (a) Day—10,000 feet. (b) Night—5,000 feet. Ref: T.O. 95-45.
2. 45 degrees to such airway. Ref: C.A.A. Regs.
3. (a) No. (b) No. Both are prohibited due to the magnitude of the control forces which may be required for recovery. Ref: T.O. 40-46.
4. False. Never attempt takeoff with snow, frost or ice on the wings. Even loose snow cannot be depended upon to blow off, and only a very thin layer is necessary to destroy lift and create treacherous stalling characteristics. Ref: T.N. 84-45.
5. (d) Report your condition to the Flight Surgeon or senior officer present. Ref: Flight Safety Bulletin 3-46.

● NAVIGATION QUIZ (p. 9)

1. Lat. 27° 30', Long 125° 17'; *2.* T.H. 1st leg. 356° T; *3.* 0747; *4.* 258° T; *5.* 0824; *6.* 154° T or 164 naut. mi.; *7.* 210 kts.; *8.* 158° T; *9.* 155° T; *10.* 192 kts.; *11.* 0911.

● RECOGNITION QUIZ

(inside back cover)
1. U.S.S. Biloxi, Cleveland—class CL 2. Balao—class submarine 3. Iowa—class BB 4. Arkangelsk (Russian BB), ex-Royal Sovereign 5. Southampton—class CL (British) 6. U.S.S. Helena, Baltimore—class CA

Big Boys!

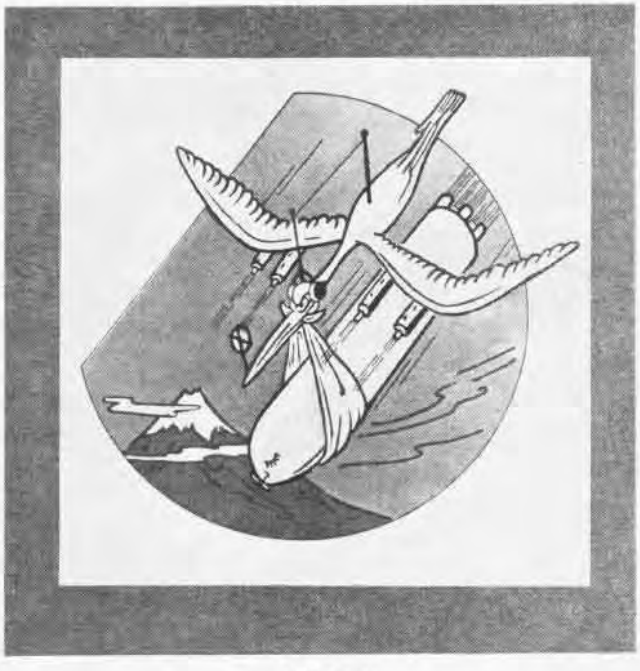
NAVAL AVIATION NEWS

Quiz Answers on Page 40

SQUADRON INSIGNIA

SOME PLAIN and fancy squadron insignia are included in this month's page. One of the plainest in Naval Aviation is that of VF-4B, formerly VBF-75. It has a green pawn on a white shield. VMF-122 is more decorative—a poison bottle as a fuselage indicates death to the enemy. The bullet emerging from the mouth denotes power. The Corsair's gull wings and tail assembly also are included. On the insignia of VF-20A, formerly VBF-19, can be seen a *Tiny Tim* rocket "baby" carried over Mt. Fujiyama.

VP-HL-1



VF-20A

VMF-122

VF-4B